Contacting BMC Software

Several methods are available for contacting BMC Software.

You can access the BMC Software website at http://www.bmc.com. From this website, you can obtain information about the company, its products, corporate offices, special events, and career opportunities.

United States and Canada

**Address**

BMC SOFTWARE INC
2103 CITYWEST BLVD
HOUSTON TX 77042-2827 USA

**Telephone**

1 713 918 8800
or
1 800 841 2031

**Fax**

1 713 918 8000

Outside United States and Canada

**Telephone**

+01 713 918 8800

**Fax**

+01 713 918 8000

© Copyright 1999-2016 BMC Software, Inc.

BMC, BMC Software, the BMC logo, the BMC Software logo, and other BMC marks are the exclusive properties of BMC Software, Inc. and are registered or may be registered in the U.S. and in other countries. BladeLogic and other BladeLogic marks are the exclusive properties of BladeLogic, Inc. and are registered or may be registered in the U.S. and in other countries. All other trademarks or registered trademarks are the property of their respective owners.

Explorer and Together are trademarks or registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

CICS, IBM, IMS, IMS/ESA, MVS, OS/390, RACF, Systems Application Architecture, VTAM, VTF, and z/OS are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

The information included in this documentation is the proprietary and confidential information of BMC Software, Inc., its affiliates, or licensors. Your use of this information is subject to the terms and conditions of the applicable End User License agreement for the product and to the proprietary and restricted rights notices included in the product documentation.

**Restricted rights legend**

U.S. Government Restricted Rights to Computer Software. UNPUBLISHED—RIGHTS RESERVED UNDER THE COPYRIGHT LAWS OF THE UNITED STATES. Use, duplication, or disclosure of any data and computer software by the U.S. Government is subject to restrictions, as applicable, set forth in FAR Section 52.227-14, DFARS 252.227-7013, DFARS 252.227-7014, DFARS 252.227-7015, and DFARS 252.227-7025, as amended from time to time. Contractor/Manufacturer is BMC SOFTWARE INC, 2103 CITYWEST BLVD, HOUSTON TX 77042-2827, USA. Any contract notices should be sent to this address.
Customer support

Support website
You can obtain technical support from BMC 24 hours a day, 7 days a week at http://www.bmc.com/support. From this website, you can:

■ Read overviews about support services and programs that BMC offers
■ Find the most current information about BMC products
■ Search a database for problems similar to yours and possible solutions
■ Order or download product documentation
■ Download products and maintenance
■ Report a problem or ask a question
■ Subscribe to receive proactive e-mail alerts
■ Find worldwide BMC support center locations and contact information, including e-mail addresses, fax numbers, and telephone numbers

Support by telephone or e-mail
In the United States and Canada, if you need technical support and do not have access to the web, call 1 800 537 1813 or send an e-mail message to customer_support@bmc.com. (In the subject line, enter SupID:yourSupportContractID, such as SupID:12345). Outside the United States and Canada, contact your local support center for assistance.

Before contacting BMC
Have the following information available so that Customer Support can begin working on your issue immediately:

■ Product information
  — Product name
  — Product version (release number)
  — License number and password (trial or permanent)

■ Operating system and environment information
  — Machine type
  — Operating system type, version, and service pack or other maintenance level such as PUT or PTF
  — System hardware configuration
  — Serial numbers
  — Related software (database, application, and communication) including type, version, and service pack or maintenance level

■ Sequence of events leading to the problem
■ Commands and options that you used
■ Messages received (and the time and date that you received them)
  — Product error messages
  — Messages from the operating system
  — Messages from related software
License key and password information

If you have questions about your license key or password, contact Customer Support through one of the following methods:

■ Send an e-mail message to customer_support@bmc.com. (In the Subject line, enter SupID:yourSupportContractID, such as SupID:12345.)

■ In the United States and Canada, call 1 800 537 1813. Outside the United States and Canada, contact your local support center for assistance.

Contents

About this book 19
Note about version compatibility ................................................................. 19
Conventions ........................................................................................................ 19
Syntax statements ................................................................................................ 20
Syntax diagrams .................................................................................................. 20
General document information ............................................................................ 22
Task structure ......................................................................................................... 22

Chapter 1 Introduction to DELTA PLUS 25

What is DELTA PLUS? ......................................................................................... 25
Dynamic Change Features ................................................................................ 26
  Dynamic Change of IMS Resource Definitions ............................................ 26
  Check Facility Verification ............................................................................. 27
  Summary of DELTA PLUS Updates to IMS Elements ................................. 27
Change Management Features ........................................................................... 31
  IMS Command Interface ........................................................................... 31
  IMS Command Enhancements .................................................................... 31
  DUMP/ZAP Facilities .................................................................................. 37
  System Authorization Facility (SAF) Interface ............................................. 37
  DELTA PLUS Log and History File ............................................................... 37
  Dependent Changes .................................................................................... 38
IMS Resource Management Features .............................................................. 38
  ISPF/DELTA List Editor ............................................................................... 38
  DELTA PLUS Utilities .................................................................................. 39
  DELTA PLUS XREF Feature ....................................................................... 39
  Multi-system Execution .............................................................................. 40
Coordinated Change Feature ............................................................................ 40
DELTA PLUS Operational Considerations ....................................................... 41
  IMS Online Change and DELTA PLUS ....................................................... 41
  Duplicate Elements in a DELTA List .......................................................... 43
  Auto-stop and Auto-start Feature ............................................................... 43
  IMS Resource Modeling .............................................................................. 44
  Partial Revise .............................................................................................. 44
  Command Elements and DELTA List Execution ........................................ 45
  DELTA List Execution and Backout Processing .......................................... 45
Locating DELTA PLUS Tasks ............................................................................ 46
Specifying Preferences for Initial Edit Command ........................................73
Specifying Preferences for Startup ........................................................................ 74
Specifying Preferences for the Colors and Field Attributes of the DELTA PLUS Interface ..........................................................................................................75
Specifying Preferences for the Function Keys ..................................................... 76
Accessing EXTENDED TERMINAL ASSIST PLUS ...........................................76

Chapter 5 Implementing DELTA PLUS 79
DELTA PLUS Interface and Product Views ............................................................79
Introduction to Customization ......................................................................................... 80
  Global Options ......................................................................................................... 80
  IMSID Options ......................................................................................................... 80
  Group Options ......................................................................................................... 81
  View Profiles ......................................................................................................... 82
Accessing Customization Panels ...................................................................................... 82
Setting Global Options ....................................................................................................... 84
Setting IMSID Options for DELTA PLUS and DELTA PLUS for DBCTL ................. 88
Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL ..............................92
  Enabling DELTA PLUS VIRTUAL TERMINAL .................................................. 93
  Setting Basic IMSID Options for DELTA PLUS VIRTUAL TERMINAL .......... 93
  Setting Limits for Virtual Terminals ......................................................................98
  Setting Virtual Terminal Options ........................................................................103
  Setting VT TSS Options .........................................................................................107
  Setting VT Logon Options ......................................................................................111
  Setting VT Signon Bypass Options ......................................................................114
  Setting VT Signon Options ...................................................................................118
  Setting Extended Options .....................................................................................122
Creating a New IMSID .....................................................................................................128
  Using DELTA PLUS Defaults .............................................................................. 128
  Using an Existing IMSID ...........................................................................................128
Customizing DELTA PLUS for the FDR Feature ..........................................................129
Setting Group Options ..................................................................................................... 130
  Creating a New Group ..........................................................................................133
  Adding an IMSID to an Existing Group’s Log Data Sets ......................................134
Updating IMSID/Group Options in the Control Region ...........................................137
Refreshing CPU ID Options ...........................................................................................138
Refreshing TSS Tables .................................................................................................139
Editing View Profiles .......................................................................................................141
  Available Commands ............................................................................................141
  Commands available on the View Profile Edit, View Profile Element Edit, and View Profile Field Edit panels .................................................................141
Commands available on the View Profile Edit panel ........................................142
Commands available on the View Profile Element Edit panel ..........................142
Commands available on the View Profile Field Edit panel ..............................142
To Edit a View Profile .......................................................................................143
Creating a New View Profile .............................................................................148
Allocating New DELTA PLUS Data Sets ..........................................................148

Chapter 6  Creating and Editing DELTA Lists ....................................................151
What is a DELTA List? .........................................................................................151
Duplicate Elements in a DELTA List ...............................................................151
Auto-stop and Auto-start Feature .....................................................................152
IMS Resource Modeling ..................................................................................153
Partial Revise .....................................................................................................153
Command Elements and DELTA List Execution ..............................................153
DELTA List Edit .................................................................................................154
Creating and Editing DELTA Lists ....................................................................155
DELTA List Edit and DELTA List Element Edit Panels .....................................155
Commands Available in DELTA List Edit .........................................................156
Beginning an Edit Session ................................................................................161
Selecting a DELTA List to Edit .........................................................................164
Editing a DELTA List .........................................................................................166
Inserting DELTA List Elements .......................................................................173
Inserting an Application Element .....................................................................174
Inserting a Database Element ...........................................................................178
Inserting a Command Element .......................................................................181
Inserting a DELTA List Element .....................................................................184
Inserting a Comment Element .........................................................................187
Inserting a Transaction Element .....................................................................190
Inserting a Route Code Element .....................................................................193
Inserting a Terminal Element ..........................................................................197
Inserting an LTERM Element .........................................................................200
Inserting a Subpool Element ..........................................................................203
Editing DELTA List Elements .........................................................................206
Introduction .....................................................................................................207
Other Primary Commands Available in DELTA List Element Edit ..................207
Editing an Application Element ......................................................................210
Editing a Database Element ............................................................................215
Editing a Command Element ..........................................................................220
Editing a DELTA List Element .........................................................................222
Editing a Comment Element ..........................................................................224
Editing a Transaction Element ......................................................................226
Chapter 12  DELTA PLUS Reports 375
Using History File Utilities Online .................................................. 375
   Selecting Report Input Items ..................................................... 377
   Selecting Report Format and Sort Sequence ............................. 377
   Generating a Terse Report ....................................................... 379
   Generating Complete or Changed Reports .............................. 381
   Additional Information on Complete Reports ......................... 383
Using History File and Log Utilities in Batch .................................. 384
   Using the Batch History File Report Utility .............................. 384
   Using the SELECT Command .................................................. 384
   Using the REPORT Command .................................................. 386
   Report Examples ................................................................. 388
   Using the Batch Log Report Utility ......................................... 389
   Using the SELECT Command .................................................. 390
   Using the REPORT Command .................................................. 391
   Report Examples ................................................................. 393

Chapter 13  Administration 395
BMCXLINK ....................................................................................... 395
   BMCXLINK Trace .................................................................. 396
   Starting BMCXLINK ............................................................ 396
   Terminating BMCXLINK ....................................................... 397
Executing IMS operator commands online .................................... 397
   Routing IMS Type-2 commands to the IBM Operations Manager (OM)
   address space ........................................................................ 398
   Using IMSPLEX and ROUTE TO command fields .................. 399
   Command routing GLOBAL option ........................................ 400
Specifying DELTA PLUS Operator Commands .............................. 401
   Sample DISPLAY commands ............................................... 403
   Displaying IMS Resource Manager RM Resources .................. 405
   DELTA PLUS XREF Feature Online ....................................... 408
   DELTA PLUS XREF Feature in Batch ...................................... 411
Specifying DELTA PLUS VIRTUAL TERMINAL Operator Commands 412
   Using the /ASSIGN Command .............................................. 413
   Using the /CHANGE Command ............................................. 415
   Using the /DISPLAY Command ............................................. 416
   Using the /SECURE Command .............................................. 425
Using the /TEST MFS Command ................................................................. 427
Using the /END Command ................................................................. 428
Using the /TRACE Command ................................................................. 428
IMS Storage Display and ZAP ......................................................... 430
Identifying ZAPS Supplied by BMC Software ...................................... 437
Diagnostic Tools .............................................................................. 437
DELTA PLUS Journal ....................................................................... 437
IMS Control Region Diagnostics ......................................................... 438
BMCXLINK Diagnostics ..................................................................... 439
TSO/ISPF Diagnostics ....................................................................... 440
Problem Determination Documentation ............................................. 441

Chapter 14 Virtual Terminals 443
Introduction .................................................................................... 443
Virtual Terminal ................................................................. 443
Virtual LTERM ................................................................. 443
Virtual Terminals and IMSGEN-Defined Terminals ................................ 444
Virtual Terminal Models ................................................................. 444
Logon Models ............................................................................ 445
Signon Models ............................................................................ 446
Supporting SLUTYPEP Devices ..................................................... 446
Signon Bypass ............................................................................... 447
Supporting Multiple LTERMs for Virtual Terminals .......................... 448
Virtual Terminal and LTERM Statistics ........................................... 449
Virtual Terminal Statistics Panel ..................................................... 449
Shutdown Statistics ................................................................. 450
Log Records .................................................................................. 451
Virtual LTERM Dequeue ................................................................. 453
Timer Facility for Virtual Terminals ................................................... 453
Unattended Virtual Terminal .......................................................... 453
Idle Terminal Logoff ...................................................................... 454
Idle Conversation Logoff and Exit .................................................... 455
Held Conversation Exit Interval ......................................................... 456

Chapter 15 Virtual Printers 459
Introduction .................................................................................... 459
Virtual Printer Setup ...................................................................... 459
TSS Virtual Printer Table ................................................................. 460
Virtual Printer Models ................................................................. 461
Virtual Printers ............................................................................ 462
Virtual Printer Autologon ................................................................. 462
## Chapter 16 Translate Subsystem Services Tables

### Overview of TSS
- Structure of TSS Tables ................................................. 470
- Updating TSS Tables ....................................................... 470
- TSS Search Methods ....................................................... 470

### Structure of the TSS Data Set
- TSS Data Set Records ..................................................... 471
- Updating TSS Data Sets .................................................. 472
  - Using Wildcard Characters for Searches and Updates ........ 472
  - Establishing Shared Access to TSS Data Sets ................. 472
- TSS ISPF Interface ......................................................... 474

### TSS Tables Online
- Select a TSS Table ......................................................... 477
- Edit a TSS Table ........................................................... 479
- Browse a TSS Table ....................................................... 485
- TSS Table Test .............................................................. 486
- TSS Table Search and Modify ........................................ 486
- Define a TSS Table ........................................................ 488
- Remove a TSS Table ....................................................... 489
- Unload a TSS Table ......................................................... 490
- Load a TSS Table .......................................................... 490
- Refresh a TSS Table ....................................................... 491
- Format a TSS Library ...................................................... 492
- Back Up a TSS Library ................................................... 492
- Reorganize a TSS Library ............................................... 493
- Create a Library Status Report ....................................... 493

### Batch TSS Commands
- DLATSS TSO Command Processor ................................. 497
- TSS Data Set Commands ............................................... 498
- TSS Table Commands ................................................... 499
- TSS Table Entry Commands .......................................... 504
Stage-1 Conversion Aid ................................................................. 507
Implementation ........................................................................... 507
Virtual Printers ........................................................................... 507
NLTERMs .................................................................................. 507
Execution .................................................................................. 508
Execute TSS Batch Commands .................................................. 508
TSS Table Batch Reports ............................................................ 510

Chapter 17       Virtual Terminal Control Blocks 511
Introduction .................................................................................. 511
Control Blocks ............................................................................ 511
Virtual Terminal Global Area ...................................................... 512
Virtual Terminal Control Block ................................................. 512
Virtual Communications Name ................................................. 513
Virtual Printer Override ............................................................ 514
User Signon Block ..................................................................... 514
Virtual Terminal Pending Element ........................................... 514
Special Element Created by DELTA PLUS ................................. 515
Macro $VTFCBS ........................................................................ 515
BTAM Line and PTERM Number Formats ................................. 517

Chapter 18       Using DELTA PLUS VIRTUAL TERMINAL Exits 519
Macro $VTFTEST ........................................................................ 519
Virtual Terminal Sample Exit Routines ..................................... 520
Using the Virtual Terminal Exit Assembly Guide ......................... 520
Logon Exit Sample Routine ....................................................... 521
Before You Begin ...................................................................... 522
Setting Logon Exit Routine Conditions .................................... 522
Using the Logon Exit Sample Routine ........................................ 523
Setting IMSID Basic Options .................................................... 524
Logon Exit Sample Routine 1 ..................................................... 525
Before You Begin ...................................................................... 525
Setting Logon Exit Routine 1 Conditions .................................... 525
Using the Logon Exit Sample Routine 1 ...................................... 525
Setting IMSID Basic Options .................................................... 526
Logon Exit Sample Routine 2 ..................................................... 526
Before You Begin ...................................................................... 526
Setting Logon Exit Routine 2 Conditions .................................... 526
Using the Logon Exit Sample Routine 2 ...................................... 527
Setting IMSID Basic Options .................................................... 528
Signon Bypass Exit Sample Routine .......................................... 528
Before You Begin ................................................................. 528
Using Multiple LTERMs ...................................................... 529
Using URMCOUNT ............................................................. 529
Using the Work Area .......................................................... 529
Setting Signon Bypass Exit Routine Conditions .................. 529
Using Signon Bypass Exit Sample Routine ......................... 530
Setting IMSID Basic Options .............................................. 531

Signon Exit Sample Routines .............................................. 531
  Before You Begin ............................................................. 531
  Using Multiple LTERMs ................................................... 532
  Using URMCOUNT .......................................................... 532
  Using the Work Area ....................................................... 532
  Setting Signon Exit Routine Conditions ......................... 532

Signon Exit Sample Routine 1 ............................................. 533
Signon Exit Sample Routine 3 and RACF ............................ 534
Signon Exit Sample Routine 5 and TSS ............................... 535
  Setting Signon Exit Sample Routine 5 Conditions .......... 536
  Setting IMSID Basic Options ......................................... 536

Signon Exit Sample Routine 7 ............................................. 537
  Multiple LTERM Support ................................................ 538
  URMCOUNT Usage ........................................................ 538
  Work Area ................................................................. 538

Signon Exit Sample Routine 9 ............................................. 538
Translation Assist Exit ....................................................... 539
  Assemble and Link-Edit .................................................. 539
  Implement the Exit ......................................................... 539
  Prevent Errors ............................................................. 540

Chapter 19 DELTA PLUS Questions and Scenarios 541
  Is Help Available in the ISPF Interface? ......................... 541
    Panel-Level and Field-Level Help ................................ 541
    Message Help Index .................................................. 542

  How Does DELTA PLUS Use XCF, and are XCF Definitions Required? 543
  Does BMCXLINK Still Use a BMP/TRAN/PGM for Communication with the IMS Control Region? 543
  What are View Profiles? .................................................. 543
  Why Would I Use the MARK (Mk) Facility in a DELTA List? 544
  Can I Change My Display to See More Lines on the DELTA List Element Edit Panel? 544
  Is It possible to See the IMS MACRO Definitions on the DELTA List Element Edit Panel? 544
What Does a Dependent DELTA List Mean? ............................................................... 545
What Does Executing a DELTA List Coordinated Mean? ..........................................545
Why Would I Use the DELTALST Element within a DELTA List? ......................... 546
What Does Using Variables in a DELTA List Mean, and When Can I Specify
Variables in a DELTA List? ............................................................................................. 546
  Using Variables in DELTA List Processing ........................................................547
Sample Variable Definitions and their Resolved Values ..............................................547
What is the Difference between Optimized and One element at a time Execution
Modes? ............................................................................................................................... 548
Can I View the Execution Results List after I Exit the Panel? .................................... 549
What if I Execute a DELTA List on a Group, and One of the IMS Systems is
Down? ................................................................................................................................ 550
What Is a DELTA PLUS Group and Why Would I Use It? ........................................ 550
How Do I Define a DELTA PLUS Group? ....................................................................551
How Does DELTA PLUS Keep My Grouped Systems in Sync When One of the
Systems is Down? ............................................................................................................. 551
How Do I Add an IMS System to an Existing Group? ................................................551
How Do I Remove an IMS System from an Existing Group Log or History File? .....553
What is the DELTA PLUS XREF Feature? .................................................................... 553
  Sample Online Displays Using the DISPLAY DLP XREF Command and
Output of IMS Resource Relationships .............................................................. 554
Does DELTA PLUS Provide a Utility to Compare IMS Systems (RESLIB,
MODBLKS, Stage1 Input)? .......................................................................................... 556
Does DELTA PLUS Offer Improvements in the Interrelation between the IMS
SYSGEN and DELTA PLUS-Managed Elements? ....................................................... 556
  Available DELTA PLUS/IMS SYSGEN Options ................................................... 557
What Are the DELTA PLUS Log and History File Data Sets, and How Are They
Different? ......................................................................................................................... 557
Can I Convert My Existing DELTA IMS Log Data Sets to DELTA PLUS Log
Data Sets? ....................................................................................................................... 558
  Scenario 1 .............................................................................................................. 558
  Scenario 2 .............................................................................................................. 558
  Scenario 3 .............................................................................................................. 558
Conversion Procedure 1 .......................................................................................... 558
Conversion Procedure 2 .......................................................................................... 559
Conversion Procedure 3 .......................................................................................... 559
Conversion Utility Considerations ............................................................................. 560

Appendix A  Defining Spare Elements 561
Spare Element Masks ........................................................................................................ 561
Sample Spare Element Definitions ..................................................................................561
### Appendix B  Converting from DELTA IMS to DELTA PLUS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>565</td>
</tr>
<tr>
<td>Invocation CLIST</td>
<td>566</td>
</tr>
<tr>
<td>Global Options</td>
<td>566</td>
</tr>
<tr>
<td>IMSID Options</td>
<td>568</td>
</tr>
<tr>
<td>SAF Security</td>
<td>571</td>
</tr>
<tr>
<td>SAF Resource Rules</td>
<td>572</td>
</tr>
<tr>
<td>Using the Existing DELTA IMS SAF Resource Rules</td>
<td>572</td>
</tr>
<tr>
<td>UPF Security</td>
<td>576</td>
</tr>
<tr>
<td>DELTA PLUS Logs and History Files</td>
<td>576</td>
</tr>
<tr>
<td>Conversion from DELTA IMS Log Data Sets to DELTA PLUS Log and History File Data Sets</td>
<td>577</td>
</tr>
<tr>
<td>Scenario 1</td>
<td>577</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>577</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>578</td>
</tr>
<tr>
<td>Conversion Procedure 1</td>
<td>578</td>
</tr>
<tr>
<td>Conversion Procedure 2</td>
<td>578</td>
</tr>
<tr>
<td>Conversion Procedure 3</td>
<td>579</td>
</tr>
<tr>
<td>DELTA Lists</td>
<td>580</td>
</tr>
<tr>
<td>Keyword Tables</td>
<td>580</td>
</tr>
<tr>
<td>Product Authorization</td>
<td>581</td>
</tr>
<tr>
<td>Message Numbers</td>
<td>581</td>
</tr>
<tr>
<td>Command Differences</td>
<td>581</td>
</tr>
<tr>
<td>Fallback Considerations</td>
<td>581</td>
</tr>
</tbody>
</table>

### Appendix C  Converting from DELTA PLEX VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>583</td>
</tr>
<tr>
<td>Invocation CLIST</td>
<td>583</td>
</tr>
<tr>
<td>Global Options</td>
<td>584</td>
</tr>
<tr>
<td>IMSID Options</td>
<td>584</td>
</tr>
<tr>
<td>Extended Options</td>
<td>585</td>
</tr>
<tr>
<td>SAF Security</td>
<td>585</td>
</tr>
<tr>
<td>UPF Security</td>
<td>586</td>
</tr>
</tbody>
</table>
About this book

This book contains detailed information about the associated product or products. This preface explains the special conventions that the book uses, and how to access related publications.

If applicable, the preface also summarizes the major changes included in the latest release of the product.

Note about version compatibility

In many instances in this book, a DELTA PLUS load module or PDS member which is referenced will actually be one of different versions because DELTA PLUS is designed to work with all supported versions of the IBM IMS system. In all such occurrences, the last character of the member name will be replaced with an \( n \). This character indicates that the actual member referenced depends upon the IMS version. For example, the \( n \) is replaced by \( 5 \) under IMS Version 13.1 or \( 6 \) under IMS Version 14.1.

Conventions

This document uses the following special conventions:

- All syntax, operating system terms, and literal examples are presented in this typeface.

- Variable text in path names, system messages, or syntax is displayed in italic text: \texttt{testsys/instance/file\textit{Name}}

- Menu sequences use a symbol to convey the sequence. For example, **Actions** => **Create Test** instructs you to choose the **Create Test** command from the **Actions** menu.
Syntax statements

This topic explains conventions for showing syntax statements.

A sample statement follows:

```
COMMAND KEYWORD1 [KEYWORD2 | KEYWORD3] KEYWORD4={YES | NO} fileName...
```

The following table explains conventions for syntax statements and provides examples:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Example</th>
</tr>
</thead>
</table>
| Items in italic type represent variables that you must replace with a name or value. If a variable is represented by two or more words, initial capitals distinguish the second and subsequent words. | alias  
databaseDirectory 
serverHostName |
| Brackets indicate optional items. Do not type the brackets when you enter the option. A comma means that you can choose one or more of the listed options. You must use a comma to separate the options if you choose more than one option. | [tableName, columnName, field]  
[-full, -incremental, -level] |
| Braces indicate that at least one of the enclosed items is required. Do not type the braces when you enter the item. | {DBDName | tableName}  
UNLOAD device={disk | tape, fileName | deviceName}  
{-a | -c} |
| A vertical bar means that you can choose only one of the listed items. In the example, you would choose either commit or cancel. | {commit | cancel} |
| An ellipsis indicates that you can repeat the previous item or items as many times as necessary. | columnName... |

Syntax diagrams

The following figure shows the standard format for syntax diagrams:
The following example illustrates the syntax for a hypothetical DELETE statement. Because the FROM keyword, alias variable, and WHERE clause are optional, they appear below the main command line. In contrast, the tableName variable appears on the command line because the table name is required. If the statement includes a WHERE clause, the clause must contain a search condition or a CURRENT OF clause. (The searchCondition variable appears on the main line for the WHERE clause, indicating that this choice is required.)

The following guidelines provide additional information about syntax diagrams:

- Read diagrams from left to right and from top to bottom.
- A recursive (left-pointing) arrow above a stack indicates that you may choose more than one item in the stack.
- An underlined item is a default option.
- If a diagram shows punctuation marks, parentheses, or similar symbols, you must enter them as part of the syntax.
- In general, IBM commands, keywords, clauses, and data types are displayed in uppercase letters. However, if an item can be shortened, the minimum required
portion might be shown in uppercase letters, with the remainder in lowercase (for example, CANcel).

- The following conventions apply to variables in syntax diagrams:
  - Variables are typically displayed in lowercase letters and are always italicized.
  - If a variable is represented by two or more words, initial capitals distinguish the second and subsequent words (for example, databaseName).

## General document information

Panels are displayed in this book only to explain a complex task or to indicate where fields or options on the panel vary, depending on the options specified. The display of some panels in the product can be affected by the ALTVIEW, MACRO ON, and MACRO OFF commands. These panels are all displayed in the same view with MACRO OFF enforced. Your panel display and field names may differ from those in the book. All the fields are still available despite which view you choose to display.

yyy indicates your user ID or a standard high-level qualifier on the panels. In the text of this document, the DELTA PLUS data sets are referred to by the last two qualifiers of the data set name only. For example, the data set BMCNODE.DLPCNTL is called DLPCNTL. Your names may differ. The function keys, as used in this book, are the default DELTA PLUS definitions of the function keys. Certain fields in the DELTA PLUS online interface allow the use of generic parameters. In these fields, certain characters (*) and (%) can be substituted for one or more characters in a parameter. See the IBM publication IMS Operators Reference for information on the use of generic parameters. The term IMS refers to all supported versions and releases of IMS/VS and IMS/ESA. The specific product name, version, and release numbers are noted only when this information is significant.

## Task structure

The tasks documented in this book are grouped by function. Each group of tasks begins with an overview. BMC Software recommends that you read this information the first time that you perform a task. Although the overview sections present some reference information, the DELTA PLUS online help provides complete reference information.

Task instructions follow each overview section. These instructions are designed primarily to help you use the DELTA PLUS online interface; it is assumed that you will use the instructions at a terminal. Task instructions are formatted consistently, and they contain the following elements:
The first paragraph of the section presents the goals of the task and a general description of how to perform it. Use this section to quickly identify the task that you need to perform.

**Panel flow** - This diagram presents a visual summary of the panels in the DELTA PLUS interface you will see while completing the task.

**Before you begin** - This section lists the tasks or actions that must be completed before you begin this task. Use this section as a checklist of task prerequisites.

**To do task** - This section provides the instructions on how to accomplish the task. In this book, there are two categories of steps: sequential and conditional. A sequential step is a step that is performed in the specified order. It can have substeps. A conditional step is a step which uses a decision table to show the available actions and their results.

**Where to go from here** - This section directs you to the task or tasks that you can perform next.
Introduction to DELTA PLUS

This chapter introduces you to the DELTA PLUS product.

What is DELTA PLUS?

The DELTA PLUS product is the next generation in the DELTA IMS family of products.

This product is an extension and enhancement of the current capabilities and interface of the DELTA IMS DC, DELTA IMS DB/DC, and DELTA IMS for DBCTL products. The basic capabilities of the DELTA IMS products, such as adding, deleting, and modifying IMS resources, are supported in DELTA PLUS.

DELTA PLUS has been developed to alleviate the problems inherent with IMS Online Change (OLC) where more than one copy of an IMS system must be maintained in a data-sharing/shared queues environment. The product uses the cross-system coupling facility (XCF) for communication between BMCXLINK and IMS control regions.

DELTA PLUS includes additional enhancements that address customer requirements taken over the life of DELTA IMS and that allow coordinated changes across a grouping of IMS systems and the dependency of DELTA requests. A coordinated change means that a change that is executed on a user-defined group of IMS systems must complete successfully on all the systems or the change is not applied on any of the systems. Dependent changes are changes that must complete successfully for all the elements in a DELTA List on the target IMS system or none of the changes are applied.

The DELTA PLUS product offers new functionality in the DELTA List editor, batch versions of utilities that were previously only available as online ISPF functions, and a suite of utilities to aid in the conversion to DELTA PLUS from DELTA IMS. The new DELTA PLUS XREF feature provides extensive reporting of the relationships between IMS resources, such as databases, programs, randomizers and compression routines.

The DELTA PLUS product features can be divided into the following categories:
Dynamic Change Features

The DELTA PLUS product provides the following dynamic change features:

- dynamic change of IMS resource definitions
- check facility verification of IMS changes prior to execution
- DELTA PLUS updates to IMS elements

Dynamic Change of IMS Resource Definitions

The DELTA PLUS product allows you to add, modify, or delete the following elements:

- databases (full-function and Fast Path DEDBs)
- programs
- transactions
- fast path route codes
- ACB or DMB control blocks
- terminals, LTERMs, subpools (requires spare elements)

IMS requires that all system elements must be defined to IMS before programs and databases can be used. This includes the programs you plan to run under IMS, the databases you will need information from, and administrative communications. The ability to add this information dynamically can eliminate additional IMSGENs and
the corresponding IMS downtime. DELTA PLUS uses DELTA Lists to make changes to the above elements without an IMSGEN.

**Figure 1: DELTA PLUS Modifications to IMS**

![Diagram showing DELTA PLUS Modifications to IMS](image)

You can make new ACB and DMB definitions resulting from a new ACBGEN active in IMS using IMS Online Change. It is not necessary to perform a MODBLKS IMSGEN or to use IMS Online Change to make changes to application, transaction, database and route code definitions.

DELTA PLUS can add and revise both full-function and Fast Path resource definitions. Changes to DEDB databases take effect immediately; thus, you can resize a DEDB without stopping IMS.

**Check Facility Verification**

After a list of changes has been created, a user can check the list without implementing the changes to IMS. This ability allows a user to verify whether or not the changes can be made prior to execution. The check facility can prevent costly errors.

**Summary of DELTA PLUS Updates to IMS Elements**

The mechanism for making changes to an IMS system is a DELTA List. A DELTA List is a member of a PDS (the DELTAPDS) which contains one or more records. Each record (or element) contains specific actions that should be taken for a designated IMS resource. The DELTA List editor allows you to add, delete, update, copy, and move elements using command syntax similar to ISPF Edit.

A DELTA List can also contain COMMAND elements to allow you to issue IMS operator commands during the execution of the DELTA List. **Table 1 on page 28** describes what definitions may be specified or changed for each IMS resource.
Note

MACRO ON and MACRO OFF toggles the current display to show IMS macro statements for the field names or not show macro statements for the field names. The element and attribute field names and their corresponding option values in this table are all displayed with MACRO ON. Your panel display of a field name may differ from this table. All the fields are still available despite which view you choose to display.

Also, if you have used the DBCTL CLIST to invoke DELTA PLUS in a DBCTL environment, the TRANSACT, RTCODE, TERMINAL, LTERM, and SUBPOOL elements will not be available.

Table 1: Allowed DELTA PLUS Changes to IMS

<table>
<thead>
<tr>
<th>Element</th>
<th>Attribute</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLCTN</td>
<td>PSB Name</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>MODEL AFTER</td>
<td>Model after an existing APPLCTN</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>APPLCTN</td>
<td>PSB always in main storage?</td>
<td>YES, NO, or RESIDENT</td>
<td></td>
</tr>
<tr>
<td>PGMTYPE</td>
<td>Program is a BMP or an MPP</td>
<td>BMP, MPP, BATCH, or TP</td>
<td></td>
</tr>
<tr>
<td>SCHDTYPE</td>
<td>Schedule is serial or parallel</td>
<td>PARALLEL or SERIAL</td>
<td></td>
</tr>
<tr>
<td>FPATH</td>
<td>Fast Path program?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>DOPT</td>
<td>Dynamic PSB modification?</td>
<td>YES, NO, or DOPT</td>
<td></td>
</tr>
<tr>
<td>GPSB</td>
<td>Generate a PSB?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>LANG</td>
<td>Language for PSB</td>
<td>ASSEM, COBOL, JAVA, PASCAL, PL/I</td>
<td></td>
</tr>
<tr>
<td>SYSID</td>
<td>MSC-remote system ID</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>SYSID</td>
<td>MSC-local system ID</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>DATABASE</td>
<td>DBD Name</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>MODEL AFTER</td>
<td>Model after an existing DATABASE</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>RESIDENT</td>
<td>DBD always in main storage?</td>
<td>YES, NO, or RESIDENT</td>
<td></td>
</tr>
<tr>
<td>ACCESS</td>
<td>Access is EX, RO, RD or UP</td>
<td>EX, RO, RD or UP</td>
<td></td>
</tr>
<tr>
<td>AUTO</td>
<td>Reload sensitive ACBs?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>Rand</td>
<td>Reload DEDB randomizer?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>RANDOMLY</td>
<td>Reload DEDB 2-stage randomizer ONLY</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>RLDAREAS</td>
<td>Reload stopped DEDB areas ONLY</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>Element</td>
<td>Attribute</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>LTERM</td>
<td></td>
<td>Logical Terminal Name</td>
<td>Name</td>
</tr>
<tr>
<td>ASSIGN</td>
<td></td>
<td>Node LTERM assignment</td>
<td>Name</td>
</tr>
<tr>
<td>MSNAME</td>
<td></td>
<td>MSC Link Name</td>
<td>Name</td>
</tr>
<tr>
<td>ISC</td>
<td></td>
<td>LU 6.1 subpools?</td>
<td>YES or NO</td>
</tr>
<tr>
<td>RTCODE</td>
<td></td>
<td>Code</td>
<td>Name</td>
</tr>
<tr>
<td>MODEL AFTER</td>
<td></td>
<td>Model after an existing RTCODE</td>
<td>Name</td>
</tr>
<tr>
<td>PSB</td>
<td></td>
<td>Name of PSB</td>
<td>Name</td>
</tr>
<tr>
<td>INQUIRY</td>
<td></td>
<td>Inquiry only route code?</td>
<td>YES or NO</td>
</tr>
<tr>
<td>SUBPOOL</td>
<td></td>
<td>Subpool Name</td>
<td>Name</td>
</tr>
<tr>
<td>MSGDEL</td>
<td></td>
<td>Message Delete Option</td>
<td>SYSINFO or NONIOPCB</td>
</tr>
<tr>
<td>TERMINAL</td>
<td>SIGNON</td>
<td>Required</td>
<td>YES or NO</td>
</tr>
<tr>
<td>Element</td>
<td>Attribute</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>TRANSACT</td>
<td>Transaction Code</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>MODEL AFTER</td>
<td>Model after an existing TRANSACT</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>APPLCTN</td>
<td>Name of PSB</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>WFI</td>
<td>Wait for input BMP?</td>
<td>YES, NO, or WFI</td>
<td></td>
</tr>
<tr>
<td>PRTY(1)</td>
<td>Normal priority</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>PRTY(2)</td>
<td>Limit count</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>PRTY(3)</td>
<td>Limit priority</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>MSGTYPE(1)</td>
<td>Multiple segment input?</td>
<td>YES, NO, MULTISEG, or SNGLSEG</td>
<td></td>
</tr>
<tr>
<td>MSGTYPE(2)</td>
<td>Transaction Response Mode?</td>
<td>YES, NO, RESPONSE, or NONRESPONSE</td>
<td></td>
</tr>
<tr>
<td>MSGTYPE(3)</td>
<td>Transaction class</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>PROCLIM(1)</td>
<td>Processing limit count</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>PROCLIM(2)</td>
<td>Processing time in seconds</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>PARLIM</td>
<td>Parallel processing limit</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>SCHD</td>
<td>Option if unschedulable</td>
<td>1,2,3,4,GE,GT,ANY, or NEXT</td>
<td></td>
</tr>
<tr>
<td>INQUIRY(1)</td>
<td>Inquiry only transaction?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>INQUIRY(2)</td>
<td>Recoverable transaction?</td>
<td>YES, NO, RECOVER, or NORECOV</td>
<td></td>
</tr>
<tr>
<td>FPATH</td>
<td>Fast path transaction?</td>
<td>YES or NO</td>
<td></td>
</tr>
<tr>
<td>FPSIZE</td>
<td>Fast Path EMH buffer size (requires FPATH=YES)</td>
<td>Number or #</td>
<td></td>
</tr>
<tr>
<td>MODE</td>
<td>Sync point per transaction?</td>
<td>SNGL or MULT</td>
<td></td>
</tr>
<tr>
<td>EDIT(1)</td>
<td>Translate input to upper case?</td>
<td>YES, NO, UC, or ULC</td>
<td></td>
</tr>
<tr>
<td>EDIT(2)</td>
<td>Set input edit/exit same as transaction</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>SPA(1)</td>
<td>SPA size if conversational</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>SPA(2)</td>
<td>Truncated data option</td>
<td>YES, NO, STRUNC, RTRUNC, OFF, ON</td>
<td></td>
</tr>
<tr>
<td>SEGSIZE</td>
<td>Maximum output segment size</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>SEGNO</td>
<td>Maximum number of output message segments</td>
<td>Number</td>
<td></td>
</tr>
</tbody>
</table>
Change Management Features

The DELTA PLUS product provides the following change management features:

- IMS command interface allows authorized TSO users to issue IMS operator commands
- IMS command enhancements provide additional information
- DUMP/ZAP facilities assist in troubleshooting and IMS maintenance
- SAF interface allows users to control use of the product functions
- DELTA PLUS History File provides an audit trail of changes
- DELTA PLUS ensures that either all changes are made or none are made through the use of dependent changes

IMS Command Interface

The DELTA PLUS ISPF interface includes a panel for issuing IMS Operator Commands and viewing the response from the command issued. This feature adds convenience for the users by eliminating the need to access an IMS Operator Console and allowing the command to be issued to multiple IMS systems.

IMS Command Enhancements

DELTA PLUS provides additional IMS DISPLAY commands, which are useful for listing information that is not otherwise available. These commands can be used to display information concerning various IMS resources and DELTA PLUS options and statistics. The following section shows sample output from some of these

<table>
<thead>
<tr>
<th>Element</th>
<th>Attribute</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSACT</td>
<td>SYSID(2)</td>
<td>MSC-local system ID</td>
<td>Number</td>
</tr>
<tr>
<td>ROUTING</td>
<td></td>
<td>MSC-pass origin to application?</td>
<td>YES or NO</td>
</tr>
<tr>
<td>DCLWA</td>
<td></td>
<td>DC log write ahead?</td>
<td>YES or NO</td>
</tr>
<tr>
<td>SERIAL</td>
<td></td>
<td>Serial processing of messages?</td>
<td>YES or NO</td>
</tr>
<tr>
<td>MAXRGN</td>
<td></td>
<td>Max regions allowed to schedule</td>
<td>Number</td>
</tr>
</tbody>
</table>
commands. Refer to the *DELTA PLUS User Guide* for a complete description of all the DELTA PLUS added commands.

**Sample DISPLAY Command and Output of DELTA PLUS REMOTE PSBs Information**

Issue the following command to display information about DELTA PLUS REMOTE PSBs:

/DIS DLP RPSB

The following sample output should display.

<table>
<thead>
<tr>
<th>RPSB</th>
<th>Remote</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL1</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>APPL2</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>APPL3</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

**Sample DISPLAY Command and Output of DELTA PLUS statistics**

Issue the following command to display information about DELTA PLUS statistics:

/DIS DLP STATS

The following sample output should display.

<table>
<thead>
<tr>
<th>DELTA PLUS STATS INFORMATION</th>
<th>CURRENT SCD COUNTS:</th>
<th>DELTA PLUS RESTART LOG REAPPLY COUNTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMB : 117 PDIR : 222 DDIR : 175 RCTE : 3</td>
<td>SMB : ADD 10 DELETE 5 REVISE 8 PDIR : ADD 3 DELETE 2 REVISE 2 DDIR : ADD 15 DELETE 8 REVISE 0 RCTE : ADD 1 DELETE 0 REVISE 0</td>
</tr>
<tr>
<td>DELTA PLUS TOTALS</td>
<td>SMB : ADD 10 DELETE 5 REVISE 8 PDIR : ADD 3 DELETE 2 REVISE 2 DDIR : ADD 15 DELETE 8 REVISE 0 RCTE : ADD 1 DELETE 0 REVISE 0</td>
<td></td>
</tr>
</tbody>
</table>

**Sample DISPLAY Command and Output of DELTA PLUS IMSID Options**

Issue the following command to display information about DELTA PLUS IMSID options:

/DIS DLP OPTIONS
The following sample output should display.

DELTA PLUS PRODUCT LEVEL V1.0.00 FOR IMSID IMSA
------------------------------------------------
IMS Version/Release     : 810
IMS Options timestamp   : 99069-16:18:35
IMS Options changed by : USERABC
IMS Options reloaded    : 0 times
IMS Options reloaded by :
Copy IMS Opt to RESLIB  : No
DELTA PLUS Group        : GRPZ
Copy Grp Opt to RESLIB  : No
DISPLAY / ZAP facility : Display storage: Yes / Zap storage: Yes
BMCXLINK LUname         : CB51LINK
DELTALOG names          : ABC.DLPLOG1
                         : ABC.DLPLOG2
HISTORYFILE names       : ABC.DLP.HISTORY1
                         : ABC.DLP.HISTORY2
Log CMDs to History File: Yes
*99077/125652* IMSA

Sample DISPLAY Command of IMS System-Related Information

Issue the following command to display information about the IMS system:

/ DIS DLP DATA xxx (cbname)

where xxx is one of the following control blocks: SCD, CLB, CNT, CTB, CIB, SPQB, PDIR, DDIR, and so forth. cbname is the name of the control block to be displayed.

Sample DISPLAY Command and Output of DLI SAS Storage

Issue the following command to display storage in the DLI/SAS region:

/ DIS DLP DATA xxxx DLI

If you want to limit the number of lines displayed, you can issue the command with the following additional, optional parameter (yyy):

/ DIS DLP DATA xxxx yyy DLI

For the display storage command:

- xxxx is the storage address.
- yyy is an additional, optional parameter that limits the number of lines displayed. The maximum value is 999.

The DLI keyword switches the command to run under the DLI TCB.
The following sample command will display storage in DLI/SAS for the specified storage address:

/\DIS DLP DATA 0004D008 DLI

The following sample output should display.

DFS0001 DELTA PLUS Display - 0004D008
004D008 +0000 47F0F022 1CC4C6E2 C4D7C4D4 F060F1F0 *00..DFSDPDMO.10*

DFS0001 004D018 +0010 F1F060F1 F161F0F6 61F0F660 F1F348F2 *10.11.06.06.13.2*

DFS0001 004D028 +0020 F90090EC D00C18CF 58D0D008 41A01000 *9................*

DFS0001 004D038 +0030 58B0A1D4 1BF50F0 A4309108 A3024710 *..M..&Ou.j.t...*

DFS0001 004D048 +0040 C5E45820 C8141836 130B58F0 B5C405EF *E...H......0.D..*

DFS0001 004D058 +0050 12F47F80 C06659F0 C8B04780 C58E59F0 *...........E..0*

DFS0001 004D068 +0060 C8B44780 C0761874 50307010 45E0C6FC *H.......&.....F.*

DFS0001 004D078 +0070 1BF47F70 C7961B11 1B21B33 1B51B99 *...Go........r*

DFS0001 004D088 +0080 5870B428 18879110 702047E0 COA0D503 *.............N.*

DFS0001 004D098 +0090 705CC8A8 4770C180 BFF7068 4770C180 *..Hy..A.......A.*

DFS0001 004D0A8 +00A0 D5017036 C8A4770 C1809102 70214780 *N...Hy..A.j.....*

DFS0001 004D0B8 +00B0 C0CE4870 70181277 4780C0CC 5BF0C8B8 *.............OH.*

DFS0001 004D0C8 +00C0 05EF12FF 4770C180 47FC086 18789120 *......A..0.f..j.*

DFS0001 004D0D8 +00D0 70204710 C18058F0 A1DA458F0 F10C12FF *....A..0.M.01...*

To display all CDE entries under DLI/SAS, specify the ALLCDE keyword along with the DLI keyword. For each CDE entry, the following items will be displayed:

- CDE name
- module EP
- module use count
- module subpool

The following sample command will display all CDE entries under DLI/SAS:

/\DIS DLP DATA CDE ALLCDE DLI

The following sample output should display.
The following sample command will display the entire CDE entry for an individual CDE:

/DIS DLP DATA CDE DFSDMBRS DLI

The following sample output should display.

```
DFS000I     DELTA PLUS Display - CDE(DFSDMBRS)                     D10P
DFS000I     006E29A0  +0000  006BA010 00000000 C4C6E2C4 D4C2D9E2
........DFSDBMS* D10P
DFS000I     006E29B0  +0010  3F3FC000 006E29C0 000100FB 02220000
..............* D10P
DFS000I     *11265/140110* D10P
```

Sample DISPLAY Command and Output of IMS Resource Relationships

Issue the following command to display information about the relationships between IMS resources, such as databases, programs, randomizers, and compression routines:

```
/DIS DLP XREF resource1 resource1_name RELresource2
```

*resource1* is PSB, DATABASE, RAND, TRAN, or COMP. *resource1_name* is the name of the resource to be displayed. RELresource2 is the related DMB, PSB, TRAN, or AREA.

The following sample command will display the PSBs that reference the named database:

```
/DIS DLP XREF DB DI21PART RELPSB
```

The following sample output should display.

```
DMBNAME - PSBS THAT REFEREENCE THE DMB
DI21PART - BMPAO12 BMP002 BMP004
DFHSM05  DFHSM014 DFHSM15
DFHSM25  DFSSAM01 DFSSAM02
DFSSAM04  DFSSAM05 DFSSAM06
```
Sample DISPLAY Command and Output of Conversational Transaction Information

Issue the following command to display information regarding conversational transactions in this IMS system:

/DIS DLP CONV {TRAN name | PSB name | ALL}

If TRAN or PSB is specified, then name is the transaction or PSB name to be displayed.

The following sample command will display all users in conversation for the named transaction:

/DIS DLP CONV TRAN IVTCX

The following sample output should display.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>User</th>
<th>Tran</th>
<th>ID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>C567</td>
<td>RIHGCB3</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
</tbody>
</table>

*2004085/104321*

The following sample command will display all users in conversation for the named PSB:

/DIS DLP CONV PSB DFSIVP35

The following sample output should display.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>User</th>
<th>Tran</th>
<th>ID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>C567</td>
<td>RIHGCB3</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
<tr>
<td>L318092</td>
<td>RDHGCB2</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
<tr>
<td>C564</td>
<td>GCB</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
<tr>
<td>L318022</td>
<td>RDHGCB</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
</tbody>
</table>

*2004085/104554*

The following sample command will display all users for all conversational transactions:

/DIS DLP CONV ALL

The following sample output should display.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>User</th>
<th>Tran</th>
<th>ID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>C567</td>
<td>RIHGCB3</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
<tr>
<td>L318092</td>
<td>RDHGCB2</td>
<td>IVTCX</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
</tbody>
</table>

DELTA PLUS User Guide
DUMP/ZAP Facilities

You can use the DELTA PLUS ISPF interface to display portions of IMS storage. You can use this interface to alter that storage. This feature can be very helpful with problem diagnosis and correction.

System Authorization Facility (SAF) Interface

The System Authorization Facility (SAF) interface is an optional security interface that allows you to protect every function which can be performed from the ISPF interface and batch. This feature provides the ability to distribute the product functionality as desired across the organization by allowing you to restrict authorization for product functionality for a specific user or group. SAF uses IBM RACF, CA Technologies CA-ACF2, or other equivalent packages.

DELTA PLUS Log and History File

DELTA PLUS records all successful changes made to an IMS system in the DELTA PLUS Log. This is a critical data set that is used during IMS initialization to reapply all active DELTA PLUS updates to IMS. Because of the critical importance of this data set, DELTA PLUS maintains dual Log data sets. The Log data sets are only for the use of DELTA PLUS.

DELTA PLUS records the same changes to the DELTA PLUS History File. The DELTA PLUS History File also contains images of the resource before and after any changes are made. The History File is useful for reporting and maintaining an audit trail of the changes made to an IMS system. DELTA PLUS also maintains dual History File data sets.

The following output is a sample History File:

```
DELTA PLUS History List - Terse format    Target: GRPZ 13/11/1998 Page:    1
Date       Time IMSid Userid   Action Ele_type Name     Other_name List     Act
11/13/1998  6.19 GCB5 GCB      ADD    APPLCTN  APPL1               #SAMP02  YES
11/13/1998  6.19 GCB5 GCB      DELETE APPLCTN  APPL2               #SAMP02  YES
11/13/1998  6.19 GCB5 GCB      ADD    DATABASE DB1      DI21PART M #SAMP02  YES
11/13/1998  6.19 GCB5 GCB      ADD    TRANSACT LCPTRAN9 LCPTRAN1 M #SAMP02  YES
11/13/1998  6.19 GCB5 GCB      ADD    TERMINAL TERM1    $SLU2008 S #SAMP02  YES
11/13/1998  6.20 GCB5 GCB      REVISE TERMINAL $3270DDD $3270DDD S #SAMP02  YES
11/13/1998  6.22 GCB5 GCB      ADDREV TRANSACT TRAN4               #SAMP04  YES
```

Chapter 1  Introduction to DELTA PLUS  37
Dependent Changes

Frequently, users request a group of changes that need to be made to the IMS system for a given application or for a new release of the application. It is important that all of the changes be applied at the same time. If all of the changes cannot be made successfully, then none of the changes should be made. DELTA PLUS supports this requirement with the concept of dependent changes. Changes are grouped together in a DELTA List that is designated as a dependent DELTA List. This designation ensures that all the changes in the DELTA List are successful or the changes will not be performed. The user can then review the output, correct the errors, and execute the DELTA List again.

IMS Resource Management Features

The DELTA PLUS product provides the following IMS resource management features:

- ISPF/DELTA List editor features make the product easy to use and the change lists easy to manage
- DELTA PLUS compare utilities assist the users in keeping multiple IMS systems synchronized
- DELTA PLUS XREF feature provides information about the relationships between IMS resources
- Multi-system execution allows changes to be made simultaneously on multiple IMS systems

ISPF/DELTA List Editor

The DELTA PLUS ISPF dialog provides an easy-to-use interface to the DELTA PLUS functions. It includes a complete online help system that assists the user in learning and maximizing the features of the product. The DELTA List Editor facilitates the creation and maintenance of DELTA Lists. The dialog validates data in each input...
field and cross-validates data in related fields which helps users get it right the first time.

**DELTA PLUS Utilities**

DELTA PLUS provides batch utilities that allow the user to compare IMS system definitions. This feature helps in the administration of complex environments with multiple IMS systems. The utility automatically generates DELTA List elements that can be executed to get the systems synchronized. The utility can compare

- SYSGEN source A versus SYSGEN source B
- IMS Control Region versus SYSGEN source

**DELTA PLUS XREF Feature**

The DELTA PLUS XREF feature provides information about the defined relationships between IMS system resources. Maintaining this information without DELTA PLUS is a time-consuming manual process. With the DELTA PLUS XREF feature, this information is always current and is available through online displays and batch reports. The DELTA PLUS XREF reports include:

- a list sorted by program of all databases that are referenced, explicitly or implicitly, by each program
- a report sorted by database of all programs that reference each database
- a report sorted by database of all programs that logically (or as an index) reference each database, or any databases that are related to that database
- a report sorted by database of the AREAs that are referenced by each database (DEDBs only)
- a report sorted by randomizer of the databases that use each randomizer routine
- a report sorted by compression routine of the databases that use each compression routine
- a report for a transaction of all databases that are used by that transaction
- a report for a database of all transactions that use the database
- a report for a list of transactions associated with a class number or all classes
IMS system programmers and DBAs can use the DELTA PLUS XREF feature to facilitate the administration of IMS systems by keeping an inventory of the IMS environment. In the event of recovery situations, such as a broken database, it allows the user to determine everything that will be affected when the broken database is taken offline. The user can display the IMS components and verify the effect of the changes.

This feature can also be executed in batch. See “DELTA PLUS XREF Feature in Batch” on page 411 for more information on the batch version of this feature and the available batch reports. All ISPF browse commands are supported when browsing the resulting report.

The following output is a sample DELTA PLUS XREF report:

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Related Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGSLJ1</td>
<td>DBGC8974 DBWFC961 DBXYZ99 DBCTS41$ DBCTD31$</td>
</tr>
<tr>
<td>PROGDLPX</td>
<td>DBINX123 DBMAX11 DBRLS328 DBGPFTX</td>
</tr>
<tr>
<td>PROGPLEX</td>
<td>DBIMS61</td>
</tr>
<tr>
<td>PROGDUC2</td>
<td>DBDLA85 DBDC95 DBBMC99</td>
</tr>
</tbody>
</table>

### Multi-system Execution

Large IMS installations frequently run many IMS systems concurrently. These systems may be organized in data-sharing groups, they may be connected via MSC, they may run on the same MVS, or they may run in different locations around the world. DELTA PLUS allows you to specify multiple targets for your IMS changes. A DELTA List can be targeted for an IMS Group, many single IMS systems, or both. This feature allows you to keep IMS resource definitions synchronized with minimal effort.

### Coordinated Change Feature

In an IMS data-sharing or shared-queues system or group of like IMS systems, it is important that the resource definitions remain synchronized. If there are inconsistencies between IMS systems in the same shared-queues group, it is possible to have responses for a transaction be different depending on the IMS system in which it was processed; this compromises the integrity of the IMS system.

The standard IMS Online Change requires you to manually make the changes to IMS system resources on each IMS system in a user-defined group. This method lends itself to error and oversight. The DELTA PLUS coordinated change feature is the only way to ensure that dynamic changes are made across all systems synchronously, thereby eliminating the possibility of inconsistencies.
DELTA PLUS allows you to make coordinated changes of IMS system resource definition elements dynamically across all IMS systems in a user-defined group. This group is usually an IMS data sharing group, IMS shared queues group, or a group of logically related or duplicated IMS systems. DELTA PLUS also allows you to define this group of IMS systems for DELTA List execution.

DELTA PLUS allows you to execute a single DELTA change or a group of dependent changes as a coordinated change. The target for the changes is a designated group of IMS systems. The change, or changes, must complete successfully on all the IMS systems or it will not be completed on any of the systems.

If an IMS Group is designated as a target for the coordinated change, but one system is down when the changes are executed, the changes will be made on the system when it is restarted. This feature ensures that the systems are never executing with inconsistent definitions. The DELTA PLUS coordinated change feature guarantees the integrity of the IMS resource definitions.

**DELTA PLUS Operational Considerations**

This section explains certain key points or issues concerning the operation of DELTA PLUS and how it functions. Some of this information can be found in other parts of this manual, but it is included here so that it can be viewed together.

*Note*

It is important that you review this section carefully in order to ensure that DELTA PLUS functions properly.

**IMS Online Change and DELTA PLUS**

The basic functionality of DELTA PLUS eliminates the necessity of performing MODBLKS or CTLBLKS GENs and implementing them with IMS Online Change. Using DELTA PLUS, changes that would normally be implemented with a MODBLKS Online Change can be implemented with less overhead, more control, and in less time. DELTA PLUS, however, can coexist with the IMS Online Change facility but you need to be aware of some situations which may arise.

**Changes Based on Current SYSGEN Date**

When a change is made to IMS using DELTA PLUS, the change is based on the current SYSGEN date. The SYSGEN date is obtained as shown in the following table.
Table 2: SYSGEN Information Used by DELTA PLUS

<table>
<thead>
<tr>
<th>SYSGEN</th>
<th>Used for</th>
<th>Date defined as assembly date of</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
<td>databases, programs, transactions, and route codes</td>
<td>CSECT DFSIDMD0 in module DFSDDIR x (in the MODBLKS data set) for DBCTL regions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSECT DFSISMB0 in module DFSSMB0 x (in the MODBLKS data set) for DB/DC and DCCTL regions</td>
</tr>
<tr>
<td>DC</td>
<td>LTERMs, subpools, and nodes</td>
<td>CSECT DFSICLLx in the IMS nucleus</td>
</tr>
</tbody>
</table>

**Note**

The dates that are stored in these modules contain only the date and no timestamp.

When an Online Change is performed that includes MODBLKLS (/MOD PREPARE MODBLKS or /MOD PREPARE ALL), DELTA PLUS examines the inactive MODBLKS data set and retrieves the DB SYSGEN date. If the date in the inactive MODBLKS data set is the same as the current DB SYSGEN date (as indicated in the active MODBLKS), DELTA PLUS assumes that the Online Change is being performed to bring in new security definitions. Any changes that were made to IMS using DELTA PLUS will remain in effect.

If DELTA PLUS determines that the date in the inactive MODBLKS data set is different from the current DB SYSGEN date, any changes made to IMS using DELTA PLUS will be inactivated. IMS Online Change will make changes to the IMS in accordance with the definitions in the inactive MODBLKS data set. Once Online Change has completed making changes to the system as indicated in the new MODBLKS data set, DELTA PLUS checks to see if there are any changes to applications, transactions, databases, or route codes on the DELTA PLUS Log for this new DB SYSGEN date. This can happen when a new MODBLKS SYSGEN is applied and then subsequently backed off. If there are changes, the changes are applied to the IMS system.

**Dates Stored Do Not Contain a Timestamp**

The dates stored in the MODBLKS members contain only the date and not a timestamp. For this reason, if multiple MODBLKS GENs are performed on the same day, DELTA PLUS will not recognize the fact that a new MODBLKS is being implemented and will attempt to keep the active changes in tact. If this occurs, the results may be unpredictable. If an IMS resource was changed by DELTA PLUS and also changed by the MODBLKS GEN, the changes made by DELTA PLUS will override the MODBLKS changes.

**/MODIFY Command Usage**

If DELTA List processing is active and a /MODIFY command is issued, the terminal that issued the command receives message DFS3431 /MODIFY PROCESSING
ALREADY ACTIVE. DELTA PLUS will also issue a message to the MTO indicating that the /MODIFY was rejected because DELTA List processing is active. The /MODIFY should be executed again once the DELTA List processing is completed. If IMS Online Change is active and a DELTA List is executed, the DELTA List execution is rejected due to the Online Change processing. The DELTA List should be executed again once the Online Change completes.

Duplicate Elements in a DELTA List

When you create a DELTA List, no restrictions exist about the number of times a particular element may appear in the DELTA List. However, the existence of duplicate elements in a DELTA List impacts performance when the DELTA List is executed.

If the DELTA List is executed in one-element-at-a-time mode, the existence of duplicate elements requires the same resource to be modified multiple times. If the DELTA List is executed in optimized mode, DELTA PLUS accumulates all the indicated changes to the resource so a single action can be made for the resource.

The existence of duplicate elements does not impact the end result of the execution of the DELTA List, regardless of the execution mode.

Note

If you are using TYPE=COORD and an error occurs in any element in the DELTA List on any of the IMS control regions, such as a duplicate element, then no changes will occur on any IMS control region to ensure that the systems remain in synch. The option TYPE=COORD is valid only when the target is a Group.

Auto-stop and Auto-start Feature

When you edit elements associated with IMS resources, the element contains selection fields which indicate that the resource should be automatically stopped before the change is made and/or automatically started after the change. When applications, databases, transactions, or route codes are revised or deleted, the resource must be in a stopped status or the change cannot be made. This action ensures that the resource is quiesced. By selecting the auto-stop and auto-start fields, you indicate that DELTA PLUS should issue the command necessary to stop the resource before making the change and, if necessary, start the resource after making the change. Table 3 on page 44 shows the commands that are issued as a result of selecting these options for the different element types.
### Table 3: Commands Issued for Auto-stop and Auto-start

<table>
<thead>
<tr>
<th>Element Type</th>
<th>Auto-stop</th>
<th>Auto-start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>/STO PROG</td>
<td>/STA PROG</td>
</tr>
<tr>
<td>Transaction</td>
<td>/STO TRAN</td>
<td>/STA TRAN</td>
</tr>
<tr>
<td>Database</td>
<td>/DBR DB a</td>
<td>/STA DB</td>
</tr>
<tr>
<td>Route Code</td>
<td>/STO RTCODE</td>
<td>/STA RTCODE</td>
</tr>
<tr>
<td>Terminal</td>
<td>/STO NODE</td>
<td>/STA NODE</td>
</tr>
<tr>
<td>LTERM</td>
<td>/STO LTERM</td>
<td>/STA LTERM</td>
</tr>
<tr>
<td>Subpool</td>
<td>/STO USER</td>
<td>/STA USER</td>
</tr>
</tbody>
</table>

a DELTA PLUS includes NOFEOV in the /DBR command.

In most cases, these commands should be sufficient to quiesce the resources so they can be changed. However, if these commands are not sufficient, additional command elements can be included in the DELTA List to perform additional actions.

### IMS Resource Modeling

DELTA PLUS provides the capability to add or revise a resource and to model it after another resource. You can use the Model after field for the element to specify the resource that should be used as the model. Data for any fields not specifically selected in the element will be copied from the model resource. The model specified must either currently exist, or there must by an ADD entry in the DELTA List for the model before it is used as a model for another element in the DELTA List.

**Note**

This feature is not available for terminals, LTERMs, or subpools.

### Partial Revise

When you create an element that will revise an existing IMS resource, you selectively specify which attributes should be modified through the fields available on the DELTA List Element Edit panel. This feature is called a partial revise. Using partial revise, you can ensure that only those fields you want changed are actually changed.

There are, however, certain attribute fields for the application and transaction elements whose values must be specified in relation to each other. DELTA PLUS avoids IMS application parameter conflicts by prompting you to specify correct values for each of these fields when you are editing a revise element.
Command Elements and DELTA List Execution

One of the element types that may be included in a DELTA List is a command element. Command elements are used to issue IMS commands during the execution of a DELTA List. Command elements are skipped when performing a Check of the DELTA List.

Most IMS commands are supported through DELTA Lists as well as /DISPLAY commands. However, for performance reasons, output from /DISPLAY commands is limited to the first 50 lines. When creating a command element, you can specify that the command be executed as a before or after command. This option relates only to a DELTA List when executed in optimized mode.

A before command element is executed prior to making any changes to the IMS resources as indicated in the DELTA List. An after command element is executed once the IMS resources have been changed. The most common use for before commands is to issue commands to stop resources so that the system can be quiesced and the changes in the DELTA List can be made successfully. The after commands can then issue the commands necessary to open the system back up and make the resources available once again. When executing a DELTA List in one-element-at-a-time mode, since each element is processed individually, before and after have no meaning.

When a command is issued, the only way to tell if the command was successful or not is to review the message that is returned. For this reason, DELTA PLUS cannot tell whether a command that was issued worked or failed. When executing a dependent DELTA List, DELTA PLUS does not consider command elements when determining if errors have occurred. It is possible, therefore, for a the IMS command in the command element to technically fail but DELTA PLUS will not stop the execution of the DELTA List unless a non-command element encounters an error.

DELTA List Execution and Backout Processing

DELTA PLUS has the ability to treat a DELTA List as a group of related changes so that when it is executed, you can specify that if any errors occur, none of the changes should be made. This feature allows you an easy way to ensure that your systems remain synchronized.

There are certain situations, however, where DELTA PLUS backout processing is limited and cannot put the system back to its original state. This occurs when the DELTA List includes elements that revise or reload databases or applications and the DMB or PSB that was read from the active ACBLIB is different from the original block. Once DELTA PLUS purges the current DMB or PSB from the pool, the next time the application or database is referenced, IMS will bring in a new copy from the active ACBLIB. DELTA PLUS must ensure, therefore, that the fields in the DDIR and PDIR that relate to the DMB and PSB reflect what is in the active ACBLIB. DELTA
PLUS does, however, backout the fields in the control block that were specified in the element.

The most extreme example of this is if a full-function database is being reloaded and the new DMB indicates that the database is now a Fast Path DEDB. Once the current DMB is purged from the pool, it is not possible for the database to be reverted back to full-function since the current DMB indicates it is a DEDB.

### Locating DELTA PLUS Tasks

DELTA PLUS tasks are described in the four manuals provided with the product. Table 4 on page 46 shows the most common tasks and the manual name for the task description.

#### Table 4: Task Locator Table

<table>
<thead>
<tr>
<th>Task</th>
<th>Manual and Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of Product</td>
<td><em>DELTA PLUS General Information</em></td>
</tr>
<tr>
<td></td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>Software Environment and Resource Requirements</td>
<td>installation guide</td>
</tr>
<tr>
<td>Initial and Maintenance Installation</td>
<td>installation guide</td>
</tr>
<tr>
<td>DELTA PLUS Customization</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>CPU ID Passwords</td>
<td>installation guide</td>
</tr>
<tr>
<td>TSO/ISPF Interface</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA Lists--Creating and Editing</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA Lists--Checking and Executing</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA PLUS Log--Creating and Maintaining</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA PLUS History File--Creating and Maintaining</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA Lists and Stage-1 macros--Generating and Converting</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>DELTA PLUS History File Reports</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>IMS Storage--Display and Zap</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>XRF</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>Task</td>
<td>Manual and Chapter</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Problem Diagnosis</td>
<td>DELTA PLUS User Guide</td>
</tr>
<tr>
<td>Defining Dynamic Terminals</td>
<td>DELTA PLUS User Guide</td>
</tr>
<tr>
<td>Converting from DELTA IMS to DELTA PLUS</td>
<td>DELTA PLUS User Guide</td>
</tr>
<tr>
<td>Defining Spare Elements</td>
<td>DELTA PLUS User Guide</td>
</tr>
<tr>
<td>Using DELTA PLUS in a DBCTL environment</td>
<td>DELTA PLUS User Guide</td>
</tr>
<tr>
<td>DELTA PLUS repository - Creating and Maintaining</td>
<td>DELTA PLUS User Guide</td>
</tr>
</tbody>
</table>
Introduction to DELTA PLUS for DBCTL

This chapter describes the key points of the DELTA PLUS for DBCTL product. It also explains how to invoke the DELTA PLUS for DBCTL interface view and use DELTA PLUS in a DBCTL environment.

Benefits of DELTA PLUS for DBCTL

Because DELTA PLUS for DBCTL provides the ability to dynamically add, delete, and rename applications and databases in a DBCTL environment, the following benefits can be realized:

- IMS end user productivity improves because the delays and interruptions associated with scheduling an IMSGEN are eliminated.

- The learning curve for CICS system programmers can be eased because DBCTL systems can be configured without IMSGENs, allowing CICS system programmers to perform required changes without immediately becoming experts in the preparation and execution of IMSGENs.

- CICS system programmers can potentially make changes that would otherwise require the assistance of an IMS system programmer, which further decreases the amount of time required to implement DBCTL system changes.

- System programmer time devoted to IMSGEN preparation and execution and CPU cycles formerly devoted to IMSGENs are reduced.

DELTA PLUS Interface and Product Views

This section provides information and instructions on invoking the DELTA PLUS interface and switching between online interface product views.
Invoking the DELTA PLUS Interface

The approach you use to invoke the DELTA PLUS online interface depends on how the product was installed. DELTA PLUS can be invoked through a selection to your ISPF main menu or through execution of a CLIST.

Members DLPCI@00, DTDCI@00, and DLVCI@00 in DLPSAMP are sample CLISTs that provide access to the DELTA PLUS online interface. Use one of these CLISTs shown in Table 5 on page 50 to invoke a product view of the DELTA PLUS online interface.

Table 5: CLISTs for Invoking the DELTA PLUS Online Interface

<table>
<thead>
<tr>
<th>If you want to view options for...</th>
<th>Then type one of the following on a TSO Command line...</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>EX 'clist.dataset.name(DLPCI@00)'</td>
</tr>
<tr>
<td>DELTA PLUS for DBCTL</td>
<td>EX 'clist.dataset.name(DTDCI@00)'</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>EX 'clist.dataset.name(DLVCI@00)'</td>
</tr>
</tbody>
</table>

The CLIST that you use determines the product view that will be displayed. When you invoke the DELTA PLUS online interface, the version of the DELTA PLUS Main Menu that is appropriate to the product you selected is displayed.

Unless stated otherwise, the panels in this book were invoked through the DELTA PLUS CLIST (DLPCI@00) with the DELTA PLUS default View Profile. The panel flows will reflect any differences in accessing panels for DELTA PLUS for DBCTL or for DELTA PLUS VIRTUAL TERMINAL.

View Profiles

View Profiles allow user customization of the keyword names and descriptions used when editing DELTA Lists. You can change the defaults for, or prohibit use of, individual fields. You can also enforce standards for DELTA Lists created at a given location or site.

Creating and Editing DELTA Lists

DELTA Lists can be used in a variety of ways. Some customers use the same DELTA Lists over-and-over for different purposes while other customers use a different DELTA List for each element changed. Whichever approach you take to using...
DELTA Lists, BMC Software recommends that you identify each DELTA List by its contents and retain the DELTA Lists until the changes are made permanent by the next IMSGEN. After changes are implemented via an IMSGEN, the executed DELTA Lists are no longer needed.

DELTA List Edit and DELTA List Element Edit Panels

You will use the DELTA List Edit and DELTA List Element Edit panels to create and edit your DELTA Lists. The DELTA List Edit panels contains line action codes that allow you to insert DELTA List elements and manipulate their order within the DELTA List. You can also set and view other options for the DELTA List on the DELTA List Edit panel.

By typing the \texttt{S} action code next to a DELTA List element, you can select that DELTA List element for detailed editing. The DELTA List Element Edit panel is displayed for the DELTA List element. You can set and view the attributes associated with that particular DELTA List element.

The DELTA PLUS product view includes DELTA List options that apply to DELTA PLUS for DBCTL. DELTA Lists that include elements common to both IMS control and DBCTL regions can be executed against either type of control region. During execution of a DELTA List against a DBCTL or DCCTL region, DELTA List elements that are not applicable to DBCTL or DCCTL are ignored.
Introduction to DELTA PLUS VIRTUAL TERMINAL

This chapter provides a high-level overview of the DELTA PLUS VIRTUAL TERMINAL product and its features. DELTA PLUS VIRTUAL TERMINAL diagnostic tools and operational considerations are also described in this chapter.

An Overview of DELTA PLUS VIRTUAL TERMINAL

This overview covers the information that is unique to the VIRTUAL TERMINAL component of DELTA PLUS VIRTUAL TERMINAL. For information regarding the basic DELTA PLUS features of DELTA PLUS VIRTUAL TERMINAL, please see “Introduction to DELTA PLUS” on page 25.

A virtual terminal is any 3270, SLU1, SLU2, SLUP, or 3600/FINANCE terminal that is not defined in an IMSGEN but is created at logon time. A 3270, SLU2 or 3600/FINANCE virtual terminal is deleted after the user logs off IMS. SLUP virtual terminals are not deleted when the user logs off IMS. Sites can specify that the IMS terminal control block for a virtual terminal reside in the IMS control region only while that virtual terminal is logged on to IMS and that it be deleted after logoff, thereby freeing virtual storage for another virtual terminal user.

Virtual Printers

Virtual printers are LTERMs and corresponding nodes that do not have to be IMSGEN-defined to be used by BMP and MPP programs for output. A virtual printer is created when IMS attempts to locate a destination unknown to the system. You do not have to make changes to IMS application programs to send output to virtual printers.
Virtual Terminals

Virtual terminals are nodes and corresponding LTERMs that do not have to be IMSGEN-defined to be used by IMS users. A virtual terminal is created at logon time and is deleted after the user logs off IMS.

Virtual Terminal Control Blocks

VIRTUAL TERMINAL uses six control blocks for defining and accessing virtual terminals and virtual printers. See “Virtual Terminal Control Blocks” on page 511 for more information.

Resource Requirements

The estimated virtual storage, CPU, and DASD resources required for VIRTUAL TERMINAL are described below. These are estimates; they may vary depending on the requirements of your system.

Table 6 on page 54 shows private storage under IMS, except where noted. Use this table to estimate virtual storage needed.

Table 6: VIRTUAL TERMINAL VIRTUAL TERMINAL Virtual Storage Requirements

<table>
<thead>
<tr>
<th>Description</th>
<th>Storage Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual terminal and printer control blocks (VLBs)</td>
<td>612 bytes</td>
</tr>
<tr>
<td>Virtual LTERM control blocks (VCNs)</td>
<td>156 bytes</td>
</tr>
<tr>
<td>Each /SECURE allowed userid</td>
<td>16 bytes</td>
</tr>
<tr>
<td>Each virtual printer override (VPO)</td>
<td>28 bytes</td>
</tr>
<tr>
<td>Each virtual terminal pending element (VTEs)</td>
<td>16 bytes</td>
</tr>
</tbody>
</table>

VLB and VCN Composition

To create a VLB, VIRTUAL TERMINAL adds a prefix and suffix to the standard control blocks that IMS uses to create terminals and printers. The combined prefix
and suffix storage is approximately 28 bytes. All storage used for VLBs is allocated above the 16-MB line. See the IBM IMS documentation for information on the standard control blocks IMS uses to create terminals and printers.

To create a VCN, VIRTUAL TERMINAL adds a prefix and suffix to the standard control blocks IMS uses to create LTERMs. The combined storage used by the prefix and suffix is approximately 12 bytes. VCN storage is allocated above the 16-MB line. See the IBM IMS documentation for information on the standard control blocks IMS uses to create LTERMs.

You can review the contents of VLBs and VCNs by issuing one of the following IMS commands:

- `/DISPLAY VT VLB nodename`
- `/DISPLAY VT VCN ltermname`

See “Executing IMS operator commands online” on page 397 for information on these IMS commands.

**GETMAIN and CWAP Storage**

GETMAIN-requested storage will be more than the control block size times the number of control blocks. This is due to increased pool size calculations that IMS performs; these calculations are based on the number of terminals.

VIRTUAL TERMINAL uses approximately 20 KB from the IMS Communications Work Area Pool (CWAP) during virtual terminal logon/signon processing. Since this process is serialized, 20 KB is the maximum amount VIRTUAL TERMINAL ever uses at one time. If you are using virtual printers, your CWAP calculations should also include approximately 2 KB for each concurrent virtual printer request. Once implemented, you should periodically monitor your CWAP allocation for future adjustments.

**Diagnostics**

The following tools are used to assist in VIRTUAL TERMINAL problem determination and resolution:

- virtual terminal trace facility
- IMS system log tapes
- file select print utility (DFSERA10)
IMS dispatcher trace facility

The virtual terminal Trace facility consists of three elements. The first is the trace table which consists of entries located in extended private virtual storage. The second is a macro interface that generates standard trace table entries and/or specific event entries. The third element is a callable routine that allocates trace table entries with integrity in a multiprocessor environment, initializes entries with an ID and time stamp, and if a CLB address is provided, produces the standard trace entry.

The IMS system log tapes, file select print utility, and dispatcher trace facility are used by BMC Software Customer Support to diagnose problems when IMS abends or is suspected to be in a loop or wait state.

Virtual Terminal Trace Facility

VIRTUAL TERMINAL provides a virtual terminal trace facility that is used for BMC Software diagnostic purposes. The facility maintains a trace within the IMS control region by documenting events that are considered significant by VIRTUAL TERMINAL. The virtual terminal trace facility has three elements:

- trace table
- macro interface
- callable trace routine

Trace Table

The trace table consists of 3200 64-byte entries located in extended private virtual storage. The size of the table never exceeds 3200 entries; when the table is full, writing continues by overlaying the oldest entry with the newest entry. The address of the trace table is at offset 'X'30' in load module VTFXVCDn, while the address of the most recent entry is at offset 'X'38'.

Macro Interface

Two forms of the virtual terminal Trace facility macro interface are available. The first generates a DSECT of a standard trace table entry. Note that while the format of trace table entries is variable and event-specific, you can use a common format by typing the $VTFTTRCE macro instruction in the following format:

$VTFTTRCE DSECT

The second form of the macro interface traces an event. The expansion of the macro provides the expected linkage to the callable routine VTFXTRC n, and is shown in
the example below. Upon return from $VTFTFRCE, general register R15 contains the 31-bit address of the trace entry created:

```
$VTFTFRCE ID='value'.VCD=address,CLB=address
```

ID= ‘value’ is a four character string that serves as an eye-catcher in the trace table and identifies the type of event.

VCD=address is the address of VTFXVCD n, or general register R2-R12.

CLB=address is an optional parameter that indicates the standard trace entry is desired and provides the address, or general register R2-R12, of the CLB whose data is to be traced. If this parameter is omitted, a trace entry is created, but it includes only the ID and time stamp.

**Callable Routine**

The callable routine, VTFXTRC n, is link-edited to VTFXVCDn. It allocates trace table entries with integrity in a multiprocessor environment, initializes the entry with the ID and time stamp, and if a CLB address is provided, produces the standard trace entry as described by the DSECT form of $VTFTFRCE.

**/DISPLAY VT TRACE Command**

The /DISPLAY VT TRACE command provides an online report of the current contents of the virtual terminal trace table. See “Executing IMS operator commands online” on page 397 for details on the /DISPLAY command and the Trace report contents and format.

**IMS System Log Tapes**

When the IMS control region abends or is operating incorrectly, the IMS system log tapes are used by BMC Software Customer Support to diagnose the problem. Once obtained, keep this documentation until the problem has been resolved to your satisfaction. BMC Software may not need any or all of this material; however, it is important that it be readily available. The following describes creating documentation to send to BMC Software, when required.

IMS and VIRTUAL TERMINAL log records are used for analysis, sometimes requiring records from a log tape created since the last cold start.
Usually, a limited subset of log record types are required, but occasionally other types are needed. The most frequently used log records are X'02', X'11', X'12', X'40', and X'DE'.

If confidentiality requires that complete log contents not be disclosed, you can copy (not print) these record types to tape using DFSERA10 prior to submitting them to BMC Software.

If your site has customized the log code used for VIRTUAL TERMINAL, replace the log code X'DE' with the code you selected in the VIRTUAL TERMINAL IMSID options.

**File Select Print Utility**

DLPCNTL member DLP#ERA7 contains JCL to use the IBM file select print utility (DFSERA10). DFSERA10 can select and print log records that contain a specific character or hexadecimal string, irrespective of offset.

For example, to select all records that contain the string ABC, include one of the following SYSIN control cards:

```plaintext
OPTION PRINT E=DFSERA10,C=E,PARM=(DATA=ABC)
```

-Or-

```plaintext
OPTION PRINT E=DFSERA10,C=E,PARM=(DATA=X'C1C2C3')
```

DFSERA10 is particularly useful when researching terminal related problems from the IMS log.

**IMS Dispatcher Trace Facility**

The IMS dispatcher trace facility can provide valuable information for diagnostic purposes. This facility traces the calls of the IMS dispatcher and places the results in a trace table. You can turn the facility on and off using the online /TRACE command, but you must first specify **DISP=ON** in the OPTIONS statement when you initialize your IMS system. This parameter is specified in PROCLIB member DFSVSMxx. If you do not have this facility activated on your IMS system, you should consider activating it to help with the diagnosis of any future problems with IMS or other products that run under IMS.

See the IBM publication *IMS System Definition Reference* for more information on the IMS dispatcher trace facility.
Identifying ZAPS Supplied by BMC Software

Each zap supplied by BMC Software includes an IDRDATA control card. When keying in a BMC Software-supplied zap to the IBM AMASPZAP utility, always include the IDRDATA card.

The VTFCNTL library contains member VTF#LIDR. If you have applied the IDRDATA control card along with each zap supplied by BMC Software, you can generate a list of the zaps that have been applied to VIRTUAL TERMINAL at your site by running job VTF#LIDR.

Figure 2 on page 59 shows a standard AMASPZAP job with typical control cards, including IDRDATA.

Figure 2: Standard AMASPZAP Job with IDRDATA Control Card

```
//DELTAFIX JOB (ACCT#),NORMAL JOBCARD INFO
//
//STEP1        EXEC PGM=AMASPZAP,REGION=512K
//SYSPRINT     DD  SYSOUT=* 
//SYSLIB       DD DISP=SHR,DSN=BMCNODE.DLPLIB
//SYSIN        DD  * 
NAME  DLAXNVB0 DLAXNVB0                  IDENTIFY MODULE, CSECT
VER 148C 4100073D                      VERIFY DATA
CHECKSUM 1BC94100                      VERIFY CHECKSUM
REP 148C 410006D9                      REPLACE DATA
CHECKSUM 1B654100                      REPLACE CHECKSUM
IDRDATA  P186055                        IDRDATA, ALWAYS INCLUDE!
/*
```

Restrictions and Compatibility

When using VIRTUAL TERMINAL, keep the following operational restrictions and considerations in mind.

Restrictions

- The IMS Master Terminal cannot be a virtual terminal or be used as a virtual terminal logon model.
- IMS commands that allow a range of LTERM or node names to be selected cannot include a virtual terminal.
- Application programs responding to virtual terminal conversational input must respond via the I/O PCB.
Local copy output from virtual terminals or to BSC 3270 candidate printers is not supported.

When Resource Manager (RM) is active, virtual terminal status is no longer kept in VTE control blocks.

A /STO NODE command issued against a virtual terminal is lost after the control blocks have been deleted unless Resource Manager (RM) and Sysplex Terminal Management (STM) are in use.

When Resource Manager (RM) is active, VTE entries are no longer created for the /EXCL, /STOP, /TEST, and /TRACE commands.

After installing VIRTUAL TERMINAL, the following become reserved words for all command processing (including non-display and non-virtual command formats), LTERM names, and MFS format names: VT, ALLOWED, OVERRIDE, PRINTER, SIGNON, TRACE, VIRTUAL, VP, VPO, VTF, VCN, VLB, VTE.

Do not use operator initiated checkpoints (such as /CHE, and /DBR) that inadvertently occur during online change (/MODIFY, /PREPARE, and /COMMIT), to restart your IMS system.

Do not use the special characters # or @ in the node name.

Virtual printers that use models defined to IMS with OPTIONS=DISCON are automatically logged off whenever the queue count is zero. The OPTIONS=DISCON parameter takes precedence over any virtual printer logoff interval you specify on the Virtual Terminal Limits panel. This option also takes precedence over the No Automatic Timeout option in a Virtual Printer Timer Override table.

The terminal communication option, Automatic Session Restart (ASR), is not supported when specified on a virtual terminal model definition.

VTAM MODETAB PSERVIC field presentation space values must be coded correctly for VIRTUAL TERMINAL to determine screen size.

Using a multiple LTERM per node Translate Subsystem Services (TSS) table for signon or signon bypass requires a special TSS translation, which precludes the use of pattern masking in these tables.

The user VTFBMCUS is created and used by VIRTUAL TERMINAL. User VTFBMCUS should not be defined by IMSGEN or added through VIRTUAL TERMINAL.

When a /STO NODE ALL command is issued, virtual terminal logons are not allowed until the virtual terminal logon models are restarted.
■ Models used for virtual terminals and virtual printers should never be connected or used.

■ If an LTERM destination is created as a remote CNT via the Virtual Remote LTERMs TSS table, it cannot be used as a local LTERM until the next cold start of IMS. Conversely, if an LTERM is created as a local LTERM, it cannot be used as a remote LTERM until the next cold start of IMS.

**IMS Master Terminal Restrictions**

The IMS Master Terminal is the control center for all IMS system operations. Operator commands affecting the entire IMS application and communications network can be entered at this terminal. System status messages are displayed on the Master Terminal.

Because of the importance of the IMS Master Terminal, IMS takes extraordinary measures during restart to accommodate it. These measures provide for the integrity of messages and conversations enqueued to the Master Terminal from the prior IMS restart. Also during this period, IMS accepts input from, and displays messages relevant to, the current restart. For these reasons, the following restrictions apply to virtual terminals and the Master Terminal:

■ A virtual terminal cannot be either the IMS Master Terminal or secondary Master Terminal.

■ An LTERM that is IMSGEN-defined to the Master Terminal or secondary Master Terminal cannot be used as a virtual terminal user’s LTERM.

**Locating VIRTUAL TERMINAL Tasks**

VIRTUAL TERMINAL tasks are described in the books provided with the product. The following table shows the most common tasks and shows the book name of the task description.

**Table 7: Task Locator Table**

<table>
<thead>
<tr>
<th>Task</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of All Product Tiers</td>
<td>DELTA PLUS General Information</td>
</tr>
<tr>
<td>Initial and Maintenance Installation</td>
<td>installation guide</td>
</tr>
<tr>
<td>Task</td>
<td>Manual</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Software Environment and Resource Requirements</td>
<td>installation guide</td>
</tr>
<tr>
<td>CPU ID Passwords</td>
<td>installation guide</td>
</tr>
<tr>
<td>VIRTUAL TERMINAL Customization</td>
<td>installation guide</td>
</tr>
<tr>
<td>Translate Subsystem Services Tables</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
<tr>
<td>IMS Operator Commands</td>
<td><em>DELTA PLUS User Guide</em></td>
</tr>
</tbody>
</table>
DELTA PLUS Online Interface

This chapter describes the ISPF conventions used in the DELTA PLUS online interface, how to access DELTA PLUS online help, and how to customize the DELTA PLUS online interface.

ISPF Conventions

An ISPF interface provides online access to all DELTA PLUS features. All panels, pull-down menus, and pop-up windows in the interface conform to IBM’s Common User Access (CUA) standards.

Panel Layout

The following figure shows a typical DELTA PLUS panel and its components.
DELTA PLUS panels include the following components:

**Action Bar**

Each DELTA PLUS panel (except pop-up windows) has an action bar across the top of the panel. The options on the action bar allow you to access pull-down menus for navigational or processing options. See “**Action Bar**” on page 67 for information on accessing the action bar and the options available from certain pull-down menus.

**Panel Title**

This title identifies the DELTA PLUS Main Menu, submenus, and data entry panels.
Command Area

You can type any valid ISPF or DELTA PLUS command in the Command area. Depending on your ISPF settings, the Command area can be located at the top or the bottom of the panel.

Data Entry Heading

Each data entry field or group of fields is preceded by a heading that indicates the subject and the type of action you can take. These headings are frequently used as a point of reference for task instructions.

Selection Fields

The DELTA PLUS panels use three types of selection fields:

- **single-choice selection field** - presents a numbered list of options from which you can choose. You enter the option number in the one- or two-character field that appears beside the first option.

- **single-choice selection list** - presents a list of values (sometimes this list is scrollable) from which you can select only one value (or you can choose not to make a selection) for a field. Type a / next to the value you want to choose for the field.

The example on Figure 3 on page 64 shows a prompt field which will present a single-choice selection list when prompted. See “Field Value Prompts” on page 66 for more information on prompt fields.

- **multiple-choice selection list** - presents a list of values (sometimes this list is scrollable) from which you can select one or more values (or you can choose not to make a selection for that field) for a field. Type a / next to each value you want to choose for the field.

Scroll Indicators

When the **Scroll** field and the **Row** indicator or the **More: - +** display continuation prompt appear on a panel, as shown in the figures below, you can use the appropriate function keys to display additional information.

The **More: - +** display continuation prompt appears below the Scroll field at the top of the panel when all the available data cannot be displayed on the current panel.

The display continuation prompt has the following components:

- – indicates that **F7 (UP)** will display more data above the currently displayed data
+ indicates that F8 (DOWN) will display additional data below the currently displayed data.

If all available information fits on the panel, the display continuation prompt is not displayed.

The Row indicator appears if you are displaying a list of items, such as DELTA List elements, and all the items will not fit on a single panel. DELTA PLUS indicates the current row number and the total number of rows.

**Figure 4: Row Scroll Indicator**

```
Command ===> ___________________________ Scroll ===> CSR
ROW 1 of 99
```

**Figure 5: More: - + Display Continuation Prompt**

```
Command ===> ___________________________ Scroll ===> CSR
More:+
```

**Field Value Prompts**

DELTA PLUS panel fields that are followed by a plus sign (+), as shown in the following figure, allow you to display a pop-up window that provides a selection list of valid values. To view this single-choice selection list, advance the cursor to the prompt field and press F4, or use the PROMPT command.

**Figure 6: Panel with Prompt Field**

```
File  Edit  View  Options  Help
-------------------------------------------------------------------------------
DLPPELA1 X                  DELTA List Element Edit
Command ===> __________________________________________________________________
Rev Element attributes:

*Model after(valid for ADD,REV,ADD/REV) ________
   PSB always in main storage NO     +
   Program is a BMP or MPP TP     +
   F1=Help     F3=Exit     F4=Prompt     F6=FldHelp     F10=Previous     F11=Next
   F12=Cancel
```

**Commands**

You can issue a command in two ways:

- Type the command on the **Command** line and press **Enter**.
- Press the designated function key.

Throughout this guide the instructions to type END, issue the END command, and press F3 all mean the same thing.

On the panels described in this chapter you have the option, unless otherwise noted, to enter the following commands. These commands may also be assigned to function keys.

**END and RETURN**

Type END or RETURN on the Command line and press Enter, or press the appropriate function key to save the options as currently displayed and exit the panel. Depending on the option selected, a save confirmation panel may be displayed.

**CANCEL**

Type CANCEL on the Command line and press Enter to immediately terminate the update without keeping any changes made since the last save.

### Action Bar

You can use the DELTA PLUS action bar to navigate the DELTA PLUS online interface.

The action bar also allows you to access the online help features and the online interface customization options. Press F13 to advance the cursor to the action bar, Tab to a menu, and press Enter to display the pull-down menu. The action bar contains the following pull-down menus:

- **File** (Menu on some panels) provides the following options:
  - *Cancel* allows you to return to the previous panel in the DELTA PLUS online interface without saving your data entry changes.
  - *Exit* has the same effect as the END command or pressing F3.
  - *Save* allows you to save data entry changes at any time.
  - Other options are available depending on which panel is displayed.

- **Help** provides the following options:
  - *Help for help* provides information on using the DELTA PLUS online help system.
— *Extended help* provides panel-level help.

— *Messages* displays an index that allows you to select online help information for any DELTA PLUS error message.

— *About* displays information about DELTA PLUS.

  See “Online Help” on page 68 for additional information.

■ *Options* provides the following DELTA PLUS interface customization options:

— *Preferences* allows you to change confirmation values, or display the DELTA PLUS logo panel at DELTA PLUS interface start-up.

— *Colors* allows you to change the colors and other field attributes used in the DELTA PLUS online interface.

— *Function keys* displays a keylist utility that allows you to modify the functions for the DELTA PLUS function keys.

— Other options are available depending on which panel is displayed.

  See “Interface Preferences” on page 71 for more information.

### Online Help

This section discusses the following subjects:

■ panel-level and field-level help

■ message help index

### Panel-Level and Field-Level Help

DELTA PLUS provides explanations of all panels and fields in the DELTA PLUS interface.

Panel-level help displays a pop-up window that explains the purpose of the panel, provides information about using the panel, and provides a selection list that allows you to view descriptions of the fields available on the panel. Field-level help displays a pop-up window that describes the purpose of the field. Help is also available for the action bar. See “Using the Message Help Index” on page 70 for information on using online help.
The type of help displayed when you activate the help feature depends on the cursor’s position:

- Panel-level help is displayed if you activate the help feature with the cursor on the **Command** area or any part of a panel other than the action bar or a data entry field.

- Field-level help is displayed if you activate the help feature with the cursor on a data entry field.

---

**WARNING**

Field-level help on the **Rev element attributes** data entry section of the DELTA List Element Edit panel differs from the other DELTA PLUS panels. Field-level help for **Rev element attributes** data entry section of the DELTA List Element Edit panel is displayed only if you press **F6** with the cursor on a data entry field. If you press **F1** in this section, panel-level help is displayed.

---

You can activate the help feature by performing any of the following actions:

- Press **F1**.

- Press **F6** for the DELTA List Element Edit panel’s **Rev element attributes** data entry section.

- Select the Extended help option from the Help pull-down menu.

- Type **HELP** in the **Command** area.

---

**Message Help Index**

The DELTA PLUS online help feature provides an index you can use to view information on all error messages that DELTA PLUS can issue.

See **Using the Message Help Index on page 70** for instructions on how to use the DELTA PLUS message help index.

- selecting the Message Help option from the Help pull-down menu

- typing one of the following commands in the **Command** area:
  
  — **MESSAGE**

  — **MSG**
— MSG $nnnnnn$, where $nnnnnn$ are the numerical digits of the BMC Software error message. For example, BMCDLP186003E would be specified as 186003. You can use generic specifications as well. For example, typing 18%34* could result in the following list of messages: BMCDLP189340E, BMCDLP189341E, BMCDLP189342E, and BMCDLP189343E.

Using the Message Help Index

DELTA PLUS provides a message help index that allows you to view information on any DELTA PLUS error message. The Message Help option from the Help pull-down menu allows you to use this index.

To Use the Message Help Index

1 Display the DELTA PLUS Messages - Entry panel.
   a Type the MSG command on the Command line and press Enter. The DELTA PLUS Messages - Entry panel is displayed.
   -Or-
   Press F13 to advance the cursor to the DELTA PLUS action bar.
   b Press Tab until the cursor is positioned beside the Help option.
   c Press Enter. The Help pull-down menu (Figure 7 on page 70) is displayed.

   Figure 7: Help Pull-Down Menu

<table>
<thead>
<tr>
<th>Menu</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS BET Command</td>
<td>1. Help for help...</td>
<td>nu</td>
</tr>
<tr>
<td>DELTA PLUS opt</td>
<td>2. Extended help...</td>
<td>______________________</td>
</tr>
<tr>
<td>DELTA Lis</td>
<td>3. Messages...</td>
<td></td>
</tr>
<tr>
<td>2. IMS Commands</td>
<td>4. About...</td>
<td></td>
</tr>
</tbody>
</table>

   d Type 3 in the selection field and press Enter. The DELTA PLUS Messages - Entry panel is displayed.

2 Optional. You can bypass the message index (Step 3 on page 70 and Step 4 on page 71) if you know your message number by typing the message number in the BMCDLP Message number field and pressing Enter. Go to Step 5 on page 71.

3 Press Enter with the BMCDLP Message number field blank to display the DELTA PLUS Messages - List panel similar to the one in Figure 8 on page 71.
4. Scroll until the message you want is displayed, then type a slash (/) in the message selection field next to it, and press Enter again.

**Figure 8: Sample Message Help Index**

<table>
<thead>
<tr>
<th>Command</th>
<th>Message</th>
<th>Date</th>
<th>Subcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>186002E DELTA PLUS initialization failed - abend U4068 subcode @@@@</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA PLUS</td>
<td>186003E DELTA PLUS restart failed - abend U4068 subcode @@@@</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA PLUS</td>
<td>186005E DELTA PLUS processing failed - abend U4068 subcode @@@@</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA PLUS</td>
<td>186020E DELTA PLUS restart logic error, possible attempt to install DELTA PL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA PLUS</td>
<td>186026E IMODULE 186027E DELTA PLUS logic error in CSECT 186028E DELTA PLUS module 186029E DELTA PLUS module incorrect product level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA PLUS</td>
<td>at incorrect IMS level</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. View information about a specific message.

Information about the message you specified is displayed in the Message Help panel.

6. When you have finished reviewing the information, press F3 twice to exit.

---

**Interface Preferences**

The Options pull-down menu on the action bar allows you to customize the DELTA PLUS interface. You can customize the interface at any time and from any panel in the DELTA PLUS interface if you use the commands shown in the tasks. Otherwise, you must be on a panel that has an Options pull-down menu on the action bar.

---

**Note**

Pull-down menus are sensitive to cursor position. You can select options from a pull-down menu by typing the appropriate number in the selection field or by moving the cursor to the line that contains the option you want and pressing Enter.

---

**Task Instructions for Specifying Preferences**

See the following sections for instructions on how to specify or change preferences:

- “Specifying Preferences for Confirmations” on page 72
- “Specifying Preferences for Default Variable Definition Set” on page 73
- “Specifying Preferences for Initial Edit Command” on page 73
Specifying Preferences for Confirmations

When you cancel or save data that you have entered, DELTA PLUS prompts you to confirm the action.

Selections from the Options pull-down menu allow you to specify whether these confirmation panels should be displayed or suppressed.

To Specify Preferences for Confirmations

1. Display the DELTA PLUS User Preferences pop-up window.
   a. Type the `PREF` command on the Command line and press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

   OR

   Press F13 to advance the cursor to the DELTA PLUS action bar.

   b. Press Tab until the cursor is positioned beside the Options option.

   c. Press Enter. The Options pull-down menu is displayed.

   d. Type the option number for the Preferences option in the selection field.

   e. Press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

2. Confirm SAVE on exit — Use this option to specify whether DELTA PLUS should display or suppress the Confirm Save panel.

3. Confirm CANCEL — Use this option to specify whether DELTA PLUS should display or suppress the Confirm Cancel panel when you cancel changes without saving them.

4. Press Enter to save your changes.
Specifying Preferences for Default Variable Definition Set

You can set a default Variable Definition Set that contains the variables to be used by DELTA PLUS automatically in the processing of a DELTA List.

**Note**
This value can be manually overridden for any DELTA List at execution time.

**To Specify Preferences for Default Variable Definition Set**

1. Display the DELTA PLUS User Preferences pop-up window.
   a. Type the `PREF` command on the Command line and press Enter. The DELTA PLUS User Preferences pop-up window is displayed.
   
   OR
   
   Press **F13** to advance the cursor to the DELTA PLUS action bar.
   
   b. Press Tab until the cursor is positioned beside the Options option.
   
   c. Press Enter. The Options pull-down menu is displayed.
   
   d. Type the option number for the Preferences option in the selection field.
   
   e. Press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

2. **Variable Definition Set**—specify the name of the default Variable Definition Set that contains the definitions for the symbolic variables to be used by DELTA PLUS in DELTA List processing.

   This Variable Definition Set will be inserted into the DELTA List when you edit a new DELTA List.

3. Press Enter to save your changes.

Specifying Preferences for Initial Edit Command

Specify the command you want to be executed initially when you edit a new DELTA List for the first time.

For example, if you specify the COPY command, the DELTA List Edit Copy panel is displayed when you first edit a new DELTA List. This panel allows you to copy an existing DELTA List into the DELTA List being edited.
To Specify Preferences for Initial Edit Command

1 Display the DELTA PLUS User Preferences pop-up window.
   a Type the PREF command on the Command line and press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

   OR

   Press F13 to advance the cursor to the DELTA PLUS action bar.

   b Press Tab until the cursor is positioned beside the Options option.

   c Press Enter. The Options pull-down menu is displayed.

   d Type the option number for the Preferences option in the selection field.

   e Press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

2 Initial edit command — specify the command you want to be executed initially when you edit a new DELTA List for the first time.

3 Press Enter to save your changes.

Specifying Preferences for Startup

Selections from the Options pull-down menu allow you to specify whether the product logo panel should be displayed or suppressed when you start DELTA PLUS.

To Specify Preferences for Startup

1 Display the DELTA PLUS User Preferences pop-up window.
   a Type the PREF command on the Command line and press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

   OR

   Press F13 to advance the cursor to the DELTA PLUS action bar.

   b Press Tab until the cursor is positioned beside the Options option.

   c Press Enter. The Options pull-down menu is displayed.
d  Type the option number for the Preferences option in the selection field.

e  Press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

2  Display Logo panel at Startup --Use this option to specify whether DELTA PLUS should display or suppress the product logo panel.

3  Press Enter to save your changes.

Specifying Preferences for the Colors and Field Attributes of the DELTA PLUS Interface

Selections from the Options pull-down menu allow you to specify the colors and field attributes used in the DELTA PLUS online interface.

To Specify Preferences for Colors and Field Attributes

1  Display the DELTA PLUS CUA Attribute Change Utility pop-up window.

   a  Type the ATTR command on the Command line and press Enter. The DELTA PLUS CUA Attribute Change Utility pop-up window is displayed.

   OR

   Press F13 to advance the cursor to the DELTA PLUS action bar.

   b  Press Tab until the cursor is positioned beside the Options option.

   c  Press Enter. The Options pull-down menu is displayed.

   d  Type the option number for the Colors option in the selection field.

   e  Press Enter. The DELTA PLUS CUA Attribute Change Utility pop-up window is displayed.

2  Press Tab to advance to the entry fields each type of text that you want to change and type the name of the color, the intensity, and the highlighting you want to use.

3  Press Enter to save your changes.
Specifying Preferences for the Function Keys

Selections from the Options pull-down menu allow you to modify the functions for the DELTA PLUS function keys.

To Specify Preferences for Function Keys

1. Display the Keylist Utility pop-up window.
   a. Type the KEYLIST command on the Command line and press Enter. The Keylist Utility pop-up window is displayed.
   OR
   Press F13 to advance the cursor to the DELTA PLUS action bar.
   b. Press Tab until the cursor is positioned beside the Options option.
   c. Press Enter. The Options pull-down menu is displayed.
   d. Type the option number for the Function Keys option in the selection field.
   e. Press Enter. The Keylist Utility pop-up window is displayed.

2. The interface and functionality of the Keylist Utility will vary depending on the level of ISPF in your environment. Refer to the appropriate ISPF documentation for more information about the Keylist Utility.

Accessing EXTENDED TERMINAL ASSIST PLUS

DELTA PLUS provides an interface to panels in EXTENDED TERMINAL ASSIST PLUS to begin the task of defining dynamic terminals.

Before you begin

Review the DELTA PLUS ISPPLIB member DLPZUSER to ensure that it contains the EXTENDED TERMINAL ASSIST PLUS CLIST to be used. The variable name is
DLPETA. Also, have the **EXTENDED TERMINAL ASSIST Plus User Guide** available for reference to complete the task of defining dynamic terminals.

**To Access EXTENDED TERMINAL ASSIST PLUS**

1. From the DELTA PLUS Main Menu, type 5 in the selection field and press Enter. The EXTENDED TERMINAL ASSIST- Main Menu panel is displayed.

<table>
<thead>
<tr>
<th>Menu</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETA</td>
<td>Main Menu</td>
<td></td>
</tr>
<tr>
<td>Command ===&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extended Terminal Assist option. Choose a selection.
- 1. TSS - Translate Sub-system (TSS)
- 2. Descriptor Lists - Edit/Execute Descriptor lists
- 3. Exit Administration - Activate/Deactivate/Load Exits
- 4. IMS Commands - Execute IMS commands
- 5. IMSID Options - Edit IMSID and Group options
- 6. Refresh - Refresh ETA data in IMS control region

**Where to go from here**

See the **EXTENDED TERMINAL ASSIST PLUS User Guide** for more information on defining dynamic terminals using EXTENDED TERMINAL ASSIST PLUS.
Implementing DELTA PLUS

This chapter describes the options and associated panels that enable you to customize DELTA PLUS.

DELTA PLUS Interface and Product Views

The approach you use to invoke the DELTA PLUS online interface depends on how the product was installed. DELTA PLUS can be invoked through a selection to your ISPF main menu or through execution of a CLIST.

Members DLPCI@00, DTDCI@00, and DLVCI@00 in DLPSAMP are sample CLISTs that provide access to the DELTA PLUS online interface. Use one of these CLISTs shown in Table 8 on page 79 to invoke a product view of the DELTA PLUS online interface.

Table 8: CLISTs for Invoking the DELTA PLUS Online Interface

<table>
<thead>
<tr>
<th>If you want to view options for . . .</th>
<th>Then type one of the following on a TSO Command line . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>EX 'clist.dataset.name(DLPCI@00)'</td>
</tr>
<tr>
<td>DELTA PLUS for DBCTL</td>
<td>EX 'clist.dataset.name(DTDCI@00)'</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>EX 'clist.dataset.name(DLVCI@00)'</td>
</tr>
</tbody>
</table>

The CLIST that you use determines the product view that will be displayed. When you invoke the DELTA PLUS online interface, the version of the DELTA PLUS Main Menu that is appropriate to the product you selected is displayed.

Unless stated otherwise, the panels in this book were invoked through the DELTA PLUS CLIST (DLPCI@00) with the DELTA PLUS default View Profile. The panel flows will reflect any differences in accessing panels for DELTA PLUS for DBCTL or for DELTA PLUS VIRTUAL TERMINAL.
Introduction to Customization

For DELTA PLUS to function, you must specify information that is common to all IMS systems that use DELTA PLUS and information specific to each IMS system. You specify this information through the associated panels for the DELTA PLUS global, IMSID, and Group options.

You can also customize the way the DELTA PLUS interface looks and operates when you edit or create DELTA Lists through the use of View Profiles.

Global Options

Global options govern how DELTA PLUS operates on all IMS systems that use DELTA PLUS. DELTA PLUS consists of various elements associated through VTAM and/or normal IMS inter-region communication. The information you specify in the DELTA PLUS global options keep these elements operating according to standards that you establish. These global options apply to all IMS systems that use DELTA PLUS.

When you create or change global options, the load module DLP$GBL0 is link-edited to a data set that you specify. DLP$GBL0 is required for BMCXLINK, batch DELTA PLUS functions, the ISPF environment, and the control region. The Message number prefix option is the only option required by the control region. BMC Software recommends that you store this module in the APF-authorized library that stores DELTA PLUS code for the control region or the ISPF options library that stores your DELTA PLUS IMSID options modules.

Note

If you change global options, all DELTA PLUS users must re-enter DELTA PLUS to obtain these revised options. To ensure proper operation, recycle BMCXLINK after changing global options.

If you have an existing DELTA IMS global options module (DLA$GBL0), certain global options field values can be copied from DLA$GBL0. For more information, see “Global Options” on page 566.

IMSID Options

The DELTA PLUS IMSID options specify customization information for each IMS system that uses DELTA PLUS. When you specify and save DELTA PLUS IMSID options, the load module DLP#iiii (where iiii is the IMSID) is stored in a data set that you specify. The DELTA PLUS online interface, BMCXLINK, batch DELTA PLUS
functions, and the control region require access to the IMSID options module or copies of this module.

**Note**

BMC Software makes the following recommendations regarding the IMSID options modules:

- Use the APF-authorized library to provide both ISPF and IMS with access to the IMSID options modules. The APF-authorized library data set is identified on the IMSID Processing panel.

- Do not use a LINKLIST library to store the IMSID options modules.

- Save in the same library with the global and Group options (if used) modules.

- If you have an existing DELTA IMS IMSID options module (DLA#iiii), certain DELTA PLUS IMSID options module fields can be copied from DLA#iiii. For more information, see “IMSID Options” on page 568.

### Group Options

The DELTA PLUS Group options enable a user-defined group of IMS systems to be treated as one IMS system. A group of IMS systems would typically be an IMS data sharing Group, IMS Shared Queues Group, or a group of logically related or duplicated IMS systems.

**Note**

Group options are NOT required.

The DELTA PLUS Group options specify customization information for each group of IMS systems that uses DELTA PLUS. When you specify and save DELTA PLUS Group options, the load module DLPZgggg (where gggg is the Group ID) is stored in a data set that you specify. The DELTA PLUS online interface, BMCXLINK, batch DELTA PLUS functions, and the control region require access to the Group options module, or copies of this module, if you specify a group name in the IMSID options modules.
Note

BMC Software makes the following recommendations regarding the Group options modules:

- Use the APF-authorized library to provide both ISPF and IMS with access to the Group options modules. The APF-authorized library data set is identified on the IMSID Processing panel.
- Do not use a LINKLIST library to store the Group options modules.
- Save in the same library with the global and IMSID options modules.

View Profiles

View Profiles allow user customization of the keyword names and descriptions used when editing DELTA Lists. You can change the defaults for, or prohibit use of, individual fields. You can also enforce standards for DELTA Lists created at a given location or site.

Accessing Customization Panels

You can access panels for specifying DELTA PLUS global, IMSID, and Group options, and for creating and editing View Profiles from the DELTA PLUS Main Menu.

Before you begin

Determine how your DELTA PLUS installation and IMS environment will be defined. Make environment decisions, such as deciding whether IMS systems will be grouped together, BMCXLINK definitions, and which APF LOADLIBs to use.
To Access Customization Panels

1 From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2 Decide which activity you want to complete.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify global options.</td>
<td>Type 1 in the selection field.</td>
</tr>
<tr>
<td>Specify IMSID options.</td>
<td>Type 2 in the selection field.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>Type 2 in the selection field.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>Type 3 in the selection field.</td>
</tr>
</tbody>
</table>

3 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field.</td>
<td>The Global Options Entry panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the selection field.</td>
<td>The IMSID/Group Options Entry panel is displayed.</td>
</tr>
<tr>
<td>You typed 3 in the selection field.</td>
<td>The View Profile Edit Entry panel is displayed.</td>
</tr>
</tbody>
</table>

Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify global options.</td>
<td>See “Global Options” on page 80.</td>
</tr>
<tr>
<td>Specify IMSID options for DELTA PLUS or DELTA PLUS for DBCTL.</td>
<td>See “Setting IMSID Options for DELTA PLUS and DELTA PLUS for DBCTL” on page 88.</td>
</tr>
<tr>
<td>Specify IMSID options for DELTA PLUS VIRTUAL TERMINAL.</td>
<td>See “Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL” on page 92.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
</tbody>
</table>
DELTA PLUS consists of various elements associated through VTAM and/or normal IMS inter-region communication. For DELTA PLUS to function on an IMS system, you must specify certain parameters to keep these elements operating according to the standards at your site. Global options are applicable to all DELTA PLUS TSO/ISPF sessions, batch DELTA PLUS functions, BMCXLINK, and the control region. When you create or change global options, the load module DLP$GBL0 is link-edited to your DELTA PLUS options library.

### Before you begin

You must have available to you the following information:

- library in which the global options module - DLP$GBL0 will reside
- four-character ACBNAME prefix from the VTAM definition statements that were created during the DELTA PLUS product installation
- View Profile library (library containing the View Profiles included in DELTA PLUS)
- esoteric DASD unit name for temporary files

__Note__

When global options have been changed, other DELTA PLUS users must re-enter DELTA PLUS to obtain these revised options. For proper operation, it is recommended that you recycle BMCXLINK.
**To Specify Global Options**

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 1 in the selection field and press Enter. The Global Options Entry panel is displayed.

3. Type the data set name of the library in which the global options module - DLP $GBL0 will reside in the Global Options library field.

   **Note**
   The DELTA PLUS interface obtains the global options module from one of the following sources:
   - TSO logon procedure /STEPLIB concatenation
   - DELTA PLUS CLIST ISPLLIB concatenation

4. Optional. Type the data set name of the additional library in which to store the DELTA PLUS global options module in the Save library 1 field, if your installation stores DELTA PLUS global options module in separate libraries used by ISPF, the control region, or BMCXLINK. If both ISPF, IMS, or BMCXLINK use the same library, this field is optional.

   **Note**
   If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

5. Press Enter. The Edit Global Options panel is displayed.

6. Edit the following fields, as necessary:

   **Table 9: Fields Available on the Edit Global Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTAM User Session</td>
<td>Specify the four-character ACBNAME prefix from the VTAM definition statements that were created during the DELTA PLUS product installation. The BMCXLINK ACBNAMEs used in the VTAM definition statements must use the format ppppnnnn, where pppp is the four-character prefix specified in this field, and nnnn is the next available sequential number starting with 0001. The default value for this field is DLPU.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DASD unit name for temporary files</td>
<td>Specify the esoteric DASD unit name the DELTA PLUS Log and History File list functions use to allocate work files and temporary report files during sorts. The default value for this field is <strong>SYSALLDA</strong>.</td>
</tr>
<tr>
<td>Trace table dynamic dump sysout class</td>
<td>Specify the sysout class to be used if the internal trace table appears in any ABEND dumps. This class is also used if the table must be printed on demand. The default value for this field is <strong>A</strong>.</td>
</tr>
<tr>
<td>Request status check time interval</td>
<td>Specify the time interval, in seconds, after which DELTA PLUS will provide status on any outstanding DELTA PLUS requests. DELTA PLUS periodically responds to the BMCXLINK user session while processing a request for that session. This periodic response informs the user of the status of request processing. The default value for this field is <strong>10</strong> seconds.</td>
</tr>
<tr>
<td>Command routing</td>
<td>Activating this option causes BMCXLINK to always send the command to IMS first. IMS will then send the command to OM if appropriate. To activate this option, select <strong>Route all commands through IMS</strong>. <strong>Note:</strong> This option applies only to systems running in a Common Service Layer (CSL) environment.</td>
</tr>
<tr>
<td>Routing code</td>
<td>Type the WTO message routing code(s) to be used by DELTA PLUS and BMCXLINK. BMCXLINK issues WTO messages any time significant events occur. Use the WTO routing code(s) to direct these messages to selected consoles. BMC Software recommends you use the default value of <strong>11</strong>. See the IBM publication <em>MVS/ESA Routing and Descriptor Codes</em> for information on other routing codes.</td>
</tr>
<tr>
<td>Descriptor code</td>
<td>Type the WTO message descriptor code(s) to be used by DELTA PLUS and BMCXLINK. BMCXLINK issues WTO messages any time significant events occur. You can suppress these messages depending on the WTO message descriptor code(s) specified. BMC Software recommends you use the default value of <strong>7</strong>. See the IBM publication <em>MVS/ESA Routing and Descriptor Codes</em> for information on other routing codes.</td>
</tr>
<tr>
<td>Translate all messages to upper case</td>
<td>Type a <code>/</code> in this field to translate DELTA PLUS-generated messages to uppercase. If not selected, messages are generated in mixed case. This option affects only the messages displayed on the console or in batch. It does not affect ISPF messages unless the message is coming from BMCXLINK.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Message number prefix</td>
<td>Select a product message prefix. Type 1 in the selection field to prefix the DELTA PLUS error message with the BMCDLP prefix (for example, BMCDLP123456E). Type 2 in the selection field to prefix the DELTA PLUS error message with the DLP prefix (for example, DLP123456E). Type 3 in the selection field to prefix the DELTA PLUS error message with the BMC prefix (for example, BMC123456E). <strong>Note:</strong> The Message number prefix option <em>does not</em> apply to the VIRTUAL TERMINAL component of DELTA PLUS.</td>
</tr>
<tr>
<td>View Profile library</td>
<td>Specify the name of the data set that will store the View Profiles which allow user customization of element fields in the ISPF interface. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
<tr>
<td>Variable Definition library</td>
<td>Specify the name of the data set that will store the Variable Definition Sets which allow user customization of values for element fields in the ISPF interface. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
<tr>
<td>User Profiles data set</td>
<td>Specify the name of the data set that will store the user access profiles that provide internal DELTA PLUS security. This data set is allocated during DELTA PLUS initial installation. The name of this data set will be similar to the following: <code>high.level.DLPUPF</code> For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
<tr>
<td>Select userid type for batch execution (selection field)</td>
<td>Type the option number in the selection field to indicate which user ID is recorded in the DELTA PLUS Log and History File when a DELTA List check or execute is initiated. Possible values are: 1 use the active userid 2 use the last-update userid The default value for this field is 1.</td>
</tr>
</tbody>
</table>

7 Save your changes.

a Press F3. The Confirm Save pop-up window is displayed.

b Type 1 in the selection field and press **Enter**. DELTA PLUS saves the global options.

c Press F3 twice. The DELTA PLUS Main Menu is displayed.
Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify IMSID options for DELTA PLUS or DELTA PLUS for DBCTL.</td>
<td>See “Setting IMSID Options for DELTA PLUS and DELTA PLUS for DBCTL” on page 88.</td>
</tr>
<tr>
<td>Specify IMSID options for DELTA PLUS VIRTUAL TERMINAL.</td>
<td>See “Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL” on page 92.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Setting IMSID Options for DELTA PLUS and DELTA PLUS for DBCTL

For DELTA PLUS to access an IMS system, the system must be defined to DELTA PLUS with a set of IMSID options. When you create or change IMSID options, the load module DLP#iii is link-edited to your DELTA PLUS options library.

*Note*

You must create IMSID options for each control region that will be serviced by DELTA PLUS.
Before you begin

Once you have saved the IMSID options module, the changes will only take place during the next IMS restart. If you perform an IMSID options REFRESH, the only changes that will take place are the display/zap options and the IMS command options.

To Specify IMSID Options

1  From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2  Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3  Type 1 in the selection field.

4  Type the data set name of the library in which the IMSID options module - DLP#iiii resides in the Options library field.

   For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5  Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the IMSID or Group field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the IMSID or Group field blank.</td>
</tr>
</tbody>
</table>

6  Optional. Type the data set name of the additional library in which to store the IMSID options modules in the Save library 1 field, if your installation stores DELTA PLUS IMSID/Group option modules in separate libraries used by ISPF,
the control region, or BMCXLINK. If both ISPF, IMS, or BMCXLINK use the same library, this field is optional.

**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 90.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 90.</td>
</tr>
</tbody>
</table>

8 Type **S** next to the IMSID you want to customize or access, and press **Enter**. The Edit IMSID Options panel is displayed.

9 Edit the following fields, as necessary:

**Table 10: Fields Available on the Edit IMSID Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected. This is not an editable field.</td>
</tr>
<tr>
<td>Allow IMS storage displays</td>
<td>Type a / in this field to enable the storage display feature for this IMS system. You can use DELTA PLUS internal security to restrict usage of this feature.</td>
</tr>
<tr>
<td>Allow IMS storage zaps</td>
<td>Type a / in this field to enable the storage alteration (zap) feature for this IMS system. The storage zap feature is a powerful tool for fixing problems within the IMS system. However, you should use DELTA PLUS internal security to restrict usage of this feature.</td>
</tr>
<tr>
<td>Copy IMSID Options to an IMS STEPLIB library when saved</td>
<td>Type a / in this field to copy IMSID options modules to an IMS STEPLIB library when the module is saved in the DELTA PLUS options library. If you select this field, you must specify the name of the IMS STEPLIB library in which to store the modules used by the control region in the <strong>IMS STEPLIB library</strong> field.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IMS STEPLIB library</td>
<td>Specify the name of the IMS STEPLIB library in which to store the modules used by the control region. If your installation stores DELTA PLUS IMSID options modules in separate libraries for use by ISPF and IMS, you should use this field. If both ISPF and IMS use the same library, this field is optional.</td>
</tr>
<tr>
<td>XRF/FDR Alternate IMSID</td>
<td>Specify the IMSID of the IMSGEN-defined XRF alternate system or the IMSID of the FDR control region.</td>
</tr>
<tr>
<td>XCF Group</td>
<td>Specify the name of the XCF Group to which this IMS system belongs. This field is optional because an IMS system does not have to belong to a Group.</td>
</tr>
<tr>
<td>Do not issue WTOR for coordinated request errors</td>
<td>Type a / in the selection field to ensure that the WTOR (write to operator with reply) message <strong>BMC186124A Errors applying new request from Log, should restart continue? Reply 'Y' or 'N'</strong> is not issued at IMS restart if a coordinated request fails. Reply <strong>Y</strong> or <strong>N</strong> for any new coordinated requests that have errors at restart. Error messages are still issued for coordinated request errors.</td>
</tr>
<tr>
<td>BMCXLINK task network LUNAME</td>
<td>Type a network LUNAME for the BMCXLINK VTAM subtask. The LUNAME specified MUST match the LUNAME specified in the PARM field of the BMCXLINK task. The default value for this field is <strong>DLPALINK</strong>.</td>
</tr>
<tr>
<td>Primary Log</td>
<td>Type the data set name of the primary Log data set. IMS must be cold-started for this change to take effect.</td>
</tr>
<tr>
<td>Secondary Log</td>
<td>Type the data set name of the secondary Log data set. IMS must be cold-started for this change to take effect.</td>
</tr>
<tr>
<td>Primary History File</td>
<td>Type the data set name of the primary History File data set. IMS must be restarted for this change to take effect.</td>
</tr>
<tr>
<td>Secondary History File</td>
<td>Type the data set name of the secondary History File data set. IMS must be restarted for this change to take effect.</td>
</tr>
<tr>
<td>Write IMS commands to History File</td>
<td>Type a / in this field to have IMS operator commands that are issued from a DELTA List, or from the Execute IMS Command panel, sent to the DELTA PLUS History File.</td>
</tr>
<tr>
<td>Primary repository</td>
<td>Specify the name of the optional primary DELTA PLUS repository data set</td>
</tr>
<tr>
<td>Secondary repository</td>
<td>Specify the name of the optional secondary DELTA PLUS repository data set</td>
</tr>
</tbody>
</table>

10 Save your changes.

a Press **F3**. The Confirm Save pop-up window is displayed.
b Type 1 in the selection field and press Enter. DELTA PLUS saves the IMSID options.

---

**Note**

If you have specified an existing IMSID in the XRF/FDR alternate IMSID field, the Confirm Delete pop-up window is displayed before the IMSID options are saved.

Type 1 in selection field and press Enter to delete the existing options for the IMSID previously specified in the XRF/FDR alternate IMSID field. This selection also makes the IMSID specified in the XRF/FDR alternate IMSID field the alternate for the IMSID you are editing.

---

c Press F3 twice. The DELTA PLUS Main Menu is displayed.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify IMSID options for DELTA PLUS VIRTUAL TERMINAL.</td>
<td>See “Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL” on page 92</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

---

**Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL**

This section starts the customization for DELTA PLUS VIRTUAL TERMINAL. To completely customize the IMSID options module for DELTA PLUS VIRTUAL TERMINAL, you must understand fully the ramifications of each option.
Enabling DELTA PLUS VIRTUAL TERMINAL

In the following pages, you will be presented options which will enable or disable DELTA PLUS VIRTUAL TERMINAL.

You must select the Enable DELTA PLUS VIRTUAL TERMINAL option, which is displayed on the IMSID Options - VT Options panel (see Table 13 on page 105).

To use DELTA PLUS VIRTUAL TERMINAL, ETO must be disabled. You can disable ETO in the following ways:

- Do not install the ETO feature.

- Or-

  - Use the statement `ETO=N` or `ETO=M` in member DFSPByyy of your PROCLIB.

As you proceed through the customization options, you may find it necessary to see later chapters in this manual to completely understand the option you are setting. You will find it particularly useful to review Virtual Terminal on page 443, Virtual Printers on page 462, and “Using DELTA PLUS VIRTUAL TERMINAL Exits” on page 519 before starting the customization. You may also use these chapters as a reference for modifying your options after DELTA PLUS VIRTUAL TERMINAL is installed as your needs or requirements change.

The panels for all the tasks related to “Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL” on page 92, were invoked through the DELTA PLUS VIRTUAL TERMINAL CLIST (DLVCI@00) with the DELTA PLUS default View Profile.

<table>
<thead>
<tr>
<th>Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you create or change basic IMSID options for DELTA PLUS VIRTUAL TERMINAL,</td>
<td>load module DLP#iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.</td>
</tr>
<tr>
<td>When you create or change VIRTUAL TERMINAL-related IMSID options other than basic or extended,</td>
<td>load module DLA#iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.</td>
</tr>
<tr>
<td>When you create or change extended IMSID options for VIRTUAL TERMINAL,</td>
<td>load module DLA@iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.</td>
</tr>
</tbody>
</table>

Setting Basic IMSID Options for DELTA PLUS VIRTUAL TERMINAL

For DELTA PLUS VIRTUAL TERMINAL to access an IMS system, the system must be defined to DELTA PLUS VIRTUAL TERMINAL with a set of IMSID options.
**Note**

You must create IMSID options for each control region that will be serviced by DELTA PLUS VIRTUAL TERMINAL.

---

**Before you begin**

Once you have saved the IMSID options module, the changes will only take place during the next IMS restart. If you perform an IMSID options REFRESH, the only changes that will take place are the display/zap options and the IMS command options.

**To Specify Basic IMSID Options**

1. From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3. Type 1 in the selection field.

4. Type the data set name of the library in which the DELTA PLUS IMSID options module - DLP#iii resides in the **Options library** field.

   For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5. Perform the appropriate action.
Indicate a specific IMSID of the IMS system you want to customize or access.

Type the IMSID of the IMS system in the **IMSID or Group** field.

Choose an IMSID you want to customize or access from a list of IMSIDs.

Leave the **IMSID or Group** field blank.

---

### Note

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

---

Press **Enter**.

---

You typed a specific IMSID in the **IMSID or Group** field.

The Edit IMSID Options panel is displayed. Go to Step 9 on page 95.

You left the **IMSID or Group** field blank.

The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 95.

---

Type **S** next to the IMSID you want to customize or access, and press **Enter**. The Edit IMSID Options panel is displayed.

Type **1** in the selection field, and press **Enter**. The IMSID Options - Basic Options panel is displayed.

Edit the following fields, as necessary:

### Table 11: Fields Available on the IMSID Options - Basic Options Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected. This is not an editable field.</td>
</tr>
<tr>
<td>Allow IMS storage displays</td>
<td>Type a / in this field to enable the storage display feature for this IMS system. You can use DELTA PLUS VIRTUAL TERMINAL internal security to restrict usage of this feature.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Allow IMS storage zaps</td>
<td>Type a / in this field to enable the storage alteration (zap) feature for this IMS system. The storage zap feature is a powerful tool for fixing problems within the IMS system. However, you should use DELTA PLUS VIRTUAL TERMINAL internal security to restrict usage of this feature.</td>
</tr>
<tr>
<td>Copy IMSID Options to an IMS STEPLIB library when saved</td>
<td>Type a / in this field to copy IMSID options modules to an IMS STEPLIB library when the module is saved in the DELTA PLUS VIRTUAL TERMINAL options library. If you select this field, you must specify the name of the IMS STEPLIB library in which to store the modules used by the control region in the IMS STEPLIB library field.</td>
</tr>
<tr>
<td>IMS STEPLIB library</td>
<td>Specify the name of the IMS STEPLIB library in which to store the modules used by the control region.</td>
</tr>
<tr>
<td>XRF/FDR Alternate IMSID</td>
<td>Specify the IMSID of the IMSGEN-defined XRF alternate system or the IMSID of the FDR control region.</td>
</tr>
<tr>
<td>XCF Group</td>
<td>Specify the name of the XCF Group to which this IMS system belongs. This field is optional because an IMS system does not have to belong to a Group.</td>
</tr>
<tr>
<td>Do not issue WTOR for coordinated request errors</td>
<td>Type a / in the selection field to ensure that the WTOR (write to operator with reply) message BMC186124A Errors applying new request from Log, should restart continue? Reply 'Y' or 'N' is not issued at IMS restart if a coordinated request fails. Reply Y or N for any new coordinated requests that have errors at restart. Error messages are still issued for coordinated request errors.</td>
</tr>
<tr>
<td>BMCXLINK task network LUNAME</td>
<td>Type a network LUNAME for the BMCXLINK VTAM subtask. The LUNAME specified MUST match the LUNAME specified in the PARM field of the BMCXLINK task. The default value for this field is DLPALINK.</td>
</tr>
<tr>
<td>Primary Log</td>
<td>Type the data set name of the primary Log data set. IMS must be cold-started for this change to take effect.</td>
</tr>
<tr>
<td>Secondary Log</td>
<td>Type the data set name of the secondary Log data set. IMS must be cold-started for this change to take effect.</td>
</tr>
<tr>
<td>Primary History File</td>
<td>Type the data set name of the primary History File data set. IMS must be restarted for this change to take effect.</td>
</tr>
</tbody>
</table>
### Field Name | Description
--- | ---
Secondary History File | Type the data set name of the secondary History File data set. IMS must be restarted for this change to take effect.
Primary repository | Specify the name of the optional primary DELTA PLUS repository data set.
Secondary repository | Specify the name of the optional secondary DELTA PLUS repository data set.
Write IMS commands to History File | Type a / in this field to have IMS operator commands that are issued from a DELTA List, or from the Execute IMS Command panel, sent to the DELTA PLUS History File.

#### 11 Save your changes.

- **a** Press **F3** twice. The Confirm Save pop-up window is displayed.
- **b** Type **1** in the selection field and press **Enter**. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

**Note**

If you have specified an existing IMSID in the **XRF/FDR alternate IMSID** field, the Confirm Delete pop-up window is displayed before the IMSID options are saved.

Type **1** in selection field and press **Enter** to delete the existing options for the IMSID previously specified in the **XRF/FDR alternate IMSID** field. This selection also makes the IMSID specified in the **XRF/FDR alternate IMSID** field the alternate for the IMSID you are editing.

- **c** Press **F3** twice. The DELTA PLUS VIRTUAL TERMINAL Main Menu is displayed.

#### Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set limits for virtual terminals.</td>
<td>See “Setting Limits for Virtual Terminals” on page 98.</td>
</tr>
<tr>
<td>Set options for virtual terminals.</td>
<td>See “Setting Virtual Terminal Options” on page 103.</td>
</tr>
<tr>
<td>Set TSS options for virtual terminals.</td>
<td>See “Setting VT TSS Options” on page 107.</td>
</tr>
<tr>
<td>Set logon options for virtual terminals.</td>
<td>See “Setting VT Logon Options” on page 111.</td>
</tr>
</tbody>
</table>
Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set signon bypass options for virtual terminals.</td>
<td>See “Setting VT Signon Bypass Options” on page 114.</td>
</tr>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Setting Limits for Virtual Terminals

Use the IMSID Options - VT Limits panel to display and modify the DELTA PLUS VIRTUAL TERMINAL limits for the selected IMS system.

Data displayed are the current values from the specified options module.
To Set Limits for Virtual Terminals

1. From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3. Type 1 in the selection field.

4. Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the <strong>IMSID or Group</strong> field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the <strong>IMSID or Group</strong> field blank.</td>
</tr>
</tbody>
</table>

Chapter 5 Implementing DELTA PLUS
Optional. Type the data set name of the additional library in which to store the IMSID options modules in the **Save library** field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.

---

*Note*

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

---

7 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 100.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 100.</td>
</tr>
</tbody>
</table>

8 Type **S** next to the IMSID you want to customize or access, and press **Enter**. The Edit IMSID Options panel is displayed.

9 Type **2** in the selection field, and press **Enter**. The IMSID Options - VT Limits panel is displayed.

10 Edit the following fields, as necessary:

**Table 12: Fields Available on the IMSID Options - VT Limits Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected. This is not an editable field.</td>
</tr>
<tr>
<td>Maximum /SECURE ALLOWed users</td>
<td>The maximum number of userids which can be specified by a /SECURE ALLOW command between IMS cold starts. DELTA PLUS VIRTUAL TERMINAL uses this value to calculate the size and capacity of the userid pool VTFUSBPL, which is allocated in the IMS private area during initialization. This value is optional; a 0 indicates that no userid pool is allocated. If this value is too low, it can cause /SECURE ALLOW commands to fail. If this value is too high, it can waste private area virtual storage, but it will not create more overhead. The initial value is site-dependent. Although you may increase the value without impacting IMS operation, it will not take effect until the next IMS restart. A cold start is recommended if you decrease the value.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Maximum virtual printer overrides</td>
<td>The maximum number of virtual printer overrides which can be specified by an /ASSIGN command that are in effect at the same time. DELTA PLUS VIRTUAL TERMINAL uses this value to calculate the size and capacity of the VPO pool VTFVPOPL, which is allocated in the IMS private area during initialization. This value is optional; a 0 indicates that no VPO pool is allocated. If this value is too low, it can cause /ASSIGN commands for virtual printers to fail. If this value is too high, it can waste private area virtual storage, but it will not create more overhead. The initial value is site-dependent. Although you can increase the value without impacting IMS operation, it will not take effect until the next IMS restart. A cold start is recommended if you decrease the value.</td>
</tr>
<tr>
<td>Maximum virtual terminal pending entries</td>
<td>The maximum number of virtual terminal pending entries that can be in effect at the same time. This value is ignored when Resource Manager (RM) and Sysplex Terminal Management (STM) are in use. DELTA PLUS VIRTUAL TERMINAL uses this value to calculate the size and capacity of the VTE pool VTFVTEPL which is allocated in the IMS private area during initialization. If this value is too low, it can cause virtual terminal /EXCL, /STOP, /TRA, or /TEST MFS commands to fail. If this value is too high, it can waste private area virtual storage, but it will not create more overhead. You can change the value without impacting IMS operation, but it will not take effect until the next IMS restart. A cold start is recommended if you decrease the value. A 0 indicates that no VTE pool is allocated. Tip: You should specify a non-zero number for both VPOs and VTEs. If a non-zero value is specified, you will be able to specify a virtual printer override and to set nodes in test MFS in emergency situations. BMC Software recommends that you specify a value of at least 10 for both VPOs and VTEs.</td>
</tr>
<tr>
<td>Idle terminal logoff intervals</td>
<td>The number of minutes a virtual terminal can remain inactive before an automatic logoff is invoked. The logon/signon process can select the alternate interval. A valid terminal logoff interval is 0 or a value between 10 and 999 minutes.</td>
</tr>
<tr>
<td>Idle conversation logoff intervals</td>
<td>The number of minutes a virtual terminal in conversational mode can remain inactive before an automatic logoff is invoked. This value overrides the idle terminal logoff interval specified in the previous field if the terminal is in conversational mode. When a virtual terminal is logged off, conversations are assigned to the user/SPQB that was created when the terminal was logged on. The conversations remain in the state they were in when the terminal was logged off. This option only logs off the terminal; it does not exit the conversations. The logon/signon process can select the alternate interval. A valid logoff interval for a terminal in conversation is 0 or a value between 10 and 999 minutes.</td>
</tr>
</tbody>
</table>
### Idle virtual printer logoff intervals

The number of minutes a virtual printer can remain inactive before an automatic logoff is invoked. You can specify the use of the alternate interval via the virtual printer timer override. See “Setting VT TSS Options” on page 107. The alternate value, entered in minutes, specifies how long a virtual printer may remain inactive before an automatic logoff will be invoked. Virtual printers that use models defined to IMS with OPTIONS=DISCON are automatically logged off whenever the queue count is zero. The OPTIONS=DISCON parameter takes precedence over any value you specify in this field. This option also takes precedence over the No Automatic Timeout option in a Virtual Printer Timer Override table.

### Held conversation exit interval

This field is optional. The number of minutes a virtual terminal waits before exiting a held conversation, whether the conversation was initiated and/or held on either a virtual terminal or an IMSGEN-defined terminal. A 0 indicates that no held conversations are to be exited. Held conversations can be exited only if the terminal is stopped. Also, this interval is independent of the idle conversation logoff/exit intervals; it does not begin after the expiration of the idle conversation logoff/exit interval. For example, if a held conversation exceeds the held conversation exit interval while still assigned to an active terminal, the conversation will be immediately exited when the terminal logs off or is automatically logged off due to inactivity.

11 Save your changes.

   a  Press F3 twice. The Confirm Save pop-up window is displayed.

   b  Type 1 in the selection field and press Enter. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

   c  Press F3 twice. The DELTA PLUS VT Main Menu is displayed.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set TSS options for virtual terminals.</td>
<td>See “Setting VT TSS Options” on page 107.</td>
</tr>
<tr>
<td>Set logon options for virtual terminals.</td>
<td>See “Setting VT Logon Options” on page 111.</td>
</tr>
<tr>
<td>Set signon bypass options for virtual terminals.</td>
<td>See “Setting VT Signon Bypass Options” on page 114.</td>
</tr>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
</tbody>
</table>
Setting Virtual Terminal Options

Use the IMSID Options - VT Options panel to display and modify the options for virtual terminals for the selected IMS system.

Data displayed are the current values from the specified options module.

To Set Options for Virtual Terminals

1  From the DELTA PLUS VT Main Menu, type 4 in the selection field and press **Enter**. The Administration Menu is displayed.
2 Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3 Type 1 in the selection field.

4 Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the <strong>IMSID or Group</strong> field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the <strong>IMSID or Group</strong> field blank.</td>
</tr>
</tbody>
</table>

6 Optional. Type the data set name of the additional library in which to store the IMSID options modules in the **Save library 1** field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.

**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 104.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 104.</td>
</tr>
</tbody>
</table>

8 Type S next to the IMSID you want to customize or access, and press Enter. The Edit IMSID Options panel is displayed.

9 Type 3 in the selection field, and press Enter. The IMSID Options - VT Options panel is displayed.
Edit the following fields, as necessary:

### Table 13: Fields Available on the IMSID Options - VT Options Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected. This is not an editable field.</td>
</tr>
<tr>
<td>Enable DELTA PLUS VIRTUAL TERMINAL</td>
<td>Type a slash (/) in this field to activate DELTA PLUS VIRTUAL TERMINAL.</td>
</tr>
<tr>
<td>Notify MTO of auto logoffs and exits</td>
<td>Type a slash (/) in this field to send a message to the IMS Master Terminal each time DELTA PLUS VIRTUAL TERMINAL automatically logs off an idle virtual terminal or automatically exits a conversation.</td>
</tr>
<tr>
<td>Require signon for ALL virtual terminals</td>
<td>Type a slash (/) in this field to specify that a signon is required after a virtual terminal logon. A signon is required for DELTA PLUS VIRTUAL TERMINAL enhanced conversation and message-handling features to associate conversations and messages with a userid.</td>
</tr>
<tr>
<td></td>
<td>Note: If any of your users are not required to sign on, do not specify signon required. All users will attempt signon bypass if you have not specified signon required. If signon bypass is not successful, the user will still be required to sign on.</td>
</tr>
<tr>
<td>Support multiple concurrent LTERMs for virtual terminals</td>
<td>Type a slash (/) in this field to enable multiple concurrent LTERM support for virtual terminals. If you select this option, each virtual terminal can support up to 8 LTERM names. The node and LTERMS must be virtual. When you do not want multiple LTERMs, the argument length in the Translate Subsystem Services (TSS) table for Signon Bypass options 2 and 3 and Signon options 3 and 4 must equal eight; otherwise, it must be greater than eight to permit suffixed node or userid values.</td>
</tr>
<tr>
<td></td>
<td>WARNING: Using a multiple LTERM per node TSS table for signon or signon bypass requires a special TSS translation, which precludes the use of pattern masking in these tables.</td>
</tr>
<tr>
<td></td>
<td>Tip: Use this option only if your NLTERM table has at least one node with more than one LTERM. This does not pertain to using a userid as the LTERM and signing on multiple times.</td>
</tr>
<tr>
<td>VT system log code</td>
<td>Type the log code that DELTA PLUS VIRTUAL TERMINAL will use when it writes records to the IMS system log. Use any hexadecimal number from X'0A0' to X'FF' except X'DA'. The default is X'DE'.</td>
</tr>
</tbody>
</table>
### Field Name: DFS3649A /SIGN COMMAND REQUIRED format name

**Description:** This field contains the name of a Message Output Descriptor (MOD) that displays each time logon occurs at a VTAM terminal where signon is required. The following MODs may be used in this field:

- **user-customized MOD** - The user’s own MOD may be used; however, it should contain a SYMSG field.
- **IBM default MOD** - The IBM default MOD DFS3649A /SIGN COMMAND REQUIRED is displayed if the field is left blank.

If a signon failure occurs, a message describing the failure will be displayed in the SYMSG field of the MOD used. To change the message text, use sample JCL in VTFCNTL member DLA#SMSEG to assemble and link a replacement module called VTFSMSG0.

### Field Name: DFS3650I SESSION STATUS format name

**Description:** This field contains the name of a Message Output Descriptor (MOD) that displays each time a VTAM terminal which is not required to sign on, logs on to IMS. If a MOD name has not been supplied and the terminal logs on, the IBM default message DFS3650I SESSION STATUS is displayed.

If a MOD name has been supplied and the terminal logs on, the MOD will be displayed.

---

11 Save your changes.

- Press **F3** twice. The Confirm Save pop-up window is displayed.
- Type **1** in the selection field and press **Enter**. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.
- Press **F3** twice. The DELTA PLUS VT Main Menu is displayed.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set TSS options for virtual terminals.</td>
<td>See “Setting VT TSS Options” on page 107.</td>
</tr>
<tr>
<td>Set logon options for virtual terminals.</td>
<td>See “Setting VT Logon Options” on page 111.</td>
</tr>
<tr>
<td>Set signon bypass options for virtual terminals.</td>
<td>See “Setting VT Signon Bypass Options” on page 114.</td>
</tr>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
</tbody>
</table>
Setting IMSID Options for DELTA PLUS VIRTUAL TERMINAL

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Setting VT TSS Options

Use the IMSID Options - VT TSS Options panel to display and modify the DELTA PLUS VIRTUAL TERMINAL Translate Sub-System options for the selected IMS system.

Data displayed are the current values from the specified options module.

To Set TSS Options for DELTA PLUS VIRTUAL TERMINAL

1. From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.
2 Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3 Type 1 in the selection field.

4 Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the IMSID or Group field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the IMSID or Group field blank.</td>
</tr>
</tbody>
</table>

6 Optional. Type the data set name of the additional library in which to store the IMSID options modules in the Save library 1 field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.

**Note**
If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the IMSID or Group field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 108.</td>
</tr>
<tr>
<td>You left the IMSID or Group field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 108.</td>
</tr>
</tbody>
</table>

8 Type S next to the IMSID you want to customize or access, and press Enter. The Edit IMSID Options panel is displayed.

9 Type 4 in the selection field, and press Enter. The IMSID Options - VT TSS Options panel is displayed.
Edit the following fields, as necessary:

Table 14: Fields Available on the IMSID Options - VT TSS Options Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected. This is not an editable field.</td>
</tr>
</tbody>
</table>
| TSS table data set name           | The name of the TSS library. The TSS library holds the tables used by the Translate Subsystem which is used by DELTA PLUS VIRTUAL TERMINAL. You can allocate the TSS data set using the Library Format option, the JCL in DLPCNTL member DLP#TSSA, or ISPF utilities.  
If you use ISPF for the allocation, the data set should be physical sequential with a RECFM of FS and an LRECL and BLKSIZE of 4096. The space used depends on the amount of data to be contained in the TSS data set; an initial allocation of 1 cylinder is a recommended minimum. If you omit this parameter and any of the virtual terminal exits require TSS, then abend U4060 subcode 010 occurs. |
| Number of TSS cache buffers       | Look-aside buffers are a cache in the extended private area. Translate Subsystem Services stores the most recently referenced blocks from the TSS library in the look-aside buffers to speed up TSS response. Valid values are any number from 5 to 1024. For best performance, specify the one (for the control record) plus the total number of index and table blocks for all TSS tables (displayed on the Table Select panel). To ensure that the most recent data is accessed, you must refresh all tables.  
Note: If a value of 0 (or a blank) is specified, the buffers will be eliminated and I/O to the data set will be required each time table data is needed. |
| Virtual printers                  | Type the name of the TSS table used to define the valid virtual printer LTERM names.                                                                                                                                                                                                                                                   |
| Virtual printer timer override    | Type the name of the TSS table used to derive the Timer facility override values. Virtual printers that use models defined to IMS with OPTIONS=DISCON are automatically logged off whenever the queue count is zero. The OPTIONS=DISCON parameter takes precedence over the No Automatic Timeout option available through the Virtual Printer Timer Override table. |
| Unsolicited output                | Type the name of the TSS table that contains the LTERM names that are to be created when a message is sent to an unknown destination.  
**WARNING:** This table is the final search to determine if a destination is valid. Liberal use of wild cards (*) may allow LTERMs to be created that you really do not wish to have created.                                                                 |
<p>| Virtual remote LTERMs             | Type the name of the TSS table used for remote output. The table must consist of 8-byte argument and function fields. The argument field contains the virtual remote LTERM name and the function field contains the MSNAME of the link to the destination IMS system.                                                                                                         |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsolicited output TRANSACT</td>
<td>Type the name of the TSS table used to define the valid dynamic transaction names. The table must consist of 8-byte argument and function fields. The argument field contains a dynamic transaction name and the function field contains the name of an IMSGEN-defined or DELTA List transaction to be used as a model to build the dynamic transaction.</td>
</tr>
<tr>
<td>Require ALLROWS keyword on /DIS TSSTABLE command</td>
<td>Type a slash (/) in this field to require a user to enter the ALLROWS keyword on the /DIS TSSTABLE command to display all entries in the table. Requiring the ALLROWS keyword on this command will prevent the inadvertent display of an entire table.</td>
</tr>
</tbody>
</table>

11 Save your changes.

   a Press F3 twice. The Confirm Save pop-up window is displayed.

   b Type 1 in the selection field and press Enter. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

   c Press F3 twice. The DELTA PLUS VT Main Menu is displayed.

Where to go from here

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set logon options for virtual terminals.</td>
<td>See “Setting VT Logon Options” on page 111.</td>
</tr>
<tr>
<td>Set signon bypass options for virtual terminals.</td>
<td>See “Setting VT Signon Bypass Options” on page 114.</td>
</tr>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
</tbody>
</table>
Setting VT Logon Options

Use the IMSID Options - VT Logon Options panel to display and modify the DELTA PLUS VIRTUAL TERMINAL method for obtaining a logon model node name for the selected IMS system.

Data displayed are the current values from the specified options module.

To Set Logon Options for DELTA PLUS VIRTUAL TERMINAL

1. From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3. Type 1 in the selection field.

4. Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field.
For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the <strong>IMSID or Group</strong> field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the <strong>IMSID or Group</strong> field blank.</td>
</tr>
</tbody>
</table>

6 Optional. Type the data set name of the additional library in which to store the IMSID options modules in the **Save library 1** field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.

**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 112.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 112.</td>
</tr>
</tbody>
</table>

8 Type **S** next to the IMSID you want to customize or access, and press **Enter**. The Edit IMSID Options panel is displayed.

9 Type **5** in the selection field, and press **Enter**. The IMSID Options - VT Logon Options panel is displayed.

10 Edit the following fields, as necessary:

**Table 15: Fields Available on the IMSID Options - VT Logon Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected.</td>
</tr>
</tbody>
</table>
**Field Name** | **Description**
--- | ---
Method | Specify the method that DELTA PLUS VIRTUAL TERMINAL should use to create node names from logon models.  
**Note:** Model node names should never exist in the VTAM network. The model names specified in the IMSID options for terminals *must not* be inadvertently or specifically changed by executing a DELTA List. The mask name used for adding terminals *must not* resolve to a terminal used as a model.

1 **Defaults**

- **SLU2 logon model node name.** The name of a terminal present in the IMS Stage-1 system definition which DELTA PLUS VIRTUAL TERMINAL can use as a model control block for SLUTYPE2 devices. If there are no SLUTYPE2 devices in your network that will be used as virtual terminals, type NONE.

- **3270 logon model node name.** The name of a terminal present in the IMS Stage-1 system definition which DELTA PLUS VIRTUAL TERMINAL can use as a model control block for VTAM 3270 devices. If there are no VTAM 3270 devices in your network that will be used as virtual terminals, type NONE.

- **SLU1 logon model node name.** The name of a terminal present in the IMS Stage-1 system definition which DELTA PLUS VIRTUAL TERMINAL can use as a model control block for SLUTYPE1 devices. If there are no SLUTYPE1 devices in your network that will be used as virtual terminals, leave this field blank.

- **SLUP logon model node name.** The name of a terminal present in the IMS Stage-1 system definition which DELTA PLUS VIRTUAL TERMINAL can use as a model control block for SLUTYPEP devices. If there are no SLUTYPEP devices in your network that will be used as virtual terminals, leave this field blank.

2 **TSS**

Uses the TSS table specified in the TSS table name field to translate the VTAM terminal type and screen size into a logon model node name.

3 **User exit**

Calls a DELTA PLUS VT Logon Exit routine in module VTFEXIT\(n\). This routine provides the name of the logon model. Unless you have hard-coded the table name, the sample will use the TSS table name specified with **Method** option 2.

| TSS table name | The name of the TSS table that will be used to translate the VTAM terminal type and screen size into a logon model node name. The VTAM terminal type and screen size information is combined into a six-character symbolic table argument of the form ttttpa where tt is SLU1, SLU2, SLUP or 3270, p is the primary screen size (0-5), and a is the alternate screen size (0-5). The suggested name for this table is LMODEL.

11 **Save your changes.**

- Press **F3** twice. The Confirm Save pop-up window is displayed.
b Type 1 in the selection field and press Enter. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

c Press F3 twice. The DELTA PLUS VT Main Menu is displayed.

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set signon bypass options for virtual terminals.</td>
<td>See “Setting VT Signon Bypass Options” on page 114.</td>
</tr>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Setting VT Signon Bypass Options

Use the IMSID Options - VT Signon Bypass Options panel to display and modify the DELTA PLUS VIRTUAL TERMINAL method for obtaining an LTERM when signon is not required for the selected IMS system.

Data displayed are the current values from the specified options module.
To Set Signon Bypass Options for DELTA PLUS VIRTUAL TERMINAL

1 From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2 Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3 Type 1 in the selection field.

4 Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field.

   For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the IMSID or Group field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the IMSID or Group field blank.</td>
</tr>
</tbody>
</table>

6 Optional. Type the data set name of the additional library in which to store the IMSID options modules in the Save library 1 field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.
If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 116.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 116.</td>
</tr>
</tbody>
</table>

8 Type S next to the IMSID you want to customize or access, and press Enter. The Edit IMSID Options panel is displayed.

9 Type 6 in the selection field, and press Enter. The IMSID Options - VT Signon Bypass Options panel is displayed.

10 Edit the following fields, as necessary:

**Table 16: Fields Available on the IMSID Options - VT Signon Bypass Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected.</td>
</tr>
</tbody>
</table>
This option provides three LTERM name selection methods for virtual terminals that are not required to perform an IMS signon.

**Note:** If some users are required to sign on and others are not, enter the following information into the signon bypass TSS table for each user *not* required to sign on:

- the node name
- the associated LTERM

The remainder of the nodes will fail the table search and will be required to sign on.

Select one of the following options by typing its number in this field:

1 **Default**
Use the node name as the LTERM name.

2 **TSS**
Use Translate Subsystem Services to translate the node name to an LTERM name. You can use the Translate Subsystem Services to translate the derived LTERM name into a virtual terminal Timer facility override value. This option uses the same logic as the Signon Bypass Exit sample routine distributed in exit VTFEXBXX.

3 **User exit**
Calls a DELTA PLUS VT signon-bypass exit routine in module VTFEXITn. This exit routine is responsible for providing an LTERM name(s), and a virtual terminal Timer facility override value. For more information about the requirements for this exit, see “Signon Bypass Exit Sample Routine” on page 528.

**Note:** The sample exit uses the TSS table names specified in the **Node to LTERM TSS table name** and **LTERM timer override TSS table name** fields on this panel.

---

11 **Save your changes.**

a. Press F3 twice. The Confirm Save pop-up window is displayed.

b. Type 1 in the selection field and press Enter. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

c. Press F3 twice. The DELTA PLUS VT Main Menu is displayed.

Where to Go from Here
Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set signon options for virtual terminals.</td>
<td>See “Setting VT Signon Options” on page 118.</td>
</tr>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

**Setting VT Signon Options**

Use the IMSID Options - VT Signon Options panel to display and modify the DELTA PLUS VIRTUAL TERMINAL method for obtaining an LTERM when signon is required for the selected IMS system.

Data displayed are the current values from the specified options module.
To Set Signon Options for DELTA PLUS VIRTUAL TERMINAL

1. From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3. Type 1 in the selection field.

4. Type the data set name of the library in which the VIRTUAL TERMINAL IMSID options module - DLA#iiii resides in the Options library field. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the IMSID or Group field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the IMSID or Group field blank.</td>
</tr>
</tbody>
</table>

6. Optional. Type the data set name of the additional library in which to store the IMSID options modules in the Save library 1 field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.
**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 120.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 120.</td>
</tr>
</tbody>
</table>

8 Type **S** next to the IMSID you want to customize or access, and press **Enter**. The Edit IMSID Options panel is displayed.

9 Type **7** in the selection field, and press **Enter**. The IMSID Options - VT Signon Options panel is displayed.

10 Edit the following fields, as necessary:

**Table 17: Fields Available on the IMSID Options - VT Signon Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected.</td>
</tr>
<tr>
<td>Key</td>
<td>Select one of the following options by typing its number in this field: 1 <strong>Node name</strong>. The node name is used in the selection technique for permanent LTERMIs. 2 <strong>Userid</strong>. The user ID is used instead of the node name in the selection technique for permanent LTERMIs.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Method</td>
<td>Select one of the following options to be used in assigning the permanent LTERM name.</td>
</tr>
<tr>
<td>1 Signon-bypass</td>
<td>The LTERM created using the Signon Bypass option, specified on the IMSID Options - VT Signon Bypass Options panel, remains the permanent LTERM name. This option is for users that want to establish the LTERM name using the Signon Bypass option but that also have certain user groups that do sign on.</td>
</tr>
<tr>
<td></td>
<td>With this option, the AOI exit sees the response to the signon command. As far as DELTA PLUS VIRTUAL TERMINAL is concerned, this is essentially a NOP of virtual terminal signon processing logic in the sense that no action of any kind is taken. No LTERM names are assigned and no conversations are released.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The following options each assign a permanent LTERM name on the basis of either the node name or the userid, depending on the selection made in the <strong>Key</strong> field.</td>
</tr>
<tr>
<td>2 Key</td>
<td>Sets up an LTERM equivalent to the node name or userid as specified in the <strong>Key</strong> field. No model override or timer override are supplied.</td>
</tr>
<tr>
<td>3 TSS</td>
<td>Uses the TSS tables to translate the node name or userid into an LTERM name. The TSS tables are then used to translate the derived LTERM name into a virtual terminal Timer facility override value.</td>
</tr>
<tr>
<td>4 User exit</td>
<td>Calls a DELTA PLUS VT Signon Exit routine in module VTFEXIT n. This exit routine is responsible for providing LTERM names, and a virtual terminal Timer facility override value. For more information about the requirements for this exit, see “Signon Exit Sample Routine 1” on page 533.</td>
</tr>
<tr>
<td></td>
<td>If you select this option and use the Signon Exit sample routine provided with DELTA PLUS VIRTUAL TERMINAL, you must also specify values for the <strong>Key to LTERM TSS table name</strong> and <strong>LTERM timer override TSS table name</strong> fields for these features to work.</td>
</tr>
<tr>
<td>Key to LTERM TSS table name</td>
<td>Enter the name of the Translate Subsystem Services table used for determining the LTERM name. If the node name is used, a suggested tablename is NLTERM. If the userid is used, a suggested table name is ULTERM.</td>
</tr>
<tr>
<td>LTERM timer override TSS table name</td>
<td>Enter the name of the TSS table used to derive a virtual terminal Timer facility override value. A suggested table name is LTERMOR.</td>
</tr>
</tbody>
</table>

11 Save your changes.

a Press **F3** twice. The Confirm Save pop-up window is displayed.

b Type 1 in the selection field and press **Enter**. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

c Press **F3** twice. The DELTA PLUS VT Main Menu is displayed.
Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set extended options for virtual terminals.</td>
<td>See “Setting Extended Options” on page 122.</td>
</tr>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Setting Extended Options

Use the IMSID Options - Extended Options panel to display and modify the DELTA PLUS VIRTUAL TERMINAL Extended Options for the selected IMS system. Data displayed are the current values from the specified options module.

DELTA PLUS VIRTUAL TERMINAL was designed and written to function consistently in every IMS system. Occasionally, a new feature is added that does not completely fit into the basic design of the product, but it is deemed worthwhile for customers who may have a specific need for that feature. These types of features are known as Extended Options.

**WARNING**

Extended Options are features that have been added to resolve a specific customer need. These options should not be used unless the results are fully understood. Call BMC software support if you are unsure if these options will solve the problem you are trying to address.
To Set Extended Options for DELTA PLUS VIRTUAL TERMINAL

1 From the DELTA PLUS VT Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2 Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3 Type 1 in the selection field.

4 Type the data set name of the library in which the VIRTUAL TERMINAL IMSID extended options module - DLA@ iii resides in the Options library field. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific IMSID of the IMS system you want to customize or access.</td>
<td>Type the IMSID of the IMS system in the IMSID or Group field.</td>
</tr>
<tr>
<td>Choose an IMSID you want to customize or access from a list of IMSIDs.</td>
<td>Leave the IMSID or Group field blank.</td>
</tr>
</tbody>
</table>

6 Optional. Type the data set name of the additional library in which to store the IMSID options modules in the Save library 1 field, if your installation stores DELTA PLUS VIRTUAL TERMINAL IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, IMS, and BMCXLINK use the same library, this field is optional.
**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific IMSID in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit IMSID Options panel is displayed. Go to Step 9 on page 124.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit IMSID Options - List panel is displayed, allowing you to select an IMSID. Go to Step 8 on page 124.</td>
</tr>
</tbody>
</table>

8 Type S next to the IMSID you want to customize or access, and press Enter. The Edit IMSID Options panel is displayed.

9 Type 8 in the selection field, and press Enter. The IMSID Options - Extended Options panel is displayed.

10 Edit the following fields, as necessary:

**Table 18: Fields Available on the IMSID Options - Extended Options Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSID</td>
<td>Displays the IMSID of the options module you selected.</td>
</tr>
<tr>
<td>Use DFS3649A replacement format on sysgen'ed terminals</td>
<td>Type a slash (/) in this selection field to use the DFS3649A replacement option for static nodes in addition to virtual terminals.</td>
</tr>
</tbody>
</table>
| Pass VTAM user data | Type a slash (/) in this selection field to indicate that VTAM user data will be passed to the logon exit. If the **Userid and password supplied in VTAM user data** field is also selected, the VTAM user data will follow the userid and password. This data will be available to the first call to the IMS greetings message exit.  
**Note**: This option is incompatible with the **Retry signon bypass when initial signon fails** option. |
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| Pass VTAM user data from logon to signon                                  | Type a slash (/) in this selection field to indicate that the VTAM user data will be passed from the logon exit to the signon exit.  
Note: The Userid and password supplied in VTAM user data option must also be selected for this option to work. This option is incompatible with the Retry signon bypass when initial signon fails option. |
<p>| Preserve response mode across signons                                     | Type a slash (/) in this selection field to preserve the terminal &quot;awaiting response&quot; indication for virtual terminals from logon to logon. If not selected, the indication is preserved for sysgenned terminals, but not for virtual terminals. |
| /EXIT conversations                                                       | Type a slash (/) in this selection field to exit conversations automatically from a previous session. If activated, this option takes effect when IMS creates a dynamic terminal that uses an existing LTERM and USER structure that has an active conversation connected to it. |
| /DEQ messages                                                             | Type a slash (/) in this selection field to dequeue all messages automatically from a previous session. If activated, this option takes effect when IMS creates a dynamic terminal that uses an existing LTERM and USER structure that has one or more messages queued to it. |
| Use DFS3650I replacement format on sysgenned terminals                    | Type a slash (/) in this selection field to use the DFS3650I replacement option for static nodes in addition to virtual terminals.                                                                 |
| Bypass RACF authorization for conversations                               | Type a slash (/) in this selection field to bypass RACF authorization for conversations. If you activate this option, DELTA PLUS VIRTUAL TERMINAL will specify the node name as the user ID that RACF authorization requires. Activating this option will allow you to use the /EXIT conversations option to exit all conversational transactions regardless of transaction authorization. This option does not allow unauthorized use of any transaction. |
| /EXIT non-held conversations after held conversation interval            | Type a slash (/) in this selection field to EXIT non-held conversations after the Held conversation exit interval is exceeded.                                                                 |
| Reset PRESET mode (IMS 7.1 and earlier)                                  | Type a slash (/) in this selection field to reset the preset destination mode at signoff.                                                                                                                   |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use LTERM edit routine DFSCNTE0</td>
<td>Type a slash (/) in this selection field to use a user-supplied LTERM edit routine.</td>
</tr>
</tbody>
</table>
| Do not delete USERs and LTERMs at signoff | Type a slash (/) in this selection field to bypass deleting of CNTs and users at signoff.  
   **Note:** This option is incompatible with the **Do not delete USERs and LTERMs if stopped** option. |
| Retry signon bypass when initial signon fails | Type a slash (/) in this selection field to retry signon bypass when an initial signon attempt fails.  
   **Note:** This option is incompatible with the **Pass VTAM user data** and **Pass VTAM user data from logon to signon** options. |
| Userid and password supplied in VTAM user data | Type a slash (/) in this selection field to include the userid and password in the VTAM user data passed to the logon exit. |
| Ignore DFS3650I replacement message when running ACF2 or Top Secret | Type a slash (/) in this selection field to ignore the DFS3650I replacement message in message table module VTFSMSG0 when running ACF2 or Top Secret security. |
| Call ETO signoff exit DFSSGFX0 | Type a slash (/) in this selection field to cause the ETO signoff exit DFSSGFX0 to be loaded during IMS initialization. |
| Call ETO logon exit DFSLGNX0 | Type a slash (/) in this selection field to call the ETO logon exit DFSLGNX0 during logon processing. |
| Call ETO logoff exit DFSLGF0 | Type a slash (/) in this selection field to bypass deleting of the ETO logoff exit DFSLGF0 during IMS initialization. |
| Allow more than 8 LTERMs per USER | Type a slash (/) in this selection field to allow 255 LTERMs per USER.  
   An IMS restart is required to implement or remove this option. It cannot be refreshed. |
<p>| FID class for /DISPLAY command | Type a one-character format identifier (FID) class that will identify /DISPLAY command output prepared by DELTA PLUS when presented to an AOI program. The default value is #. |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable DELTA PLUS VT compatibility with session managers</td>
<td>Type a slash (/) in this selection field if you are using a session manager and you wish to use the real VTAM node name for these terminals rather than the session manager pool node name. Prerequisites for using this option are:</td>
</tr>
<tr>
<td></td>
<td>■ The session manager product must place the real VTAM node name in the VTAM user data field when a terminal user logs on. Check with your local session manager support group or the session manager vendor to see if your product complies.</td>
</tr>
<tr>
<td></td>
<td>■ The VTAM APPL for this IMS must have PARSESS=YES.</td>
</tr>
<tr>
<td></td>
<td>To specify the session manager pool node names to be used in conjunction with this option, use the Prefixes for session manager node names fields.</td>
</tr>
<tr>
<td>VTAM user data contains trailing blanks</td>
<td>Type a slash (/) in this selection field only if your VTAM user data contains trailing blanks immediately following the node name. Selecting this option will cause any '/OPNDST NODE nodename USER username' command to create the nodename as the username.</td>
</tr>
<tr>
<td>Prefixes for session manager node names</td>
<td>Specify the user-defined prefixes for session manager node names to be used in conjunction with the Enable DELTA PLUS VT compatibility with session managers option. Specify ALL to process all dynamic nodes.</td>
</tr>
</tbody>
</table>

11 Save your changes.

a. Press F3 twice. The Confirm Save pop-up window is displayed.

b. Type 1 in the selection field and press Enter. DELTA PLUS VIRTUAL TERMINAL saves the IMSID options.

c. Press F3 twice. The DELTA PLUS VT Main Menu is displayed.

Where to Go from Here

Perform any of the following actions:
<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a new IMSID.</td>
<td>See “Creating a New IMSID” on page 128.</td>
</tr>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

## Creating a New IMSID

There are two ways to create a new IMSID: use the DELTA PLUS defaults or copy the options for a new IMSID from an existing IMSID.

### Using DELTA PLUS Defaults

You can create a new DELTA PLUS IMSID options module using internal DELTA PLUS defaults. Use the DELTA PLUS ISPF interface Administration Menu (option 4 on the Main Menu) to complete this task. Select option 2 on the Administration Menu and press Enter. The IMSID/Group Options Entry panel is displayed. Specify the new IMSID and the library that will contain it in the appropriate fields. Select option 1 and press Enter. DELTA PLUS will populate certain DELTA PLUS IMSID options module fields using the internal defaults.

### Using an Existing IMSID

The following topic describes using an existing IMSID.

**To use an existing IMSID**

1. Use the procedure in “Using DELTA PLUS Defaults” on page 128 to create a new IMSID options module.
2 Then, type **COPY name** on the **Command** line on the Edit IMSID Options panel where name is the name of the existing IMSID from which you want to copy the IMSID options. Press **Enter**. The new options will be copied from the existing IMSID options module.

**Where to Go from Here**

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customize DELTA PLUS to use the FDR feature.</td>
<td>See “Customizing DELTA PLUS for the FDR Feature” on page 129.</td>
</tr>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

**Customizing DELTA PLUS for the FDR Feature**

You must complete the following steps to enable the functionality of the FDR feature for DELTA PLUS.

1 Add the DELTA PLUS library to the STEPLIB for the FDR region.

2 Ensure that the ACBLIB in the FDR region is the same as in the control region.

3 Verify that DELTA PLUS is licensed on the CPU where the FDR region resides.

4 Specify the IMSID of the FDR region in the **XRF/FDR Alternate IMSID** field (see the table in Setting IMSID Options for DELTA PLUS and DELTA PLUS for DBCTL on page 88) when you are setting the IMSID basic options for the primary IMSID options module.
When you save your IMSID options, DELTA PLUS automatically creates two IMSID options modules. The primary IMSID options module is named DLP#iiii where iiii is the IMSID of your primary system. The secondary IMSID options module is named DLP#ffff where ffff is the IMSID of your system where the FDR region resides. DELTA PLUS creates these modules automatically to ensure that the modules are always synchronized.

**Note**
DELTA PLUS will not allow you to manually edit the IMSID options module for your FDR region. This restriction ensures the options for the primary IMSID options module and the FDR region IMSID options module are synchronized to avoid potential errors.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify Group options.</td>
<td>See “Setting Group Options” on page 130.</td>
</tr>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

## Setting Group Options

The DELTA PLUS Group options enable a user-defined group of IMS systems to be treated as one IMS system.

A group of IMS systems would typically be an IMS data sharing Group, IMS Shared Queues Group, or a group of logically related or duplicated IMS systems. When you create or change Group options, the load module DLPZggs is link-edited to your DELTA PLUS options library.

**Note**
Group options are *not* required.
Before you begin

Once you have saved the Group options module, the changes will only take place during the next IMS restart. If you perform a Group options REFRESH, the only changes that will take place are the IMS command options.

Note

When you are deciding on a name for your Group options, be sure that this name does not duplicate the name used for existing IMSID options. If you duplicate the IMSID options name for your Group options name, DELTA PLUS will not find the Group options because the IMSID options will be located first.

To Specify Group Options

1 From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2 Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3 Type 2 in the selection field.

4 Type the data set name of the library in which the Group options module - DLPZgggg resides in the Options library field.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

5 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific Group you want to customize or access.</td>
<td>Type the name of the Group in the IMSID or Group field.</td>
</tr>
</tbody>
</table>
### Setting Group Options

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose a Group you want to customize or access from a list of Groups.</td>
<td>Leave the <strong>IMSID or Group</strong> field blank.</td>
</tr>
</tbody>
</table>

6. Optional. Type the data set name of the additional library in which to store the Group options modules in the **Save library 1** field, if your installation stores DELTA PLUS IMSID/Group option modules in separate libraries used by ISPF, the control region, or BMCXLINK. If ISPF, the control region, or BMCXLINK use the same library, this field is optional.

**Note**

If you use several load libraries, remember that it is possible to have a copy of a module in more than one library. IMS will use the first module it finds, regardless of whether that module is the most current one available.

7. Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific Group name in the <strong>IMSID or Group</strong> field.</td>
<td>The Edit Group Options panel is displayed. Go to Step 9 on page 132.</td>
</tr>
<tr>
<td>You left the <strong>IMSID or Group</strong> field blank.</td>
<td>The Edit Group Options - List panel is displayed, allowing you to select a group. Go to Step 8 on page 132.</td>
</tr>
</tbody>
</table>

8. Type **S** next to the Group you want to customize or access, and press **Enter**. The Edit Group Options panel is displayed.

9. Edit the following fields, as necessary:

#### Table 19: Fields Available on the Edit Group Options Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group name</td>
<td>Displays the name of the Group you are creating or modifying. This is not an editable field.</td>
</tr>
<tr>
<td>BMCXLINK task network LUNAME</td>
<td>Type a network LUNAME for the BMCXLINK VTAM subtask. The LUNAME specified MUST match the LUNAME specified in the PARM field of the BMCXLINK task. The default value for this field is <strong>DLPALINK</strong>.</td>
</tr>
<tr>
<td>Primary Log</td>
<td>Type the data set name of the primary Log data set. All IMS systems included in the Group must be cold-started for this change to take effect.</td>
</tr>
</tbody>
</table>
### Field Name | Description
---|---
Secondary Log | Type the data set name of the secondary Log data set. All IMS systems included in the Group must be cold-started for this change to take effect.
Primary History File | Type the data set name of the primary History File data set. All IMS systems included in the Group must be restarted for this change to take effect.
Secondary History File | Type the data set name of the secondary History File data set. All IMS systems included in the Group must be restarted for this change to take effect.
Write IMS commands to History File | Type a `/` in this field to have IMS operator commands that are issued from a DELTA List or from the Execute IMS Command panel sent to the DELTA PLUS History File.
Copy Group options to an IMS STEPLIB library when saved | Type a `/` in this field to copy Group options modules to an IMS //STEPLIB library when the module is saved in the DELTA PLUS options library. If you select this field, you must specify the name of the IMS //STEPLIB library in which to store the modules used by the control region in the **IMS STEPLIB library** field.
IMS STEPLIB library | Specify the name of the IMS //STEPLIB library in which to store the modules used by the control region. If your installation stores DELTA PLUS Group option modules in separate libraries for use by ISPF and IMS, you should use this field. If both ISPF and IMS use the same library, this field is optional.

10 Save your changes.

a. Press F3. The Confirm Save pop-up window is displayed.

b. Type 1 in the selection field and press Enter. DELTA PLUS saves the Group options.

c. Press F3 twice. The DELTA PLUS Main Menu is displayed.

### Creating a New Group

There are two ways to create a new Group: use the DELTA PLUS defaults or copy the options for a new Group from an existing Group.
Using DELTA PLUS Defaults

Type the name of the new Group in the IMSID or Group field on the IMSID/Group Options Entry panel and press Enter. The Group options will be populated from internal DELTA PLUS defaults.

Using an Existing Group

Use the following procedure to use an existing group.

1. Type the name of the new Group in the IMSID or Group field on the IMSID/Group Options Entry panel and press Enter.

2. Type COPY name on the Command line on the Edit Group Options panel, where name is the name of the existing Group from which you want to copy the Group options.

3. Press Enter.

The new options will be copied from the existing Group.

Adding an IMSID to an Existing Group’s Log Data Sets

The Add IMSID to Group Log option allows you to add an IMSID to the Log and History File data sets for a specified Group. This feature ensures the coordinated changes that have been applied already to the IMSIDs in the specified Group will be applied to the IMSID you are adding to the Group.
To Add an IMSID to an Existing Group’s Log Data Sets

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 2 in the selection field and press Enter. The IMSID/Group Options Entry panel is displayed.

3. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS without VIRTUAL TERMINAL</td>
<td>Type 1 in the selection field with the IMSID to be added specified in the IMSID or Group field and press Enter. The Edit IMSID Options panel is displayed.</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>Type 1 in the selection field with the IMSID to be added specified in the IMSID or Group field and press Enter. The Edit IMSID Options panel is displayed. Type 1 in the selection field and press Enter. The IMSID Options - Basic Options panel is displayed.</td>
</tr>
</tbody>
</table>

4. Type the name of the Group to which you want to add an IMSID in the XCF Group field and press Enter. The Confirm Add IMS pop-up window is displayed.

5. Add the IMSID to the Specified Group’s Log and History File data sets.
   a. Type 1 in the selection field and press Enter. DELTA PLUS adds the IMSID to the specified Group’s Log and History File data sets.
   b. Type 2 in the selection field and press Enter. DELTA PLUS does not add the IMSID to the specified Group’s Log and History File data sets, but will save the XCF Group field change to the IMSID’s options when you save your changes.

   You can add the IMSID to the Specified Group’s Log and History File data sets later.

6. Save your changes.
   a. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS without VIRTUAL TERMINAL</td>
<td>Press F3. The Confirm Save pop-up window is displayed.</td>
</tr>
</tbody>
</table>
To add the IMSID to the Specified Group’s Log and History File data sets later

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 8 in the selection field and press Enter. The Add IMSID to Group Log panel is displayed.

3. Type the IMSID of the IMS system you want to add to a specified Group's Log and History File data sets in the Add IMSID field.

4. Type the name of the Group for which you want to add an IMSID to its Log and History File data sets in the to the Log for Group field, and press Enter. The Confirm Add IMS pop-up window is displayed.

5. Save your changes.

a. Type 1 in the selection field and press Enter. DELTA PLUS adds the IMSID to the specified Group’s Log and History File data sets.

b. Press F3 twice. The DELTA PLUS Main Menu is displayed.

Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh the IMSID/Group Options.</td>
<td>See “Updating IMSID/Group Options in the Control Region” on page 137.</td>
</tr>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>
Updating IMSID/Group Options in the Control Region

You can dynamically update the IMSID options or Group options in the IMS control or DBCTL region(s) by choosing the Refresh IMSID or Group Options option with an IMSID or Group specified in the IMSID or Group field on the Refresh Menu.

Before you begin

This process only pertains to changing your options while IMS is up. If IMS is not up, the refresh process is not needed since changes will be picked up after the next restart.

Following a refresh attempt, DELTA PLUS issues a message that indicates whether the refresh was successful.

To Update IMSID Options or Group Options in the Control Region

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 5 in the selection field and press Enter. The Refresh Menu is displayed.

3. Type 1 in the selection field.

4. Type an IMSID to update the IMSID options for a single IMS system or the Group name to update the Group options for multiple IMS systems in the IMSID or Group field.

5. Press Enter. The Confirm Options Refresh pop-up window is displayed.

6. Type 1 in the selection field and press Enter. DELTA PLUS refreshes the IMSID options or Group options.

7. Press F3 twice. The DELTA PLUS Main Menu is displayed.
Where to go from here

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh the CPU ID Options.</td>
<td>See “Refreshing CPU ID Options” on page 138.</td>
</tr>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Refreshing CPU ID Options

You can use the Refresh Menu to send a request to the online IMS system to refresh the CPU ID security from the standard STEPLIB / JOBLIB / link-list concatenation of your control region JCL. The update will be applied without a restart of your control region. Depending on the options you select, a confirmation panel may be displayed before the CPU ID is refreshed.

Before you begin

This process only pertains to changing your options while IMS is up. If IMS is not up, the refresh process is not needed since changes will be picked up after the next restart.

Following a refresh attempt, DELTA PLUS issues a message that indicates whether the refresh was successful.

To Update CPU ID Options

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 5 in the selection field and press Enter. The Refresh Menu is displayed.
3 Type 2 in the selection field for the DELTA PLUS or DELTA PLUS for DBCTL interfaces OR type 3 in the selection field if you are in the DELTA PLUS VIRTUAL TERMINAL interface.

4 Type an IMSID to update the CPU ID options for a single IMS system or a Group name to update the CPU ID options for multiple IMS systems in the IMSID or Group field.

5 Press Enter. The Confirm Options Refresh pop-up window is displayed.

6 Type 1 in the selection field and press Enter. DELTA PLUS refreshes the CPU ID options. The Group Refresh Results pop-up window is displayed if a group was refreshed.

7 If the Group Refresh Results pop-up window was displayed, press F3 to return to the Refresh Menu.

8 Press F3 twice. The DELTA PLUS Main Menu is displayed.

**Where to go from here**

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh TSS tables.</td>
<td>See “Refreshing TSS Tables” on page 139.</td>
</tr>
<tr>
<td>Create or edit a View Profile.</td>
<td>See “Editing View Profiles” on page 141.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

**Refreshing TSS Tables**

You can use the Refresh Menu to clear the TSS cache buffers if you are running DELTA PLUS VIRTUAL TERMINAL and using cache buffering to access TSS table data.

Clearing the cache buffers causes DELTA PLUS to load the most current information the next time a table is accessed.
**Before you begin**

This process only pertains to changing your options while IMS is up. If IMS is not up, the refresh process is not needed since changes will be picked up after the next restart.

Following a refresh attempt, DELTA PLUS issues a message that indicates whether the refresh was successful.

**To Refresh TSS Tables**

1. From the DELTA PLUS Main Menu, type **4** in the selection field and press **Enter**. The Administration Menu is displayed.

2. Type **5** in the selection field and press **Enter**. The Refresh Menu is displayed.

3. Type **2** in the selection field.

4. Type an IMSID to update the TSS tables for a single IMS system or the Group name to update the TSS tables for multiple IMS systems in the IMSID or Group field.

5. Press **Enter**. The Confirm TSS Refresh pop-up window is displayed.

6. Type **1** in the selection field and press **Enter**. DELTA PLUS refreshes the TSS tables and the TSS Refresh Results pop-up window is displayed.

7. Press **F3** to return to the Refresh Menu.

8. Press **F3** twice. The DELTA PLUS Main Menu is displayed.

**Where to go from here**

Where to Go from Here

Perform any of the following actions:
## Editing View Profiles

View Profiles allow user customization of the keyword names and descriptions used when editing DELTA Lists.

You can change the defaults for, or prohibit use of, individual fields. You can also enforce standards for DELTA Lists created at a given location or site.

### Available Commands

You can issue several primary commands from the View Profile Edit, View Profile Element Edit, and View Profile Field Edit panels. Primary commands are typed on the **Command** line. Uppercase characters indicate the minimum text required to execute the command.

**Commands available on the View Profile Edit, View Profile Element Edit, and View Profile Field Edit panels**

- **CANcel** cancels any changes and returns to previous panel.

- **COPY** copies data from the specified View Profile. The level of data that is copied is determined by the panel from which the **COPY** command is issued. For example, if you issue the **COPY** command from the View Profile Field Edit panel, only the data for that field type is copied.
**DEFAULT** populates all required fields with default values shipped with the product. The level of data that is populated is determined by the panel from which the **DEFAULT** command is issued. For example, if you issue the **DEFAULT** command from the View Profile Element Edit panel, ALL fields on the View Profile Element Edit and View Profile Field Edit panels for the selected element type will be reset to default values.

### Commands available on the View Profile Edit panel

**EDIT** displays the View Profile Edit Entry panel to allow selection of another member for edit.

**OPEN** functions the same as **EDIT**.

**SAVE** saves the View Profile.

### Commands available on the View Profile Element Edit panel

**ALTVIEW** toggles the current display to an alternate view. The panels in this section are all displayed in the same view. Your panel display may differ from the view of these panels. All the fields are still available despite which view you choose to display.

**CLEAR** clears the values for the input fields on this panel for the element type you are editing.

**MACRO ON** and **MACRO OFF** toggles the current display to show IMS macro statements for the field names or not show macro statements for the field names. The panels in this section are all displayed with **MACRO OFF**. Your panel display of a field name may differ from the view of these panels. All the fields are still available despite which view you choose to display.

### Commands available on the View Profile Field Edit panel

**CLEAR** clears the values for the input fields on this panel for the selected field type.

**PROMPT** displays the available values for the field where the cursor currently resides.
To Edit a View Profile

Use the following procedure to edit a View Profile.

**To edit a View Profile**

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press **Enter**. The Administration Menu is displayed.

2. Type 3 in the selection field and press **Enter**. The View Profile Edit Entry panel is displayed.

3. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific View Profile you want to edit or create.</td>
<td>Type the name of the View Profile in the <strong>View Profile</strong> field.</td>
</tr>
<tr>
<td>Choose a View Profile you want to edit from a list of View Profiles.</td>
<td>Leave the <strong>View Profile</strong> field blank.</td>
</tr>
</tbody>
</table>

4. Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific View Profile name in the <strong>View Profile</strong> field.</td>
<td>The View Profile Edit panel is displayed. Go to Step 7 on page 143.</td>
</tr>
<tr>
<td>You left the <strong>View Profile</strong> field blank.</td>
<td>A Member Selection List panel is displayed, allowing you to select a View Profile. Go to Step 5 on page 143.</td>
</tr>
</tbody>
</table>

5. Type S next to the View Profile you want to edit, and press **Enter**. The View Profile Edit panel is displayed.

6. Type a / in the field next to each element type that you want to edit. The View Profile Element Edit panel will display for the first element type selected.

**Note**

The View Profile Element Edit panel displays different fields for the various element types. All fields displayed on any View Profile Element Edit panel are listed in Table 21 on page 146.

7. Edit the following fields, as necessary:
Table 20: Fields Available on the View Profile Element Edit Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Profile</td>
<td>Displays the name of the View Profile you are creating or modifying. This is not an editable field.</td>
</tr>
<tr>
<td>Element Type</td>
<td>Displays the type of DELTA List element. Valid types are ▶ APPLCTN ▶ TRANSACT ▶ DATABASE ▶ TERMINAL ▶ LTERM ▶ RTCODE ▶ SUBPOOL ▶ COMMAND ▶ DELTALST This is not an editable field.</td>
</tr>
<tr>
<td>Description</td>
<td>Type a description of the DELTA list element type. The default descriptions for each element type are ▶ APPLCTN - Define program directory entry ▶ TRANSACT - Define transaction code ▶ DATABASE - Define database directory entry ▶ TERMINAL - Define VTAM terminal ▶ LTERM - Define logical terminal ▶ RTCODE - Define Fast Path routing code ▶ SUBPOOL - Define VTAM LU 6.1 SUBPOOL ▶ COMMAND - Execute IMS operator command ▶ DELTALST - Include another DELTA list</td>
</tr>
<tr>
<td>Field Order</td>
<td>Specify the Field ID number of each field in the order you want the fields to appear on the DELTA List Element Edit panel.</td>
</tr>
<tr>
<td>Element Access</td>
<td>Indicate whether to prohibit users of this View Profile access to the element type or to allow edit access. Type 1 to allow edit access for the element type. Type 2 to prohibit access to the element type.</td>
</tr>
<tr>
<td>Marked for Execution</td>
<td>Type a / in this field to indicate that any element of this type that is in the DELTA List should be included when the DELTA List is processed. If this field is selected, by default, when an element of this type is added in a DELTA List it is automatically included in the execution of that DELTA List.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stop program before change</td>
<td>Type a / in this field to indicate the command should be executed, by default, for any element of this type when the DELTA List is processed.                                                                                       If this field is selected, by default, an element of this type in a DELTA List is stopped before the change for that element is executed. For example, it is advisable on a Revise DELTA action to stop the program before executing the Revise action.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> DELTA PLUS will internally issue the /DBR NOFEOV command for the DATABASE element, and /STO for all other applicable element types. If this process does not sufficiently address your requirements, additional COMMAND elements can be used.</td>
</tr>
<tr>
<td></td>
<td>Be aware when performing a FAST PATH database change, the /DBR command issued by DELTA PLUS will take an extended amount of time if the database contains many areas. This is not an anomaly. IMS processing of the /DBR command, not DELTA PLUS processing, causes the extended amount of time.</td>
</tr>
<tr>
<td>Start program after change</td>
<td>Type a / in this field to indicate the command should be executed, by default, for any element of this type when the DELTA List is processed.                                                                                       If this field is selected, by default, an element of this type in a DELTA List is /STArted after the change for that element is completed.</td>
</tr>
<tr>
<td>Force update when queue count &gt; 0</td>
<td>This field is valid only for the TRANSACTION element type. It will not appear on the panel for the other element types.                                                                                                 Type a / in this field to indicate the forcing of this change, by default, for any element of this type when the DELTA List is processed.</td>
</tr>
<tr>
<td></td>
<td>If this field is selected, by default, this option allows the desired change to any element of this type in the DELTA List even if the IMS queue count is greater than zero.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The Force option is ignored for requests that rename the transaction, revise the transaction from local to remote or vice versa, a conversational transaction where the SPA size is changed, or transactions that are changed to or from FAST PATH.</td>
</tr>
<tr>
<td>Command defaults</td>
<td>This field is valid only for the COMMAND element type. It will not appear on the panel for the other element types. Use this field to set the default value for when an IMS command should be executed in relation to the execution of the DELTA List in which the command element is included.</td>
</tr>
<tr>
<td></td>
<td>Type 1 to execute the command before DELTA List execution. Type 2 to execute the command after DELTA List execution.</td>
</tr>
</tbody>
</table>

8 Type a / in the selection field next to each element attribute for which you want to edit the default values. The View Profile Field Edit panel will display for the first element attribute field selected.

**Note**

The View Profile Field Edit panel displays different fields depending upon which element attribute field was selected for editing. All fields displayed on any View Profile Field Edit panel are listed in Table 21 on page 146.
9 Edit the following fields, as necessary:

Table 21: Fields Available on the View Profile Field Edit Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Profile</td>
<td>Displays the name of the View Profile you are creating or modifying. This is not an editable field.</td>
</tr>
<tr>
<td>Element Type</td>
<td>Displays the type of DELTA List element. Valid types are: &lt;br&gt; ■ APPLCTN &lt;br&gt; ■ TRANSACT &lt;br&gt; ■ DATABASE &lt;br&gt; ■ TERMINAL &lt;br&gt; ■ LTERM &lt;br&gt; ■ RTCODE &lt;br&gt; ■ SUBPOOL &lt;br&gt; ■ COMMAND &lt;br&gt; ■ DELTALST &lt;br&gt;This is not an editable field.</td>
</tr>
<tr>
<td>Field ID</td>
<td>The Field ID is a sequential ID number of each element attribute field that appears for the element type on the DELTA List Element Edit panel. This is not an editable field.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Displays the name of the element attribute field you are modifying. This is not an editable field.</td>
</tr>
<tr>
<td>Macro</td>
<td>Specify the corresponding IMS macro statement for this element attribute field.</td>
</tr>
<tr>
<td>Description</td>
<td>Type a user-defined description of this element attribute field.</td>
</tr>
<tr>
<td>Field access</td>
<td>Indicate whether to prohibit users of this View Profile access to this element attribute field, or to allow read-only or edit access. &lt;br&gt; Type 1 to allow edit access for this field. &lt;br&gt; Type 2 to allow read-only access for this field. &lt;br&gt; Type 3 to prohibit access to this field.</td>
</tr>
<tr>
<td>Default value</td>
<td>This field is not applicable to all element attribute fields. &lt;br&gt; Specify a default value for the element attribute field.</td>
</tr>
<tr>
<td>Select field for revise</td>
<td>This field is not applicable to all element attribute fields. &lt;br&gt; Type a / in this field to indicate this element attribute field should be selected for revise when an element of this type is added to a DELTA List with a DELTA action of REVISE. &lt;br&gt; If this field is selected, by default, this element attribute field will be selected for revise when an element of this type is added with a DELTA action of REVISE.</td>
</tr>
<tr>
<td>Comment</td>
<td>This field is applicable only to the comment element attribute fields. &lt;br&gt; Use this field to provide any miscellaneous comments about this element type or any of the element attribute fields.</td>
</tr>
</tbody>
</table>

Editing View Profiles
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Type any miscellaneous comments about this element attribute field.</td>
</tr>
</tbody>
</table>

10 Press F3.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You selected more than one element attribute field for editing.</td>
<td>The View Profile Field Edit panel is displayed for the next field. Repeat Step 9 on page 146 and Step 10 on page 147 until the View Profile Field Edit panel is displayed for the element type selected for editing. Go to Step 11 on page 147.</td>
</tr>
<tr>
<td>You selected only one element attribute field for editing.</td>
<td>The View Profile Field Edit panel is displayed for the element type selected for editing. Go to Step 11 on page 147.</td>
</tr>
</tbody>
</table>

11 Press F3.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You selected more than one element type for editing.</td>
<td>The View Profile Element Edit panel is displayed for the next element type. Repeat List item. on page 143 through Step 10 on page 147 until the View Profile Edit panel is displayed. Go to Step 12 on page 147.</td>
</tr>
<tr>
<td>You selected only one element type for editing.</td>
<td>The View Profile Edit panel is displayed. Go to Step 12 on page 147.</td>
</tr>
</tbody>
</table>

12 Save your changes.

   a  Press F3. The Confirm View Profile Save pop-up window is displayed.

   b  Type 1 in the selection field and press Enter. DELTA PLUS saves the View Profile.

   c  Press F3 twice (or three times if you are on the member selection list panel). The DELTA PLUS Main Menu is displayed.

Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a new View Profile.</td>
<td>See “Creating a New View Profile” on page 148.</td>
</tr>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>
Creating a New View Profile

There are two ways to create a new View Profile: use the DELTA PLUS defaults or copy the values for a new View Profile from an existing View Profile.

Using DELTA PLUS Defaults

Type the name of the new View Profile in the View Profile field on the View Profile Edit Entry panel and press Enter. The View Profile will be populated from internal DELTA PLUS defaults.

Using an Existing View Profile

Type the name of the new View Profile in the View Profile field on the View Profile Edit Entry panel and press Enter. Next, type COPY name on the Command line on the View Profile Edit panel where name is the name of the existing View Profile from which you want to copy the View Profile values. Press Enter. The new values will be copied from the existing View Profile.

Resetting to DELTA PLUS Defaults

To reset the values for the View Profile to the internal DELTA PLUS defaults, type DEFAULT on the Command line on the View Profile Edit panel. Press Enter. The View Profile will be populated from internal DELTA PLUS defaults.

Where to Go from Here

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocate new data set.</td>
<td>See “Allocating New DELTA PLUS Data Sets” on page 148.</td>
</tr>
</tbody>
</table>

Allocating New DELTA PLUS Data Sets

Use the DELTA PLUS Data Set Allocation Menu to allocate a new data set on a DASD device. DELTA PLUS data sets that can be allocated include the Log, History File, DELTA List library, DELTA PLUS Options library, View Profile library, Variable Definition library, report output, and User Access Profile data sets.
To Allocate a New DELTA PLUS Data Set

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 7 in the selection field and press Enter. The DELTA PLUS Data Set Allocation Menu is displayed.

3. Type the number corresponding to the type of data set you want to allocate in the selection field.

4. Type the name of the data set to be allocated in the Data set name field and press Enter.

The Allocate New data_set_type panel is displayed.

The panels accessed from the DELTA PLUS Data Set Allocation Menu will be named Allocate New data_set_type where data_set_type is

- DELTA List Library
- Options Library
- View Profile Library
- Variable Definition Library
- Log Data Set
- History File Data Set
- Report Output Data Set
- UPF Data Set

The IMS control region must have UPDATE authority for the DELTA PLUS Log and History File data sets.
During IMS control region initialization, the IMS DB/DC SYSGEN linkedit dates are written to the Log and History File control record (if required). The Log and History File SYSGEN dates are also updated following an online change MODBLKS GEN implementation.

All the possible fields on these panels are described in Table 22 on page 150. Edit the fields that apply to the type of data set you are allocating.

5 Edit the following fields, as necessary:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>data_set_type</em></td>
<td>Displays the name of the data set being allocated. This is not an editable field.</td>
</tr>
<tr>
<td>SMS Management Class</td>
<td>Specify the SMS Management class to be used for this DELTA PLUS data set allocation. This field is <em>not</em> required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>SMS Storage Class</td>
<td>Specify the SMS Storage class to be used for this DELTA PLUS data set allocation. This field is <em>not</em> required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>Volume serial</td>
<td>Specify the DASD volume serial (VOLSER) where this DELTA PLUS data set will be allocated.</td>
</tr>
<tr>
<td>Generic unit</td>
<td>Type the generic unit name to be used for data set allocation. Generic names (also referred to as esoteric) are given to groups, or pools of DASD volumes. Some common generic/esoteric names are SYSDA, SYSALLDA, and SCRATCH.</td>
</tr>
<tr>
<td>Space Units</td>
<td>Specify the space unit type to be used for data set allocation. Valid values are TRKS or CYLS.</td>
</tr>
<tr>
<td>Primary quantity</td>
<td>Specify the number of primary space units to be used for the DELTA PLUS data set allocation. The space unit type was previously specified on this panel.</td>
</tr>
<tr>
<td>Secondary quantity</td>
<td>Specify the number of secondary space units to be used for the DELTA PLUS data set allocation. The space unit type was previously specified on this panel.</td>
</tr>
<tr>
<td>Directory blocks</td>
<td>Specify the number of directory blocks to be provided for a partitioned data set. Specify zero for a sequential data set.</td>
</tr>
<tr>
<td>Block size</td>
<td>Specify the DASD block size to be used for the DELTA PLUS data set.</td>
</tr>
</tbody>
</table>

6 Press Enter. The DELTA PLUS Data Set Allocation Menu is displayed, and the data set is allocated.

7 Press F3 twice. The DELTA PLUS Main Menu is displayed.
Creating and Editing DELTA Lists

This chapter describes how to create and edit DELTA Lists using the DELTA PLUS TSO/ISPF panel interface.

What is a DELTA List?

A DELTA List is a collection of elements and the individual IMS change instructions for each element. A DELTA List tells DELTA PLUS how and which IMS resources to add, modify, or delete. A DELTA List can contain as little as one element, or many thousand elements. DELTA Lists may perform actions against the following IMS resources:

- APPLCTN
- TRANSACT
- DATABASE
- ROUTE CODES
- TERMINAL
- LTERM
- SUBPOOL

DELTA PLUS provides additional functionality to RELOAD a DMB (including DEDB randomizer) or ACB, execute IMS operator commands, and embed a DELTA List within a DELTA List.

Duplicate Elements in a DELTA List

When you create a DELTA List, no restrictions exist about the number of times a particular element may appear in the DELTA List. However, the existence of
duplicate elements in a DELTA List impacts performance when the DELTA List is
executed. If the DELTA List is executed in one-element-at-a-time mode, the existence
of duplicate elements requires the same resource to be modified multiple times. If
the DELTA List is executed in optimized mode, DELTA PLUS accumulates all the
indicated changes to the resource so a single action can be made for the resource.
The existence of duplicate elements does not impact the end result of the execution
of the DELTA List, regardless of the execution mode.

Auto-stop and Auto-start Feature

When you edit elements associated with IMS resources, the element contains
selection fields which indicate that the resource should be automatically stopped
before the change is made and/or automatically started after the change. When
applications, databases, transactions, or route codes are revised or deleted, the
resource must be in a stopped status or the change cannot be made. This action
ensures that the resource is quiesced. By selecting the auto-stop and auto-start fields,
you indicate that DELTA PLUS should issue the command necessary to stop the
resource before making the change and, if necessary, start the resource after making
the change. Table 23 on page 152 shows the commands that are issued as a result of
selecting these options for the different element types.

Table 23: Commands Issued for Auto-stop and Auto-start

<table>
<thead>
<tr>
<th>Element Type</th>
<th>Auto-stop</th>
<th>Auto-start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>/STO PROG</td>
<td>/STA PROG</td>
</tr>
<tr>
<td>Transaction</td>
<td>/STO TRAN</td>
<td>/STA TRAN</td>
</tr>
<tr>
<td>Database</td>
<td>/DBR DB a</td>
<td>/STA DB</td>
</tr>
<tr>
<td>Route Code</td>
<td>/STO RTCODE</td>
<td>/STA RTCODE</td>
</tr>
<tr>
<td>Terminal</td>
<td>/STO NODE</td>
<td>/STA NODE</td>
</tr>
<tr>
<td>LTERM</td>
<td>/STO LTERM</td>
<td>/STA LTERM</td>
</tr>
<tr>
<td>Subpool</td>
<td>/STO USER</td>
<td>/STA USER</td>
</tr>
</tbody>
</table>

1 DELTA PLUS includes NOFEOV in the /DBR command.

In most cases, these commands should be sufficient to quiesce the resources so they
can be changed. However, if these commands are not sufficient, additional
command elements can be included in the DELTA List to perform additional actions.
IMS Resource Modeling

DELTA PLUS provides the capability to add or revise a resource and to model it after another resource. You can use the Model after field for the element to specify the resource that should be used as the model. Data for any fields not specifically selected in the element will be copied from the model resource. The model specified must either currently exist, or there must be an ADD entry in the DELTA List for the model before it is used as a model for another element in the DELTA List.

Note
This feature is not available for terminals, LTERMs, or subpools.

Partial Revise

When you create an element that will revise an existing IMS resource, you selectively specify which attributes should be modified through the fields available on the DELTA List Element Edit panel. This feature is called a partial revise. Using partial revise, you can ensure that only those fields you want changed are actually changed. However, there are certain attribute fields for the application and transaction elements whose values must be specified in relation to each other. DELTA PLUS avoids IMS application parameter conflicts by prompting you to specify correct values for each of these fields when you are editing a revise element.

Command Elements and DELTA List Execution

One of the element types that may be included in a DELTA List is a command element. Command elements are used to issue IMS commands during the execution of a DELTA List. Command elements are skipped when performing a Check of the DELTA List.

Most IMS commands are supported through DELTA Lists as well as /DISPLAY commands. However, for performance reasons, output from /DISPLAY commands is limited to the first 50 lines. When creating a command element, you can specify that the command be executed as a before or after command. This option relates only to a DELTA List when executed in optimized mode.

A before command element is executed prior to making any changes to the IMS resources as indicated in the DELTA List. An after command element is executed once the IMS resources have been changed. The most common use for before commands is to issue commands to stop resources so that the system can be quiesced and the changes in the DELTA List can be made successfully. The after commands can then issue the commands necessary to open the system back up and make the resources available once again. When executing a DELTA List in one-
element-at-a-time mode, since each element is processed individually, before and after have no meaning.

When a command is issued, the only way to tell if the command was successful or not is to review the message that is returned. For this reason, DELTA PLUS cannot tell whether a command that was issued worked or failed. When executing a dependent DELTA List, DELTA PLUS does not consider command elements when determining if errors have occurred. It is possible; therefore, for an IMS command in the command element to technically fail, but DELTA PLUS will not stop the execution of the DELTA List unless a non-command element encounters an error.

**DELTA List Edit**

DELTA Lists are members of a partitioned data set. The individual IMS change instructions are written as records in a DELTA List member. A DELTA List may contain entries for the following element types:

- databases
- applications
- selected IMS operator commands
- reload requests for program and database directories
- transactions
- route codes
- IMSGEN-defined terminals
- IMSGEN-defined LTERMs
- IMSGEN-defined subpools
- DELTA Lists

You can specify the following actions in the DELTA List entries for the IMS elements:

- ADD
- ADD/REVISE
- REVISE
- DELETE
You maintain DELTA List elements with commands with similar syntax and use as those of TSO/ISPF Edit.

When a DELTA List is executed, DELTA PLUS makes the changes specified in the DELTA List to the target IMS control regions. DELTA PLUS makes changes to IMS by processing each element in the DELTA List and making the necessary changes. If you want to test a DELTA List before executing it, you can use the Check feature. See “Using DELTA List Check and Execute” on page 257 for more information about checking and executing DELTA Lists.

Check and execute can also be performed in a batch mode using a special batch command language. See the DLPCNTL data set for the control members which can be used in batch.

DELTA Lists have no required association with a specific IMS control region (IMSID). A DELTA List may be applied to any, or all, IMSIDs. However, a limiting IMSID may be used, if required. This allows a specific element to be executed on a particular IMS control region. The limiting IMSID can be very useful when you execute a DELTA List against more than one IMS system, but there are elements which relate to only one of the systems.

Creating and Editing DELTA Lists

DELTA Lists can be used in a variety of ways. Some customers use the same DELTA Lists over-and-over for different purposes while other customers use a different DELTA List for each element changed. Whichever approach you take to using DELTA Lists, BMC Software recommends that you identify each DELTA List by its contents and retain the DELTA Lists until the changes are made permanent by the next IMSGEN. After changes are implemented via an IMSGEN, the executed DELTA Lists are no longer needed.

DELTA List Edit and DELTA List Element Edit Panels

You will use the DELTA List Edit and DELTA List Element Edit panels to create and edit your DELTA Lists. The DELTA List Edit panels contains line action codes that allow you to insert DELTA List elements and manipulate their order within the DELTA List. You can also set and view other options for the DELTA List on the DELTA List Edit panel.

By typing the S action code next to a DELTA List element, you can select that DELTA List element for detailed editing. The DELTA List Element Edit panel is
displayed for the DELTA List element. You can set and view the attributes associated with that particular DELTA List element.

If you use the DBCTL CLIST (DTDCI@00) to invoke the DELTA PLUS interface, your panels may differ from the view of the panels in this manual.

The panels in this manual were invoked through the DELTA PLUS CLIST (DLPCI@00) with the DELTA PLUS default View Profile.

The DELTA PLUS product view includes DELTA List options that apply to DELTA PLUS for DBCTL. DELTA Lists that include elements common to both IMS control and DBCTL regions can be executed against either type of control region. During execution of a DELTA List against a DBCTL or DCCTL region, DELTA List elements that are not applicable to DBCTL or DCCTL are ignored.

Commands Available in DELTA List Edit

Two types of commands are provided for editing DELTA Lists. These commands and the DELTA List Edit session are very much like the ISPF Edit commands and session. There are primary commands and action codes available with DELTA List Edit. Primary commands are typed on the **Command** line and work at the member level. Action codes are typed in the **Actn** field and work at the DELTA List element level.

**Primary Commands**

You can type the following primary commands on the Edit DELTA List panel **Command** line:

**ALTVIEW**

The **ALTVIEW** command toggles the current display to an alternate view.

**CANCEL**

The **CANCEL** command terminates the edit session without saving the DELTA List. Any errors on the current panel are ignored, and all DELTA List changes since the last save are lost.

**CHANGE**

The **CHANGE** command finds and changes field values for elements meeting specified criteria. The DELTA PLUS **CHANGE** command functions the same as the ISPF **CHANGE** command.
CHECK

The CHECK command checks (executes with no IMS updates) the DELTA List being edited for possible execution errors.

COPY

The COPY command copies one DELTA List into another DELTA List that is being edited. The format of the command is COPY listname, where listname is the name of the DELTA List to be copied. If the DELTA List being edited is empty, a line command is not necessary. However, if the DELTA List being edited is not empty, the AFTER (A) or BEFORE (B) line command is required to specify where to insert the copied list.

EDIT

The EDIT command invokes the DELTA List Edit on another DELTA List. When you terminate editing of that DELTA List, you return to the current DELTA List.

END

The END command terminates the edit session and saves the changes if you have not specified that you want to confirm all save actions. Otherwise, it displays the Confirm Save pop-up window. Any pending line commands are ignored if END is entered. Although you can exit from DELTA List Edit without correcting check conditions in value fields, this action should not become a standard practice.

EXCLUDE

The EXCLUDE command excludes from view the elements meeting specified criteria.

EXECUTE

The EXECUTE command executes the DELTA List currently being edited.

FIND

The FIND command searches for a desired DELTA List element value. The DELTA PLUS FIND command functions the same as the ISPF FIND command.

INSERT [C | E]

The INSERT command inserts a new element at the end of the DELTA List. The optional parameters C and E allow you to indicate whether you want to use the Copy Element from IMS panel to copy one or more elements from an IMS control region into the DELTA List or the Insert Single Element panel to
insert an original new element into the DELTA List. If you do not specify C or E, you will be prompted for the type of element insertion you want to use.

**MARK ALL**

The **MARK ALL** command marks all the elements in the DELTA List for execution.

**NOTES**

The **NOTES** command displays the Notes for the DELTA List.

**OPEN**

The **OPEN** command functions the same as the **EDIT** command. It invokes the DELTA List Edit on another DELTA List. When you terminate editing of that DELTA List, you return to the current DELTA List.

**OPTIONS**

The **OPTIONS** command displays the options for the DELTA List. Options include restricting IMSIDs and the Dependent indicator.

**PROFILE**

The **PROFILE** command changes the View Profile currently in use.

**RCHNG**

The **RCHNG** command finds and changes field values for the next element meeting the specified criteria in a previous **CHANGE** command.

**RESET**

The **RESET** command resets the current display by including all excluded elements and clearing the Found/Changed indicator.

**RFND**

The **RFND** command finds the next element meeting the specified criteria in a previous **FIND**, **CHANGE**, or **EXCLUDE** command.

**SAVE**

The **SAVE** command saves the updated DELTA List without terminating the edit session.

**SORT arg**

The **SORT** command sorts the display of the elements. The optional parameter **arg** can be used to specify one or two sort fields. If one sort field is
specified, then it can optionally be followed by a sort direction of **ASCENDING** or **DESCENDING**. If two sort fields are specified, then the second sort field can be, and the first sort field must be, followed by a sort direction. Possible sort fields are

- **INSERT_ORDER** or **INSERT**
- **MARK**
- **ELEMENT_TYPE** or **TYPE**
- **ELEMENT_NAME** or **NAME**
- **DELTA_ACTION** or **ACTION**
- **RENAME**
- **MODEL_AFTER** or **MODEL** or **MASK**
- **IMSID**
- **FND/CHG** or **FND** or **CHG**
- **DATA_CHECK**
- **NOTES**

**UNMARK ALL**

The **UNMARK ALL** command unmarks, or clears the mark for, all the marked elements in the DELTA List.

**Action Codes**

Action codes are typed on the line numbers of the DELTA List in a fashion similar to TSO/ISPF edit line commands. These codes typically are abbreviated to the first letter of the command. For example, **AFTER** is entered as **A**. The action codes are described in the following list:

**(A) AFTER**

The **AFTER** action code indicates an element after which a copy or move will occur. You can also specify this action code as **An**, which repeats a copy n times.

**(B) BEFORE**

The **BEFORE** action code indicates an element before which a copy or move will occur. You can also specify this action code as **Bn**, which repeats a copy n times.

**(C) COPY**

The **COPY** action code copies a single element before or after another element in the DELTA List. You can also specify this action code as **Cn**, which copies n elements, beginning at the line where the action code was entered.
You can specify a range to copy using the CC variant of the action code; type a beginning and an ending CC to define the range.

(CK) CHECK

The CHECK action code checks (executes with no IMS updates) a single element for possible execution errors.

(D) DELETE

The DELETE action code deletes an element from a DELTA List. You can also specify this action code as Dn, which deletes n number of elements, beginning at the point which the action code was entered. You can specify a range to be deleted using the DD variant of the action code; type a beginning and an ending DD to define the range.

(E) EDIT DELTA LIST

The EDIT DELTA LIST action code is used only to select an embedded DELTA List from a DELTA List for editing.

(EX) EXECUTE

The EXECUTE action code executes a single element.

(I) INSERT

The INSERT action code displays the Insert Element Options pop-up window where you can specify whether you want to insert a single element or copy one or more elements from IMS into the DELTA List. This action code has no variant (n or II).

(IC) INSERT COPY

The INSERT COPY action code displays the Copy Element from IMS pop-up window where you can copy one or more elements from IMS into the DELTA List. This action code has no variant (n or II).

(IE) INSERT ELEMENT

The INSERT ELEMENT action code displays the Insert Single Element pop-up window where you can insert a single element into the DELTA List. This action code has no variant (n or II).

(K) MARK

The MARK action code is used to identify an element that is eligible to be executed. You can also specify the K action code as Kn which marks n elements, beginning at the line where the action code was entered. You can specify a range to mark using the KK variant of the action code; type a beginning and an ending KK to define the range.
(M) MOVE

The MOVE action code moves a single element before or after another element in the DELTA List. You can also specify the M action code as M n which moves n elements, beginning at the line where the action code was entered. You can specify a range to move using the MM variant of the action code; type a beginning and an ending MM to define the range.

(R) REPEAT

The REPEAT action code repeats an element in a DELTA List. You can also specify this action code as R n, which repeats an element n times. You specify a range to be repeated using the RR variant of the action code; type a beginning and an ending RR to define the range. You can repeat a range n times by specifying the beginning or ending RR command as RR n.

(S) DETAIL

The DETAIL action code displays the DELTA List Element Edit panel for an element in the DELTA List. The DELTA List Element Edit panel displays detailed information and fields for the element.

(U) UNMARK

The UNMARK action code is used to deselect, or unmark, an element in the DELTA List for execution. You can also specify the U action code as U n which unmarks n elements, beginning at the line where the action code was entered. You can specify a range to unmark using the UU variant of the action code; type a beginning and an ending UU to define the range.

(X) EXCLUDE

The EXCLUDE action code excludes an element from view. You can also specify the X action code as X n which excludes n elements, beginning at the line where the action code was entered. You specify a range to be suppressed using the XX variant of the action code; type a beginning and an ending XX to define the range.

Beginning an Edit Session

You access the panels to begin a DELTA List edit session from the DELTA PLUS Main Menu panel. You can create or edit a DELTA List with a DELTA List edit session. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.
Before you begin

A DELTA List can be created with DELTA List Edit, or it can be generated in batch. This chapter describes how DELTA Lists are created using DELTA List Edit. To find out how to generate a DELTA List in batch, see “Generating a DELTA List in Batch” on page 373.

To Begin a DELTA List Edit Session

1  Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

Menu  Options  Help
-------------------------------------------------------------------------------
DELTA PLUS                DELTA List Edit/Execute Entry
Command ===> _________________________________________________________________
Choose a selection.
  1. Edit a DELTA List
  2. Check/Execute a DELTA List

Specify DELTA List information:
  DELTA List library    . . . 'yyy.DLP.DELTAPDS'
  DELTA List            ________ (blank for selection list)
  View Profile         . . . . . . . . DEFAULT

F1=Help    F3=Exit   F12=Cancel

2  Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.
## Creating and Editing DELTA Lists

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

   For information on allocating this data set, see "Allocating New DELTA PLUS Data Sets" on page 148.

4. **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

   **Note**

   When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

   For information on allocating this data set, see "Allocating New DELTA PLUS Data Sets" on page 148.

5. Press **Enter**.
Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>select a DELTA List for editing from a member selection list</td>
<td>See “Selecting a DELTA List to Edit” on page 164 for instructions.</td>
</tr>
<tr>
<td>perform edit actions, other than inserting, on a DELTA List</td>
<td>See “Editing a DELTA List” on page 166 for instructions.</td>
</tr>
<tr>
<td>insert DELTA List elements</td>
<td>See “Inserting a DELTA List Element” on page 184 for instructions.</td>
</tr>
</tbody>
</table>

Selecting a DELTA List to Edit

The member selection list (see the following figure) is the first panel accessed with option 1 if the DELTA List field on the DELTA List Edit/Execute Entry panel is blank or contains a masking pattern.

If the DELTA List field was blank, it presents a scrollable selection list of all DELTA Lists in the DELTA PLUS PDS. If the DELTA List field contained a masking pattern, it presents a selection list of all DELTA Lists that matched the masking pattern. All entries on this panel display the member name and a brief history for each member.

Figure 9: Member Selection List

Menu Functions Utilities Help
---------------------------------------------
EDIT GCB.DLP.DELTAPDS                      Row 00001 of 00029
Command ===>                                  Scroll ===> PAGE
Name       VV MM Created   Changed      Size Init Mod ID
#SAMPLST   01.00 98/10/20 98/10/20 10:17     3    3    0 RIHGCB2
Table 24: Fields Available on the Member Selection List

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>contains the DELTA PLUS PDS member name for each DELTA List</td>
</tr>
<tr>
<td>VV MM</td>
<td>indicates the version number and modification of each DELTA List member</td>
</tr>
<tr>
<td>Created</td>
<td>identifies the creation date of each DELTA List</td>
</tr>
<tr>
<td>Changed</td>
<td>identifies the date and time of the last update of each DELTA List</td>
</tr>
<tr>
<td>Size</td>
<td>indicates the current number of lines, or size, of each DELTA List</td>
</tr>
<tr>
<td>Init</td>
<td>indicates the initial number of lines, or size, of each DELTA List</td>
</tr>
<tr>
<td>Mod</td>
<td>identifies the number of times each DELTA List has been modified</td>
</tr>
<tr>
<td>ID</td>
<td>identifies the individual responsible for either the creation or the last update of each DELTA List</td>
</tr>
</tbody>
</table>

To Select a DELTA List to Edit

1. Type a / next to one of the DELTA PLUS PDS member names listed on the panel.

2. Press Enter to select the DELTA list for editing.

Where to go from here

Perform either of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform edit actions, other than</td>
<td>See “Editing a DELTA List” on page 166 for instructions.</td>
</tr>
<tr>
<td>inserting, on a DELTA List</td>
<td></td>
</tr>
<tr>
<td>insert DELTA List elements</td>
<td>See “Inserting a DELTA List Element” on page 184 for</td>
</tr>
<tr>
<td></td>
<td>instructions.</td>
</tr>
</tbody>
</table>
Editing a DELTA List

The DELTA List Edit panel is the main panel for a DELTA List edit session. From this panel, you can insert, delete, copy, and move elements and nested DELTA Lists within a DELTA List.

You can also mark elements for execution, add notes for the DELTA List, and view details about each element in the DELTA List.

Before you begin

This task describes the edit actions, other than inserting, you can perform on a DELTA List. If you want to insert elements in a DELTA List, use the I action code on this panel to display further element insertion menus. See “Inserting DELTA List Elements” on page 173 for more task instructions.

To Edit a DELTA List

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
</tbody>
</table>
3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

4 **View Profile** — Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a `/` next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.
Table 25: Fields Available on the DELTA List Edit Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA List</td>
<td>contains the DELTA PLUS PDS member name for the DELTA List</td>
</tr>
<tr>
<td>Title</td>
<td>An optional descriptive title of up to 30 characters can be entered in the Title field. The Title field enables you to provide a description for each DELTA List as an aid in DELTA List management. With ISPF Version 2.3 or later, double-byte character set (DBCS) capable terminals (such as the IBM 5550) can edit the Title field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sorted by</td>
<td>indicates the order by which the elements in the DELTA List are sorted. The following sort orders are available:</td>
</tr>
<tr>
<td></td>
<td>- INSERT_ORDER - Elements are sorted by the order in which they were inserted in the DELTA List.</td>
</tr>
<tr>
<td></td>
<td>- MARK - Elements are sorted with unmarked elements occurring before the marked elements.</td>
</tr>
<tr>
<td></td>
<td>- ELEMENT_TYPE - Elements are sorted by element type.</td>
</tr>
<tr>
<td></td>
<td>- ELEMENT_NAME - Elements are sorted by element name.</td>
</tr>
<tr>
<td></td>
<td>- DELTA_ACTION - Elements are sorted by DELTA action.</td>
</tr>
<tr>
<td></td>
<td>- RENAME - Elements are sorted by the name in the Rename field.</td>
</tr>
<tr>
<td></td>
<td>- MODEL/MASK - Elements are sorted by the value in the Model/Mask field.</td>
</tr>
<tr>
<td></td>
<td>- LIMITING_IMSID - Elements are sorted by the value in the Limiting IMSID field.</td>
</tr>
<tr>
<td></td>
<td>- FND/CHG - Elements are sorted by the value in the Fnd/Chg field.</td>
</tr>
<tr>
<td></td>
<td>- DATA_CHECK - Elements are sorted first by INSERT_ORDER and then by the value in the Data Check field.</td>
</tr>
<tr>
<td></td>
<td>- NOTES - Elements are sorted first by whether or not notes exist for the element and then by INSERT_ORDER.</td>
</tr>
</tbody>
</table>

You can change the sort order by moving the cursor to the Sort menu on the action bar and pressing Enter, or by typing the SORT command on the Command line. Select the appropriate sort option.

The sort order determines which action codes are available. The INSERT_ORDER sort order must be used for the I(Insert), C(Copy), M(Move), A(After), B(Before), and O(Overlay) action codes to be available.

<table>
<thead>
<tr>
<th>Excluded</th>
<th>indicates the number of elements excluded from view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked</td>
<td>indicates the number of elements marked for execution. Elements not marked for execution can be bypassed at execution time by using the option Execute Marked elements only on the DELTA List Execution panel.</td>
</tr>
<tr>
<td>DELTA List is dependent</td>
<td>A mark in this field designates the DELTA List and the changes contained in it as dependent. This designation ensures that all the changes must complete successfully for all the elements in the DELTA List on the target IMS system or none of the changes are applied.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Variable Definition Set</td>
<td>Specify the name of the member (the Variable Definition Set) in the Variable Definition Library that contains the variable definitions for this DELTA List. The Variable Definition Sets are members that contain the definitions for the symbolic variables used by DELTA PLUS in DELTA List processing. To specify a default Variable Definition Set that will automatically be inserted into this field each time you edit a new DELTA List, enter the PREF command. Note: This value can be overridden at DELTA List execution time.</td>
</tr>
</tbody>
</table>
| Actn                             | Type one of the following action codes in this field next to one or more of the elements listed on the panel:  
  - A - After (only available when the INSERT_ORDER sort order is used)  
  - B - Before (only available when the INSERT_ORDER sort order is used)  
  - C - Copy (only available when the INSERT_ORDER sort order is used)  
  - D - Delete  
  - E - Edit the DELTA List  
  - I - Insert (only available when the INSERT_ORDER sort order is used)  
  - K - Mark  
  - M - Move (only available when the INSERT_ORDER sort order is used)  
  - O - Overlay (only available when the INSERT_ORDER sort order is used)  
  - R - Repeat  
  - S - Detail  
  - U - Unmark  
  - X - Exclude  
These actions are performed for the element in relation to the DELTA List. See Step 7 on page 172 for more instructions on using this field.                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mk                               | A / in this field indicates that the element is marked for execution. You can also select this option while editing an individual element. An asterisk in this field indicates that the element is a comment element. The remaining fields in the row contain the comment text.                                                                                                                                                                                                                                                                                                                                                                                                 |

170  *DELTA PLUS User Guide*
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element Type</td>
<td>identifies the type of the IMS system resource element in the DELTA List. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ APPLCTN - application programs that run under the control of the IMS DB/DC environment</td>
</tr>
<tr>
<td></td>
<td>■ TRANSACT - IMS exclusive, IMS Fast Path potential, or IMS Fast Path exclusive transactions</td>
</tr>
<tr>
<td></td>
<td>■ DATABASE - a physical database that IMS manages</td>
</tr>
<tr>
<td></td>
<td>■ RTCODE - route codes</td>
</tr>
<tr>
<td></td>
<td>■ TERMINAL - IMSGEN-defined terminals</td>
</tr>
<tr>
<td></td>
<td>■ LTERM - IMSGEN-defined LTERMs</td>
</tr>
<tr>
<td></td>
<td>■ SUBPOOL - IMSGEN-defined subpools</td>
</tr>
<tr>
<td></td>
<td>■ COMMAND - selected IMS operator commands</td>
</tr>
<tr>
<td></td>
<td>■ DELTALST - a DELTA List nested, or embedded, in the parent DELTA List</td>
</tr>
<tr>
<td></td>
<td>■ COMMENT - user comments</td>
</tr>
<tr>
<td>Element Name</td>
<td>identifies the name of the IMS system resource element in the DELTA List</td>
</tr>
<tr>
<td>DELTA Action</td>
<td>identifies the DELTA Action that should be taken against the associated IMS system resource element. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ ADD</td>
</tr>
<tr>
<td></td>
<td>■ ADD/REVISE</td>
</tr>
<tr>
<td></td>
<td>■ REVISE</td>
</tr>
<tr>
<td></td>
<td>■ DELETE</td>
</tr>
<tr>
<td></td>
<td>■ RELOAD</td>
</tr>
<tr>
<td>Rename</td>
<td>identifies the new name to which the specified element should be renamed in IMS</td>
</tr>
<tr>
<td>Model/Mask</td>
<td>identifies the name of the existing element on which you want to base, or model, the selected element</td>
</tr>
<tr>
<td>Limiting IMSID</td>
<td>specifies an IMSID that is used to restrict the target IMSID for a DELTA List Check or Execute. When specified, a DELTA List Check or Execute will only be allowed for IMSIDs that match this mask.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Fnd/Chg</td>
<td>indicates whether the element was found with the FIND command or was changed with the CHANGE command.</td>
</tr>
<tr>
<td>Data Check</td>
<td>indicates if the element contains data errors. An element with errors cannot be executed.</td>
</tr>
</tbody>
</table>

7 Decide which edit action you want to perform. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy an element within the DELTA List</td>
<td>Type the C action code in the Actn field next to the element that you want to copy. Use the A(after) and B(before) action codes to indicate where in the DELTA List you want the selected element to be copied. Type the A(after) or B(before) action code in the Actn field next to the element where you want the selected element to be copied before or after in the DELTA List. Press Enter. The C, A, and B action codes are only available when the INSERT_ORDER sort order is used.</td>
</tr>
<tr>
<td>Delete an element from the DELTA List</td>
<td>Type the D action code in the Actn field next to the element and press Enter. DELTA PLUS delete element requests can be included in a DELTA List for databases, applications, transactions, and route codes only. When DELTA PLUS is used to delete one of these IMS elements, it does not physically remove the control block from IMS storage; instead, it sets a delete bit on in the control block, thereby making it unavailable for use. The element cannot be displayed or used with IMS; however, it remains in virtual storage. Subsequent attempts to delete these already deleted elements are ignored, no error message is generated, and delete processing continues.</td>
</tr>
<tr>
<td>Edit a DELTA List nested within the DELTA List</td>
<td>Type the E action code in the Actn field next to the DELTA List and press Enter.</td>
</tr>
<tr>
<td>Insert an element in the DELTA List</td>
<td>Type the I action code in the Actn field next to the element and press Enter. See “Inserting a DELTA List Element” on page 184 for more instructions. The I action code is only available when the INSERT_ORDER sort order is used.</td>
</tr>
<tr>
<td>Mark an element for execution</td>
<td>Type the K action code in the Actn field next to the element and press Enter.</td>
</tr>
</tbody>
</table>
## Inserting DELTA List Elements

Although you can copy, revise, and then add existing elements, the DELTA List Edit options described in the following pages assume you are inserting a new element.

If you use the DBCTL CLIST (DTDCI@00) to invoke the DELTA PLUS interface, your panels may differ from the view of the panels in this manual.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move an element within the DELTA List</td>
<td>Type the <strong>M</strong> action code in the <strong>Actn</strong> field next to the element that you want to move. Use the <strong>A</strong>(after) and <strong>B</strong>(before) action codes to indicate where in the DELTA List you want the selected element to be moved. Type the <strong>A</strong>(after) or <strong>B</strong>(before) action code in the <strong>Actn</strong> field next to the element where you want the selected element to be moved before or after in the DELTA List. Press <strong>Enter</strong>. The <strong>M</strong>, <strong>A</strong>, and <strong>B</strong> action codes are only available when the INSERT_ORDER sort order is used.</td>
</tr>
<tr>
<td>Overlay another element in the DELTA List</td>
<td>Type the <strong>O</strong> action code in the <strong>Actn</strong> field next to the element that you want replaced. Type the <strong>C</strong> action code in the <strong>Actn</strong> field next to the element that you want to replace the other element. Press <strong>Enter</strong>. The <strong>O</strong> and <strong>C</strong> action codes are only available when the INSERT_ORDER sort order is used.</td>
</tr>
<tr>
<td>Repeat an element within the DELTA List</td>
<td>Type the <strong>R</strong> action code in the <strong>Actn</strong> field next to the element and press <strong>Enter</strong>.</td>
</tr>
<tr>
<td>View the details for an element</td>
<td>Type the <strong>S</strong> action code in the <strong>Actn</strong> field next to the element and press <strong>Enter</strong>.</td>
</tr>
<tr>
<td>Unmark an element for execution</td>
<td>Type the <strong>U</strong> action code in the <strong>Actn</strong> field next to the element and press <strong>Enter</strong>.</td>
</tr>
<tr>
<td>Exclude an element and its associated DELTA Action from processing when the DELTA List is executed</td>
<td>Type the <strong>X</strong> action code in the <strong>Actn</strong> field next to the element and press <strong>Enter</strong>.</td>
</tr>
</tbody>
</table>
The panels in this manual were invoked through the DELTA PLUS CLIST (DLPCI@00) with the DELTA PLUS default View Profile. If you are in the DBCTL product view, the TRANSACT, RTCODE, TERMINAL, LTERM, and SUBPOOL elements will not be available for insertion.

The DELTA PLUS product view includes DELTA List options that apply to DELTA PLUS for DBCTL. DELTA Lists that include elements common to both IMS control and DBCTL regions can be executed against either type of control region. During execution of a DELTA List against a DBCTL or DCCTL region, DELTA List elements that are not applicable to DBCTL or DCCTL are ignored.

See the following sections for instructions on inserting elements into a DELTA List:

- “Inserting an Application Element” on page 174
- “Inserting a Database Element” on page 178
- “Inserting a Command Element” on page 181
- “Inserting a DELTA List Element” on page 184
- “Inserting a Comment Element” on page 187
- “Inserting a Transaction Element” on page 190 (not available for DBCTL)
- “Inserting a Route Code Element” on page 193 (not available for DBCTL)
- “Inserting a Terminal Element” on page 197 (not available for DBCTL)
- “Inserting an LTERM Element” on page 200 (not available for DBCTL)
- “Inserting a Subpool Element” on page 203 (not available for DBCTL)

Inserting an Application Element

If the application option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a PSB to an online IMS system.
To Insert an Application Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
</tbody>
</table>
Activity | Action
---|---
choose an existing DELTA List for editing | Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 View Profile — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**
When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type 1 in the Actn field and press Enter. The Insert Element Options pop-up window is displayed.

8 Type 1 in the selection field and press Enter. The Insert Single Element pop-up window is displayed.
9 Type 1 in the **Element type** selection field.

10 Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the **DELTA action** selection field. Possible values are

- **ADD**
- **REVISE**
- **ADD/REVISE**
- **DELETE**
- **RELOAD**
- **EXECUTE**

12 Optional. You can type a / in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:
### Inserting a Database Element

If the database option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a database to an online IMS system.

After executing a DELTA List to add or revise a database, you must define the database in ACBLIB, and establish the dynamic allocation member, if needed.
Before you begin

Define the database to the appropriate ACB libraries by running a DBDGEN and an
ACBGEN. If DELTA PLUS cannot find the necessary control blocks in the active
ACB library, a warning message will be issued when the element is executed and the
database will be set to NOTINIT.

To Insert a Database Element

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter.
The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to create a new DELTA List, edit a specific existing DELTA
List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>List</td>
<td></td>
</tr>
<tr>
<td>choose an existing DELTA List</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
<tr>
<td>for editing</td>
<td></td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or
where you want the new DELTA List placed, in the DELTA List library field.

4 View Profile —Type the name of the View Profile in the View Profile field;
otherwise, accept the default View Profile.

   Note

When UPF security is in effect, this field will be labeled IMSID or Group. Enter
the IMSID or Group for which you intend to execute the DELTA List. The view
profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL
TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the
applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in
the Global Options.

5 Press Enter.
### Inserting DELTA List Elements

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to edit by typing a `/` next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7. Type **I** in the **Actn** field and press **Enter**. The Insert Element Options pop-up window is displayed.

8. Type **1** in the selection field and press **Enter**. The Insert Single Element pop-up window is displayed.

9. Type **3** in the **Element type** selection field.

10. Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11. Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the **DELTA action** selection field. Possible values are:
   - ADD
   - REVISE
   - ADD/REVISE
   - DELETE
   - RELOAD
   - EXECUTE

12. Optional. You can type a `/` in the selection field next to one or more of the following options:
   - Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Inserting a Command Element**

If the command option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry causes DELTA PLUS to issue the IMS command to the IMS control region at execution time.
To Insert a Command Element

1. Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
</tbody>
</table>
3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

4 *View Profile* —Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type 1 in the **Actn** field and press **Enter**. The Insert Element Options pop-up window is displayed.

8 Type 1 in the selection field and press **Enter**. The Insert Single Element pop-up window is displayed.

9 Type 8 in the **Element type** selection field.
10 Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type 6 in the **DELTA action** selection field.

12 Optional. You can type a / in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Inserting a DELTA List Element**

If the DELTALST option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry causes DELTA PLUS to process the nested, or embedded, DELTA List at execution time.
To Insert a DELTA List Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>DELTA List</td>
<td></td>
</tr>
</tbody>
</table>
3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

4 **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type 1 in the **Actn** field and press **Enter**. The Insert Element Options pop-up window is displayed.

8 Type 1 in the selection field and press **Enter**. The Insert Single Element pop-up window is displayed.

9 Type 9 in the **Element type** selection field.
10 Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type 6 in the **DELTA action** selection field.

12 Optional. You can type a `/` in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Inserting a Comment Element**

If the comment option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts a user comment entry. This entry enables the user to insert comments in the DELTA List.
To Insert a Comment Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
</tbody>
</table>
Activity | Action
--- | ---
edit a specific existing DELTA List | Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.
choose an existing DELTA List for editing | Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

--- Note ---
When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type 1 in the Actn field and press Enter. The Insert Element Options pop-up window is displayed.

8 Type 1 in the selection field and press Enter. The Insert Single Element pop-up window is displayed.

9 Type 10 in the Element type selection field.
10 Type the comment text in the **Element name** field.

11 Leave the **DELTA action** selection field blank.

12 Optional. You can type a `/` in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)

- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Inserting a Transaction Element**

If the transaction option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a transaction to an online IMS system.
To Insert a Transaction Element

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
</tbody>
</table>
### Activity | Action
--- | ---
choose an existing DELTA List for editing | Type 1 in the selection field and leave the **DELTA List** field blank or type a masking pattern in the **DELTA List** field.

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

4. **View Profile** — Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT*nn* for DELTA PLUS VIRTUAL TERMINAL or DDCKWT*nn* for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to edit by typing a `/` next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7. Type 1 in the **Actn** field and press **Enter**. The Insert Element Options pop-up window is displayed.

8. Type 1 in the selection field and press **Enter**. The Insert Single Element pop-up window is displayed.

9. Type 2 in the **Element type** selection field.
10 Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the **DELTA action** selection field. Possible values are

- ADD
- REVISE
- ADD/REVISE
- DELETE
- RELOAD
- EXECUTE

12 Optional. You can type a / in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press Enter.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Inserting a Route Code Element**

If the route code option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a Fast Path route code (RTCODE) to an online IMS system. The Fast Path feature must be present in the IMS system.
When a new RTCODE element is added to a PSB by DELTA PLUS, all IFP regions for the corresponding PSB must be stopped at the same time. The PDIRBALG in the master PDIR is then reset so that the BALG for the PSB may be rebuilt to incorporate the newly added route code when the IFPs are restarted. Otherwise, the new route code will not schedule, and error message DFS2533 will be generated.

To Insert a Route Code Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 **View Profile**—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   **Note**
   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/next to one of the DELTA PLUS PDS member names listed on the panel and pressing 1. The DELTA List Edit panel is displayed.

7 Type 1 in the Actn field and press **Enter**. The Insert Element Options pop-up window is displayed.
8 Type 1 in the selection field and press Enter. The Insert Single Element pop-up window is displayed.

9 Type 4 in the Element type selection field.

10 Type the name of the IMS system resource element to be inserted in the DELTA List in the Element name field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the DELTA action selection field. Possible values are
   - ADD
   - REVISE
   - ADD/REVISE
   - DELETE
   - RELOAD
   - EXECUTE

12 Optional. You can type a / in the selection field next to one or more of the following options:
   - Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
   - Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press Enter.

Where to go from here

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>
Inserting a Terminal Element

If the terminal option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a VTAM terminal to an online IMS system.

Before you begin

Before a terminal element is added, valid spare elements must exist in the IMGEN. Terminals are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.

To Insert a Terminal Element

1  Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.
2 Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the **DELTA List library** field.

4 **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

---

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT*nn* for DELTA PLUS VIRTUAL TERMINAL or DDCKWT*nn* for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.
7 Type I in the Actn field and press Enter. The Insert Element Options pop-up window is displayed.

8 Type 1 in the selection field and press Enter. The Insert Single Element pop-up window is displayed.

9 Type 5 in the Element type selection field.

10 Type the name of the IMS system resource element to be inserted in the DELTA List in the Element name field. A unique TERMINAL node name is required. Virtual terminals cannot be renamed. The naming conventions are the same as for an IMMSGEN.

11 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the DELTA action selection field. Possible values are

- ADD
- REVISE
- ADD/REVISE
- DELETE
- RELOAD
- EXECUTE

12 Optional. You can type a / in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press Enter.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>
Inserting an LTERM Element

If the LTERM option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a logical terminal to an online IMS system.

Before you begin

Before an LTERM element is added, valid spare elements must exist in the IMSEG. LTERMs are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.

To Insert an LTERM Element

1. Go to the DELTA List Edit/Execute Entry panel.
From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>
6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type **1** in the **Actn** field and press **Enter**. The Insert Element Options pop-up window is displayed.

8 Type **1** in the selection field and press **Enter**. The Insert Single Element pop-up window is displayed.

9 Type **6** in the **Element type** selection field.

10 Type the name of the IMS system resource element to be inserted in the DELTA List in the **Element name** field. The name must be unique. The naming conventions are the same as for an IMSGEN.

11 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the **DELTA action** selection field. Possible values are

- ADD
- REVISE
- ADD/REVISE
- DELETE
- RELOAD
- EXECUTE

12 Optional. You can type a / in the selection field next to one or more of the following options:

- Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
- Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13 Press **Enter**.

**Where to go from here**

Perform the following action:
Inserting a Subpool Element

If the subpool option is selected from the Insert Single Element pop-up window, DELTA PLUS inserts the DELTA List entry. This entry adds a VTAM LU 6.1 subpool to the DELTA List. You can add or revise subpools.

Before you begin

Before a subpool element is added, valid spare elements must exist in the IMSGEN. Subpools are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.
To Insert a Subpool Element

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   Note
When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record. This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.
<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7. Type 1 in the Actn field and press Enter. The Insert Element Options pop-up window is displayed.

8. Type 1 in the selection field and press Enter. The Insert Single Element pop-up window is displayed.

9. Type 7 in the Element type selection field.

10. Type the name of the IMS system resource element to be inserted in the DELTA List in the Element name field. The name must be unique. The naming conventions are the same as for an IMSSGEN.

11. Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the DELTA action selection field. Possible values are
   - ADD
   - REVISE
   - ADD/REVISE
   - DELETE
   - RELOAD
   - EXECUTE

12. Optional. You can type a / in the selection field next to one or more of the following options:
   - Invoke edit on the inserted element (displays the DELTA List Element Edit panel for the inserted element)
   - Return to this screen after insert (displays the Insert Single Element pop-up window with a message indicating that the element was inserted)

13. Press Enter.
Where to go from here

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

Editing DELTA List Elements

After you have inserted an element in a DELTA List, you need to access the DELTA List Element Edit panel to provide further details. You access the DELTA List Element Edit panel for an element from the DELTA List Edit panel by typing an S (Detail) line command next to the DELTA List element you want to edit.

See the following sections for instructions on editing these elements in a DELTA List:

- “Editing an Application Element” on page 210
- “Editing a Database Element” on page 215
- “Editing a Command Element” on page 220
- “Editing a DELTA List” on page 166
- “Editing a Comment Element” on page 224
- “Editing a Transaction Element” on page 226 (not available for DBCTL)
- “Editing a Route Code Element” on page 233 (not available for DBCTL)
- “Editing a Terminal Element” on page 236 (not available for DBCTL)
- “Editing an LTERM Element” on page 239 (not available for DBCTL)
- “Editing a Subpool Element” on page 243 (not available for DBCTL)
- “Copying DELTA List Elements” on page 246
- “Using the FIND and CHANGE Commands” on page 249
Introduction

You can issue the following primary commands from any DELTA List Element Edit panel to alter the display of the panel:

- ALTVIEW
- MACRO ON or MACRO OFF

ALTVIEW toggles the current display to an alternate view. The panels in this section are all displayed in the same view. Your panel display may differ from the view of these panels. All the fields are still available despite which view you choose to display.

MACRO ON and MACRO OFF toggles the current display to show IMS macro statements for the field names or not show macro statements for the field names. The panels in this section are all displayed with MACRO OFF. Your panel display of a field name may differ from the view of these panels. All the fields are still available despite which view you choose to display.

If you use the DBCTL CLIST (DTDCI@00) to invoke the DELTA PLUS interface, your panels may differ from the view of the panels in this manual.

The panels in this manual were invoked through the DELTA PLUS CLIST (DLPCI@00) with the DELTA PLUS default View Profile.

The DELTA PLUS product view includes DELTA List options that apply to DELTA PLUS for DBCTL. DELTA Lists that include elements common to both IMS control and DBCTL regions can be executed against either type of control region. During execution of a DELTA List against a DBCTL or DCCTL region, DELTA List elements that are not applicable to DBCTL or DCCTL are ignored.

Other Primary Commands Available in DELTA List Element Edit

You can type the following primary commands on the DELTA List Element Edit panel **Command** line:

**CANcel**

The **CANcel** command terminates the Element Edit session without saving the changes.
The CHECK command and the optional parameters D and E allow you to indicate whether you want to check the execution of an entire DELTA List or the execution of a single element, without altering the IMS control region, for possible execution errors.

Same as the CHECK command.

The CLEAR command erases existing values in all fields.

The DELETE command deletes the element currently being edited.

The DESELect ALL command removes any / characters in the Rev field to reflect no elements are selected for revision.

The EDIT command invokes the DELTA List Edit on another DELTA List. If member is not specified, the system prompts for the member name.

The END command terminates the edit session and saves the changes if you have not specified that you want to confirm all save actions. Otherwise, it displays the Confirm Save pop-up window.

The EXecute command and the optional parameters D and E allow you to indicate whether you want to execute an entire DELTA List or a single element.

The FHelp command displays field level help for the field where the cursor currently resides.

The NEW command displays the Insert Element Options pop-up window to add an element to the DELTA List currently being edited.
NEXT

The NEXT command displays the next element in the DELTA List currently being edited.

NOTes

The NOTes command displays the Notes for the DELTA List element being edited.

OPtions

The OPtions command displays the options for the DELTA List. Options include restricting IMSIDs and the Dependent indicator.

OPTS

Same as the OPtions command.

PREVious

The PREVious command displays the previous element in the DELTA List currently being edited.

PROFile

The PROFile command allows you to change the View Profile currently in use.

PROMPT

The PROMPT command displays the available values for the field where the cursor currently resides.

RESET

The RESET command resets any changed fields to the values before the changes, including resetting resolved variable values back to variable names.

RESOLVE imsid vds

The RESOLVE command, without any parameters, displays the Resolve Variables panel that allows you to specify the IMSID for which you want to resolve the variable values.

Specify a particular imsid with the RESOLVE command to resolve the variable values for the specified IMSID on the current display.

Specify a particular vds (Variable Definition Set) with the RESOLVE command to resolve variable values with a Variable Definition Set other than the one specified in the DELTA List Options.
**SESelect ALL**

The **SESelect ALL** command adds the `/` character in every **Rev** field to reflect all elements are selected for revision.

## Editing an Application Element

Access the DELTA List Element Edit panel to provide further details or edit an application element in the DELTA List.

**Before you begin**

When you create an application element and you edit the attribute fields, there are certain attribute fields whose values must be specified in relation to each other. DELTA PLUS avoids IMS application parameter conflicts by prompting you to specify correct values for each of these fields.

**To Edit an Application Element**

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press **Enter**. The DELTA List Edit/Execute Entry panel is displayed.
2 Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4 *View Profile* — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

---

Chapter 6 Creating and Editing DELTA Lists 211
8 Edit the following fields, as necessary:

Table 26: Fields Available on the DELTA List Element Edit Panel for APPLCTN Elements

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA Action</td>
<td>Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ Add</td>
</tr>
<tr>
<td></td>
<td>■ Revise</td>
</tr>
<tr>
<td></td>
<td>■ Add/Revise</td>
</tr>
<tr>
<td></td>
<td>■ Delete</td>
</tr>
<tr>
<td></td>
<td>■ Reload</td>
</tr>
<tr>
<td>Execution options</td>
<td>Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the program before executing the Revise action for an element and then start the program again after the change is complete.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Name of application</td>
<td>Type the name of the application on which you are performing an action.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Model after (valid for ADD, REV, ADD/REV)</td>
<td>Type the name of the existing element on which you want to model, or base, the element you are adding or revising.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PSB resident in storage</td>
<td>Required. Specify whether the PSB associated with this application is to be made resident during system initialization.</td>
</tr>
<tr>
<td></td>
<td>This parameter is equivalent to the RESIDENT positional parameter of the APPLCTN macro used during an IMSGEN. If execution of a DELTA List changes an existing application, it becomes nonresident immediately. If execution of a DELTA List changes an existing application from nonresident to resident, it will become resident at the next restart of IMS. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Program is a MPP or BMP</td>
<td>Specify the type of application program being defined.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Schedule serial or parallel?</td>
<td>Specify whether or not the application program can be scheduled into more than one message region simultaneously.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Fast Path program?</td>
<td>Required. Specify whether or not this is a Fast Path exclusive application program.</td>
</tr>
<tr>
<td></td>
<td>This parameter is equivalent to the FPATH keyword parameter of the APPLCTN macro used during an IMSGEN. DELTA PLUS automatically sets the sync point per transaction (MODE=SNGL) and recoverable transaction options for each transaction converted to Fast Path exclusive.</td>
</tr>
<tr>
<td></td>
<td>If execution of a DELTA List changes an existing application from full-function to Fast Path, all transactions processed by that program will become Fast Path exclusive. Fast Path transactions must be single segment input, response mode, non-MSC remote, and non-conversational. The transactions may not have messages currently on the message queue, and a Fast Path route code must exist for each transaction with a route code name identical to the transaction code. If any transaction violates these rules, the operation will be rejected and an error message issued.</td>
</tr>
<tr>
<td></td>
<td>If execution of a DELTA List changes an existing application from Fast Path to full-function, no Fast Path route code may reference the program. No change is made to the Fast Path status of any transaction because of this change.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Dynamic PSB option?</td>
<td>Specify whether or not the PSB associated with this program is to be located dynamically.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Dynamically generate a PSB?</td>
<td>Required. Indicate whether IMS should generate a PSB for the application. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Programming language interface</td>
<td>Indicate the interface language IMS should use when generating the PSB: ASSEM, COBOL, JAVA, PASCAL, or PL/I. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>MSC - remote system ID</td>
<td>This parameter and the MSC - local system ID parameter are the same as the keyword parameters for a normal IMSGEN when defining an APPLCTN. For example, specifying a SYSID for the application does not create a PDIR (application) control block if it is a remote application. DELTA PLUS will treat the application as local if MSC - remote system ID and MSC - local system ID are not specified. The REVISE function cannot be used to change an APPLCTN from remote to local. When an application element is added or revised to indicate in the SYSID fields that the application is remote, DELTA PLUS creates a remote PSB control block which is internal to DELTA PLUS. You can display remote PSBs with the /DIS DLP RPSB command. Remote PSBs can be used in transaction element definitions as the PSB name which then makes the transaction remote. The SYSIDs are copied from the RPSB. <strong>Note:</strong> This field is not valid for DELTA PLUS for DBCTL.</td>
</tr>
<tr>
<td>MSC - local system ID</td>
<td>This parameter and the MSC - remote system ID parameter are the same as the keyword parameters for a normal IMSGEN when defining an APPLCTN. For example, specifying a SYSID for the application does not create a PDIR (application) control block if it is a remote application. DELTA PLUS will treat the application as local if MSC - remote system ID and MSC - local system ID are not specified. The REVISE function cannot be used to change an APPLCTN from remote to local. <strong>Note:</strong> This field is not valid for DELTA PLUS for DBCTL.</td>
</tr>
<tr>
<td>Log tran stats?</td>
<td>Specify whether or not transaction level statistics should be logged for JBP or non-message-driven BMPs. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

**Where to go from here**

Perform any of the following actions:
Editing a Database Element

Access the DELTA List Element Edit panel to provide further details or edit a database element in the DELTA List.

Before you begin

Define the database to the appropriate ACB libraries by running a DBDGEN and an ACBGEN. If DELTA PLUS cannot find the necessary control blocks in the active ACB library, a warning message will be issued when the element is executed and the database will be set to NOTINIT.

To Edit a Database Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.
2 Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4 *View Profile*—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   **Note**

   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>the DELTA List field.</td>
<td></td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
<tr>
<td>or typed a masking pattern in the DELTA List field.</td>
<td></td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:
Table 27: Fields Available on the DELTA List Element Edit Panel for DATABASE Elements

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA Action</td>
<td>Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are Add, Revise, Add/Revise, Delete, Reload.</td>
</tr>
<tr>
<td>Execution options</td>
<td>Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the database before executing the Revise action for an element and then start the database again after the change is complete.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Name of Database</td>
<td>Type the name of the IMS database to be acted upon.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Model after (valid for ADD, REV, ADD/REV)</td>
<td>Type the name of the existing element on which you want to model, or base, the element you are adding or revising.</td>
</tr>
<tr>
<td>DBD resident in storage?</td>
<td>Required. Specify whether the DMB created for this database should be made resident in storage. This parameter is equivalent to the RESIDENT positional parameter of the DATABASE macro used during an IMSGEN. It must be YES for resident or NO or nonresident. If the database is a Fast Path DEDB, it must be YES. If a resident full database is revised or reloaded, it becomes nonresident until the next restart of IMS. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Access is EX, RO, RD, or UP   | Required. Specify the access intent of the database. This parameter is equivalent to the ACCESS keyword parameter of the DATABASE macro used during an IMSGEN. ACCESS is associated with database sharing and the intent a particular IMS subsystem may have against a database. The following accesses are available:  
  - EX - exclusive access to the database  
  - RO - read only access  
  - RD - read access  
  - UP - update intent access  
  To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
| Auto-reload sensitive ACBs?   | Specify whether or not sensitive ACBs should be automatically reloaded. This parameter specifies whether DELTA PLUS should automatically reinitialize program directories for each program (ACB) that is sensitive to the database. This feature is optional because of the performance implication to IMS. A significant amount of I/O to ACBLIB may be incurred. The I/O is overlapped with all control region functions except MPP/BMP scheduling so that no new programs will be scheduled while the auto reload is processing. If you do not use this option, you are responsible for manually issuing DELTA PLUS reloads for each ACB referencing the database. DELTA PLUS determines database sensitivity in two ways:  
  - Programs are considered sensitive if their in-memory intent lists reference the named database.  
  - The ACBLIB directory is scanned for ACBs that have been generated since the database’s DMB was generated. For each ACB that was regenerated and is defined to IMS, the intent list will be read and scanned for the DMB reference.  
  To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
| Reload DEDB randomizer?       | Specify whether or not reload the DEDB randomizer. This option specifies whether DELTA PLUS should reload a new copy of the Randomizer module identified in the ACBLIB. The default is NO. If the name exists in the IMS system and this option is set to YES, DELTA PLUS will ensure that all other DEDBs using the same randomizer name have been /DBRed. The new copy of the randomizer will be loaded and all other DEDBs using the same randomizer will be updated to have the latest copy of the randomizer module. This feature is optional because of the performance implication to IMS. This option is ignored if the database is not a Fast Path DEDB. If the Randomizer name is new, DELTA PLUS will load the new Randomizer module regardless of this option. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
## Field Name

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reload DEDB 2-stage randomizer ONLY</td>
<td>Specify whether or not to reload the 2-stage DEDB randomizer ONLY. This option specifies whether DELTA PLUS should reload a new copy of the 2-stage DEDB Randomizer module identified in the ACBLIB. The default is NO. Note: A DBR is not required for this action. This feature is optional because of the performance implication to IMS. This option is ignored if the database is not a Fast Path DEDB. If the Randomizer name is new, DELTA PLUS will load the new Randomizer module regardless of this option. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Reload stopped DEDB areas only</td>
<td>Specify whether or not to reload ONLY the stopped DEDB areas. This option specifies whether DELTA PLUS should reload specific areas of a Fast Path DEDB. The default is NO. Note: To reload specific areas of a DEDB, issue a /DBR AREA command prior to the RELOAD request to stop each of the areas that are to be reloaded. The /DBR AREA command may be specified in the same DELTA list, or issued outside of the DELTA List. Do NOT stop the entire database with a /DBR DB command. The DELTA List RELOAD DB databaseName request is executed specifying the new Reload stopped DEDB areas only=YES keyword. DELTA PLUS will reload only the DMACs (areas) that are in a stopped state. The remaining areas are still accessible by IMS. The request will fail if DMAC changes are detected in areas that have not been stopped. The DMB read from ACBLIB will become the new DMCB and unaffected areas (DMACs not stopped) are merged back into the new DMCB. Any new areas detected in the new DMB will be added dynamically. Any old areas no longer in the new DMB will be removed (only if they are in a stopped state). This feature is optional and only impacts Fast Path DEDB databases. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

### Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>
**Editing a Command Element**

Access the DELTA List Element Edit panel to provide further details or edit a command element in the DELTA List.

1. Go to the DELTA List Edit/Execute Entry panel.
   
   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.
4 **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

*Note*

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type **S** in the **Actn** field next to the element you want to edit and press **Enter**. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution options</td>
<td>Type a / in the selection field next to this execution option to indicate that this element should be included when the DELTA List is processed.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Element attributes</td>
<td>Indicate when you want the IMS command executed in relation to the execution of the DELTA List by typing the option in the selection field. A before command element is executed prior to the elements in the DELTA List being executed. An after command element is executed after the elements in the DELTA List are executed. The designation of before and after does not pertain to a DELTA List when it is executed in one-element-at-a-time mode.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Command</td>
<td>Type the IMS command to be executed.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>

**Editing a DELTA List Element**

Access the DELTA List Element Edit panel to provide further details or edit a DELTALST element in the DELTA List.

**Panel Flow**

![Diagram of panel flow](image)
To Edit a DELTA List Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>Choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4. View Profile — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   Note
   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.
7 Type S in the **Actn** field next to the element you want to edit and press **Enter**. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

**Table 29: Fields Available on the DELTA List Element Edit Panel for DELTALST Elements**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution options</td>
<td>Type a/ in the selection field next to the execution option to indicate that the embedded DELTA List should be executed when its parent DELTA List is processed.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>DELTA List name</td>
<td>Type the name of the DELTA List to be embedded in the parent DELTA List which you are editing.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

**Where to go from here**

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press <strong>F3</strong>.</td>
</tr>
</tbody>
</table>

**Editing a Comment Element**

Access the DELTA List Element Edit panel to provide further details or edit a comment element in the DELTA List.

**Panel Flow**
To Edit a Comment Element

1. Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4. **View Profile** — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.
**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT
 for DELTA PLUS VIRTUAL TERMINAL or DDCKWT
 for DELTA PLUS for DBCTL, where

 This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8 Type the user comments to be included in the DELTA List in the Comment text field.

9 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>

**Editing a Transaction Element**

Access the DELTA List Element Edit panel to provide further details or edit a transaction element in the DELTA List.
Before you begin

When you create an transaction element and you edit the attribute fields, there are certain attribute fields whose values must be specified in relation to each other. DELTA PLUS avoids IMS transaction parameter conflicts by prompting you to specify correct values for each of these fields.

To Edit a Transaction Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>
3 Type the data set name of the library in which the existing DELTA List resides in the **DELTA List library** field.

4 **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

   **Note**

   When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type **S** in the **Actn** field next to the element you want to edit and press **Enter**. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

**Table 30: Fields Available on the DELTA List Element Edit Panel for TRANSACT Elements**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA Action</td>
<td>Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ Add</td>
</tr>
<tr>
<td></td>
<td>■ Revise</td>
</tr>
<tr>
<td></td>
<td>■ Add/Revise</td>
</tr>
<tr>
<td></td>
<td>■ Delete</td>
</tr>
</tbody>
</table>

228  *DELTAPLUS User Guide*
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution options</td>
<td>Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the transaction before executing the Revise action for an element and then start the transaction again after the change is complete.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Name of transaction Code</td>
<td>Type the name of the transaction to be acted upon.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Model after (valid for ADD, REV, ADD/REV)</td>
<td>Type the name of the existing element on which you want to model, or base, the element you are adding or revising.</td>
</tr>
<tr>
<td>Name of PSB</td>
<td>Type the name of the PSB, or application, associated with the transaction. This parameter is required unless the transaction associated with the PSB is defined to a remote system. The PSB name can be a PSB created during an IMSGEN, one added previously by a DELTA List execution, or one added during the execution of the current list. The DELTA List Editor will allow you to insert or revise a transaction even if you do not supply the name of the PSB. However, if the PSB name is required (because the transaction is defined to the local IMS system, for example) and you do not supply it, DELTA List Check or Execute processing will fail.</td>
</tr>
<tr>
<td>Wait for input transaction?</td>
<td>Specify whether or not this is a wait-for-input transaction. This parameter is the same as for a normal IMSGEN when defining a TRANSACT. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Normal priority</td>
<td>Specify the priority that should be assigned to this transaction when the number of input transactions enqueued and waiting to be processed is less than the limit count value. The valid range of values is from 0 through 14. The default is 1. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Limit priority</td>
<td>Specify the priority that should be assigned to this transaction when the number of input transactions enqueued and waiting to be processed is equal to or greater than the limit count value. The valid range of values is from 0 through 14. The default is 1. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Limit count</td>
<td>Specify the number that determines whether the normal or limit priority value is assigned to this transaction, based on the number of input transactions queued and waiting to be processed. The valid range of values is from 1 through 65535. The default is 65535. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Multiple segment input?</td>
<td>Specify whether or not the incoming message can be more than one segment in length. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Transaction response mode?</td>
<td>Specify whether or not input should be stopped until this transaction sends a response back to the terminal. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Transaction class</td>
<td>Specify the class to which this transaction code is to be assigned. This parameter must be a decimal number from 1 to 999. The default is 1. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Processing limit count</td>
<td>Specify the number of messages (count) of this transaction code a program can process in a single scheduling. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Processing time in seconds (100ths if FP)</td>
<td>Specify the amount of time (in seconds or hundredths) allowable to process a single transaction (or message). If this is a Fast Path potential transaction running in an MPP region, processing time is in hundredths. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Parallel processing limit</td>
<td>Specify NONE or 65535, which is the default, to indicate that no parallel processing is allowed. Specify 0 through 32767 to indicate that parallel processing is allowed.</td>
</tr>
<tr>
<td>Option if unschedulable</td>
<td>Specify the scheduling option used for other transactions when this transaction cannot be scheduled. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Inquiry only transaction?</td>
<td>Specify whether or not this is an inquiry transaction. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Recoverable transaction?</td>
<td>Specify whether or not this transaction should be recovered during IMS restart. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>
| Fast Path transaction?         | Required. Specify whether or not the transaction code is a potential candidate for Fast Path processing. This parameter is equivalent to the FPATH keyword parameter of the TRANSACT macro used during an IMSGEN. Fast Path transactions must be single segment input, response mode, non-MSC remote, and non-conversational. These transactions may not currently have any messages on the message queue and a Fast Path route code must exist with a route code name identical to the transaction code. If a route code does not exist, insert the DELTA List ADD RTCODE element. The Fast Path status of the transaction will be one of the following: non-Fast Path, Fast Path potential, or Fast Path exclusive. The status selected depends in part on whether the PSB referenced is Fast Path.  
  ■ Non-Fast Path - Both the APPLCTN and TRANSACTION specified FPATH=NO.  
  ■ Fast Path potential - The APPLCTN specified FPATH=NO and the TRANSACTION specified FPATH=YES.  
  ■ Fast Path exclusive - The APPLCTN (PSB) specified FPATH=YES. In this case, the TRANSACTION can specify FPATH=YES or FPATH=NO. DELTA PLUS automatically sets the sync point per transaction (MODE=SNGL) and recoverable transaction options for a Fast Path transaction.  
  To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
<p>| Fast Path EMH buffer size       | This parameter corresponds to the FPATH=YES parameter in the IMS TRANSACT macro. If FPSIZE is greater than zero, FPATH=YES is implied.                                                                                   |
| Single/Multiple message per sync point | Specify whether database buffers are to be flushed upon each request for a new message (SINGLE) or upon program termination (MULTIPLE). To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
| Translate input to upper case?  | Specify whether or not input data is to be translated to uppercase. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command. |
| Set INPUT-EDIT exit same as tran | Specify the name of the transaction code from which the transaction input edit routine is to be copied. The transaction input edit routine for this transaction code can be set the same as another transaction code already defined to IMS. |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA size if conversational</td>
<td>Specify the size of the conversational scratchpad area (SPA). A value in this field indicates that this transaction is a conversational transaction. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>SPA truncated data option</td>
<td>Specify whether or not to turn on the truncated data option. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Maximum output segment size</td>
<td>Specify the maximum number of bytes allowed in any one output segment. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Maximum # output msg segments</td>
<td>Specify the maximum number of output segments that will be allowed into the message queues from the application program. This parameter is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>Rmt SYSID</td>
<td>This parameter and the Local SYSID parameter are the same as the keyword parameters for a normal IMSGEN when defining a TRANSACT. DELTA PLUS will treat the transaction as local if <strong>Rmt SYSID</strong> and <strong>Local SYSID</strong> are not specified.</td>
</tr>
<tr>
<td>Local SYSID</td>
<td>This parameter and the RMT SYSID parameter are the same as the keyword parameters for a normal IMSGEN when defining an TRANSACT. DELTA PLUS will treat the transaction as local if <strong>Rmt SYSID</strong> and <strong>Local SYSID</strong> are not specified.</td>
</tr>
<tr>
<td>MSC - pass origin to application?</td>
<td>Specify whether or not to inform the application program processing a transaction of the system which originated the transaction. This parameter is only valid on systems using the Multiple Systems Coupling (MSC) feature and is the same as for a normal IMSGEN when defining a TRANSACT.</td>
</tr>
<tr>
<td>DC log write ahead?</td>
<td>Specify whether or not IMS should perform log write-ahead for recoverable, nonresponse mode input messages and transaction output messages. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Serial processing of messages?</td>
<td>Specify whether or not to force serial processing of messages. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Max regions allowed to schedule</td>
<td>Type the number of message processing program (MPP) regions that can be concurrently scheduled to process a transaction. When the number of MPP regions is not limited, one transaction may monopolize all available regions.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AOI CMD call allowed?</td>
<td>Indicate whether the transaction is allowed to issue the Automated Operator Interface (AOI) command call.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Log tran stats?</td>
<td>Specify whether or not transaction level statistics should be logged for message-driven programs.</td>
</tr>
<tr>
<td></td>
<td>To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
<tr>
<td>Expiration time</td>
<td>Specify the elapsed time in seconds that IMS can use to cancel an input transaction. Valid values are 0 through 65535. A value of blank or 0 indicates that no expiration is set for the transaction.</td>
</tr>
</tbody>
</table>

9 Press Enter.

Where to go from here

To return to the DELTA LIST Edit panel, press F3.

Editing a Route Code Element

Access the DELTA List Element Edit panel to provide further details or edit a route code element in the DELTA List.
To Edit a Route Code Element

1  Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2  Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3  Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4  View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.
Note
When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where \( nn \) is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press **Enter**. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

Table 31: Fields Available on the DELTA List Element Edit Panel for RTCODE Elements

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| DELTA Action        | Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are
  ■ Add
  ■ Revise
  ■ Add/Revise
  ■ Delete          |
<p>| Execution options   | Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the route code before executing the Revise action for an element and then start the route code again after the change is complete. |
| Destination option  | Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system. |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of routing code</td>
<td>Type the name of the routing code to be acted upon.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Model after (valid for ADD, REV, ADD/REV)</td>
<td>Type the name of the existing element on which you want to model, or base, the element you are adding or revising.</td>
</tr>
<tr>
<td>Name of PSB</td>
<td>Required. Specify the name of a PSB. The PSB must exist within the IMS system when this DELTA List is executed. If not, DELTA PLUS will issue an error message at DELTA List execution time. The PSB name can be a PSB created during an IMSGEN, one added previously by a DELTA List execution, or one added during the execution of the current list.</td>
</tr>
<tr>
<td>Inquiry only?</td>
<td>Specify whether or not any message associated with this routing code is an inquiry transaction. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press Enter.

Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>

Editing a Terminal Element

Access the DELTA List Element Edit panel to provide further details or edit a terminal element in the DELTA List.
Before you begin

Before a terminal element is added, valid spare elements must exist in the IMSGEN. Terminals are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.

To Edit a Terminal Element

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.
4 View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**
When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

**Table 32: Fields Available on the DELTA List Element Edit Panel for TERMINAL Elements**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| DELTA Action | Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are  
  - Add  
  - Revise  
  - Add/Revise |
<p>| Execution options | Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the terminal before executing the Revise action for an element and then start the terminal again after the change is complete. |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Node name of terminal</td>
<td>Type the name of the terminal to be added or revised.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Spare Element Mask (required for ADD)</td>
<td>Type a mask name for the terminal you are adding. DELTA PLUS uses the MASK parameter during DELTA List execution to locate a spare terminal. MASK describes to DELTA PLUS what spare node names look like. The mask is compared to terminal node names defined to the IMS control region until a match is found. The spare element mask may contain generic characters that will allow DELTA PLUS to choose from a number of terminals. If the terminal found is eligible, it is used for this addition. DELTA PLUS does not allow a mask that starts with DFS.</td>
</tr>
<tr>
<td>Signon required?</td>
<td>Specify whether or not to explicitly set or reset signon-required status for this terminal. A YES entry activates signon-required status, and a NO entry turns off signon-required status. A blank or an omitted entry sets the signon-required status to whatever the system-wide defaults are for the IMS system. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>

**Editing an LTERM Element**

Access the DELTA List Element Edit panel to provide further details or edit an LTERM element in the DELTA List.
Before you begin

Before an LTERM element is added, valid spare elements must exist in the IMSGEN. LTERMs are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.

To Edit an LTERM Element

1 Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.
4 View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA Action</td>
<td>Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are Add, Revise, Add/Revise</td>
</tr>
<tr>
<td>Execution options</td>
<td>Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop the LTERM before executing the Revise action for an element and then start the LTERM again after the change is complete.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Name of logical terminal</td>
<td>Type the name of the logical terminal to be acted upon.</td>
</tr>
<tr>
<td>New name (Valid for REV only)</td>
<td>Type the new name of an existing element if you choose to rename it.</td>
</tr>
<tr>
<td>Spare Element Mask (required for ADD)</td>
<td>Type a mask name for the LTERM you are adding. DELTA PLUS uses the MASK parameter during DELTA List execution to locate a spare LTERM. MASK describes to DELTA PLUS what spare LTERM names look like. The mask is compared to LTERM names defined to the IMS control region until a match is found. The spare element mask may contain generic characters that will allow DELTA PLUS to choose from a number of LTERMs. If the LTERM found is eligible, it is used for this addition. DELTA PLUS does not allow a mask that starts with DFS.</td>
</tr>
<tr>
<td>Assign to node/subpool</td>
<td>Specify the VTAM node or LU 6.1 subpool to which you want this LTERM assigned. The node may not be the Primary or Secondary Master Terminal.</td>
</tr>
<tr>
<td>MSC - Logical link path name</td>
<td>Indicate that this LTERM entry is a remote LTERM and is assigned to the specified logical link name. The MSNAME parameter is valid only on systems which have the Multiple Systems Coupling (MSC) feature defined. You can use DELTA PLUS to change the MSNAME designation, but a local LTERM cannot be changed to a remote LTERM and vice versa. If you specify an MSNAME in this field, omit any entries in the Assign to node/subpool field and set the LU 6.1 subpool LTERM field to NO.</td>
</tr>
<tr>
<td>LU 6.1 subpool LTERM?</td>
<td>Specify whether or not this is an LU 6.1 subpool LTERM. If you specify YES, you cannot specify an MSNAME in the MSC - Logical link path name field. To view a selection list of values for this field, advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>return to the DELTA List Edit panel</td>
<td>Press F3.</td>
</tr>
</tbody>
</table>
Editing a Subpool Element

Access the DELTA List Element Edit panel to provide further details or edit a subpool element in the DELTA List.

**Before you begin**

Before a subpool element is added, valid spare elements must exist in the IMGEN. Subpools are not technically added, but renamed using spare elements. See “Defining Spare Elements” on page 561 for more information on spare elements.

**To Edit a Subpool Element**

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type **1** in the selection field and press **Enter**. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type <strong>1</strong> in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
</tr>
</tbody>
</table>
choose an existing DELTA List for editing | Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4 View Profile —Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

Note
When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8 Edit the following fields, as necessary:
Table 34: Fields Available on the DELTA List Element Edit Panel for SUBPOOL Elements

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA Action</td>
<td>Type the option number of the DELTA action that should be taken against the associated IMS system resource element. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ Add</td>
</tr>
<tr>
<td></td>
<td>■ Revise</td>
</tr>
<tr>
<td></td>
<td>■ Add/Revise</td>
</tr>
<tr>
<td>Execution options</td>
<td>Indicate which execution options you want associated with the element change. For example, it is advisable on a Revise DELTA action to stop</td>
</tr>
<tr>
<td></td>
<td>the subpool before executing the Revise action for an element and then start the subpool again after the change is complete.</td>
</tr>
<tr>
<td>Destination option</td>
<td>Type the IMSID of the target IMS system where the DELTA List changes are to be executed if the changes are to be executed on only one IMS system.</td>
</tr>
<tr>
<td>Name of subpool</td>
<td>Type the name of the subpool to be acted upon.</td>
</tr>
<tr>
<td>New name (valid for REV only)</td>
<td>Type the new name of an existing element if you want to rename it.</td>
</tr>
<tr>
<td>Spare Element Mask (required for ADD)</td>
<td>Type a mask name for the subpool you are adding. DELTA PLUS uses the MASK parameter during DELTA List execution to locate a spare subpool.</td>
</tr>
<tr>
<td></td>
<td>MASK describes to DELTA PLUS what spare subpools look like. The mask is compared to subpool names defined to the IMS control region until a</td>
</tr>
<tr>
<td></td>
<td>match is found. The spare element mask may contain generic characters that will allow DELTA PLUS to choose from a number of subpools. If the</td>
</tr>
<tr>
<td></td>
<td>subpool found is eligible, it is used for this addition. DELTA PLUS does not allow a mask that starts with DFS.</td>
</tr>
<tr>
<td>Delete SYSINFO or NONIOPCB messages</td>
<td>Specify which type of messages IMS should discard. To view a selection list of values for this field,</td>
</tr>
<tr>
<td></td>
<td>advance the cursor to the prompt field and press F4, or use the PROMPT command.</td>
</tr>
</tbody>
</table>

9 Press Enter.

Perform any of the following actions:
Copying DELTA List Elements

Use the Copy Element from IMS pop-up window to copy one or more elements from an IMS control region into an existing DELTA List.

To Copy an Existing IMS Element

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press . The DELTA List Edit/Execute Entry panel is displayed.
2 Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 *View Profile* —Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**

Enter When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press *Enter*.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.
7 Type I in the Actn field and press Enter. The Insert Element Options pop-up window is displayed.

8 Type 2 in the selection field and press Enter. The Copy Element from IMS pop-up window is displayed.

9 Type the option number of the element type to be copied in the Element type selection field.

10 Type the element name or mask to be copied from the specified IMS control region in the Copy element name or mask field.

You can type the entire existing element name, or any valid mask.

11 Type the IMSID of the IMS control region from which the existing element(s) should be copied in the Copy from IMSID field. The specified IMS system must be active and have DELTA PLUS installed to complete the copy operation.

12 Type the option number of the DELTA Action that should be taken against the associated IMS system resource element in the DELTA action selection field. Possible values are

- ADD
- REVISE
- ADD/REVISE
- RELOAD
- DELETE
13 Optional. You can type a `/` in the selection field next to one or more of the following options:

- **Copy associated elements** - copies associated elements at the same time as the chosen element is copied. For example, you have chosen to copy application PSB1. Select this option to copy all the transactions associated with PSB1.

- **Invoke edit on the copied element** - displays the DELTA List Element Edit panel for the copied element

- **Return to this screen after copy** - displays the Copy Element from IMS pop-up window with a message indicating that the element was copied

14 Press Enter.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide further details for the DELTA List element</td>
<td>See “Editing a DELTA List Element” on page 222 for instructions.</td>
</tr>
</tbody>
</table>

**Using the FIND and CHANGE Commands**

The FIND and CHANGE commands provide panels where you can find and change character strings contained in a DELTA List. The power and convenience of these commands becomes apparent in the various techniques that you can use to specify or limit a particular search or revision of the DELTA List field values.

**Finding a Character String in a DELTA List**

Access the DELTA List Element Edit panel and use the FIND command to specify the desired string to be found in the DELTA List being edited.
To FIND Character Strings in a DELTA List

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4 *View Profile* —Type the name of the View Profile in the *View Profile* field; otherwise, accept the default View Profile.
When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT*nn* for DELTA PLUS VIRTUAL TERMINAL or DDCKWT*nn* for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 Type the FIND command on the **Command** line and press **Enter**. The DELTA List Find Elements pop-up window is displayed.

8 Edit the following fields, as necessary:
### Table 35: Fields Available on the DELTA List Find Elements Pop-up Window

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find string</td>
<td>Type a character string to be found in the DELTA List.</td>
</tr>
</tbody>
</table>
| **Direction** | Type the option number to control the starting point, direction, and extent of the search. You can start or resume the search from the current cursor position and proceed from top to bottom or from bottom to top. You can also start from the first element or last, and you can start from the top and search for all occurrences until the last match is found. Possible values are  
- **Next** - Start or resume a search from the current cursor position and proceed from top to bottom until the next match is found.  
- **Previous** - Start or resume a search from the current cursor position and proceed from bottom to top until the previous match is found.  
- **First** - Start a search from the first element and proceed from top to bottom until the first match is found.  
- **Last** - Start a search from the last element and proceed from bottom to top until the last match is found.  
- **All** - Start from the top and find all occurrences of the desired data. |
| **Context** | Type the option number to control the conditions for a successful match of the desired string based on whether the matched data begins and/or ends with a non-alphanumeric character (special characters such as plus signs, dashes, parentheses, apostrophes, or blanks). You can find a match regardless of context or a match where the desired string is prefix, suffix, or a separate word. Possible values are  
- **Any** - Find a match in any string regardless of context (such as the DO in DO-IT-YOURSELF, DON’T, ADOPT, and BULLDOZER).  
- **Prefix** - Find a match where the desired string is the prefix of a word (such as the DO in DON’T and DOWNLOAD but not in ADO, ADOPT, or BULLDOZER).  
- **Suffix** - Find a match where the desired string is the suffix of a word (such as the IT in EXHIBIT and RABBIT but not in IT’S, DITCH, or HOSPITAL).  
- **Word** - Find a match where the desired string is a separate word (such as the AS in AS or COME-AS-YOU-ARE but not in ASSUME, CASUAL, or HASN’T). |
| **Limitations** | Type the option number to limit the element(s) included in the search. Possible values are  
- **None** - No limitations, ALL elements will be searched.  
- **Excluded** - Search only excluded elements. Elements are excluded by use of the X, XX, or Xnnn action commands.  
- **Non-excluded** - Search only non-excluded elements. Elements that have been excluded by use of the X, XX, or Xnnn action commands will not be included in the search. |
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element type</td>
<td>Type a / in the selection field next to one or more types of DELTA List elements so that a search is limited to the specified types of elements. For example, if you specify that the search include only DATABASE, APPLCTN, and TRANSACT type elements, then matching data in a LTERM element is not found in the search. To search all DELTA List element types, select <em>All elements</em>. To search for specific element types, select the individual element type(s).</td>
</tr>
<tr>
<td>Field</td>
<td>Type a / in the selection field next to one or more individual fields of a DELTA List element so that a search is limited to the specified fields of an element. To search all element fields, select <em>All elements</em>. To search specific element fields, select the individual field name. You can also select any valid combination of <strong>Element type</strong> and <strong>Field</strong> by typing a / next to the appropriate type and field names.</td>
</tr>
</tbody>
</table>

9 Press Enter. The DELTA List Edit panel is displayed with the Fnd/Chg field indicating which element(s) was found with the FIND command.

**Changing a Character String in a DELTA List**

Access the DELTA List Element Edit panel and use the CHANGE command to find and change a specified string in the DELTA List being edited.
To CHANGE Character Strings in a DELTA List

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to edit a specific existing DELTA List or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4. View Profile—Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   Note

   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to edit by typing a/ next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.
7 Type the CHANGE command on the **Command** line and press **Enter**. The DELTA List Change Elements pop-up window is displayed.

8 Edit the following fields, as necessary:

Table 36: Fields Available on the DELTA List Change Elements Pop-up Window

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find string</td>
<td>Type a character string to be found in the DELTA List.</td>
</tr>
<tr>
<td>Change to</td>
<td>Specify the character string to replace the character string in <strong>Find string</strong> field. Whenever the desired <strong>Find string</strong> is successfully matched, the <strong>Change to</strong> string replaces the matched string.</td>
</tr>
<tr>
<td>Direction</td>
<td>Type the option number to control the starting point, direction, and extent of the search. You can start or resume the search from the current cursor position and proceed from top to bottom or from bottom to top. You can also start from the first element or last, and you can start from the top and search for all occurrences until the last match is found. Possible values are:</td>
</tr>
<tr>
<td></td>
<td>■ Next - Start or resume a search from the current cursor position and proceed from top to bottom until the next match is found.</td>
</tr>
<tr>
<td></td>
<td>■ Previous - Start or resume a search from the current cursor position and proceed from bottom to top until the previous match is found.</td>
</tr>
<tr>
<td></td>
<td>■ First - Start a search from the first element and proceed from top to bottom until the first match is found.</td>
</tr>
<tr>
<td></td>
<td>■ Last - Start a search from the last element and proceed from bottom to top until the last match is found.</td>
</tr>
<tr>
<td></td>
<td>■ All - Start from the top and find all occurrences of the desired data.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Context    | Type the option number to control the conditions for a successful match of the desired string based on whether the matched data begins and/or ends with a non-alphanumeric character (special characters such as plus signs, dashes, parentheses, apostrophes, or blanks). You can find a match regardless of context or a match where the desired string is prefix, suffix, or a separate word. Possible values are  
  ■ Any - Find a match in any string regardless of context (such as the DO in DO-IT-YOURSELF, DON'T, ADOPT, and BULLDOZER).  
  ■ Prefix - Find a match where the desired string is the prefix of a word (such as the DO in DON'T and DOWNLOAD but not in ADO, ADOPT, or BULLDOZER).  
  ■ Suffix - Find a match where the desired string is the suffix of a word (such as the IT in EXHIBIT and RABBIT but not in IT'S, DITCH, or HOSPITAL).  
  ■ Word - Find a match where the desired string is a separate word (such as the AS in AS or COME-AS-YOU-ARE but not in ASSUME, CASUAL, or HASN'T). |
| Limitations | Type the option number to limit the element(s) included in the search. Possible values are  
  ■ None - No limitations, ALL elements will be searched.  
  ■ Excluded - Search only excluded elements. Elements are excluded by use of the X, XX, or Xnnn action commands.  
  ■ Non-excluded - Search only non-excluded elements. Elements that have been excluded by use of the X, XX, or Xnnn action commands will not be included in the search. |
| Element type | Type a / in the selection field next to one or more types of DELTA List elements so that a search is limited to the specified types of elements.  
For example, if you specify that the search include only DATABASE, APPLCTN, and TRANSACT type elements, then matching data in a LTERM element is not found in the search.  
To search all DELTA List element types, select *All elements. To search for specific element types, select the individual element type(s). |
| Field | Type a / in the selection field next to one or more individual fields of a DELTA List element so that a search is limited to the specified fields of an element.  
To search all element fields, select *All elements. To search specific element fields, select the individual field name.  
You can also select any valid combination of Element type and Field by typing a / next to the appropriate type and field names. |

9 Press Enter. The DELTA List Edit panel is displayed with the Fnd/Chg field indicating which element(s) was changed with the CHANGE command.
Using DELTA List Check and Execute

This chapter describes how to use the DELTA List Check and Execute functions of DELTA PLUS.

Introduction

This chapter describes how you can check a DELTA List against the IMS control region without implementing the changes. The Check function verifies the elements you have inserted or changed on the DELTA List.

The Execute function implements the DELTA List on the IMS control region and logs all of the changes it makes. DELTA PLUS verifies the user ID and IMSID to prevent unauthorized execution of a DELTA List.

You can generate a report of the elements on the DELTA PLUS History File as a result of the DELTA List Execute function. This report identifies the changes, any errors, and the date and time of each change and error.

Checking DELTA Lists Online

Once a DELTA List has been created or modified, you can check it without implementing the changes to the IMS control region(s). The Check function sends the DELTA List to the target IMS control region or Group and validates, or checks, whether the element changes and additions in the DELTA List will process without errors. Although the Check function is unable to detect every error, it will detect the most common errors that cause a DELTA List to fail. No changes are made to the IMS system as a result of performing the Check function. Command elements present in the DELTA List are not executed during Check processing.

When you run the Check function in one-element-at-a-time mode and elements are defined in the DELTA List that are related to other elements, the possibility exists
that the Check function may return errors that would not occur during actual DELTA List execution.

For example, if you are adding a series of applications and transactions, the addition of the transactions will return an error because the associated applications were not actually added and do not exist. BMC Software recommends that you run the Check function in optimized mode to prevent these types of errors from occurring.

See “Executing a DELTA List” on page 272 for more information and instructions on executing a DELTA List to implement changes to the IMS control region.

You access the panels that allow you to check a DELTA List from the DELTA PLUS Main Menu panel. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.

To Begin a DELTA List Session to Check a DELTA List

1 Go to the DELTA List Edit/Execute Entry panel.

From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

```
Menu  Options  Help
---------------------------------------------------------------
DELTA PLUS                   DELTA List Edit/Execute Entry
Command ===> _________________________________________________________________

Choose a selection.
  1. Edit a DELTA List
  2. Check/Execute a DELTA List

Specify DELTA List information:
  DELTA List library . . . 'GCB.DLP.DELTAPDS'
  DELTA List . . . . . . . ________ (blank for selection list)
  View Profile . . . . . . . DEFAULT
```

2 Perform the appropriate action.
3 Type the data set name of the library in which the existing DELTA List resides in the **DELTA List library** field.

4 *View Profile* --Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**

When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT*nn* for DELTA PLUS VIRTUAL TERMINAL or DDCKWT*nn* for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed <strong>2</strong> in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Execution panel is displayed.</td>
</tr>
<tr>
<td>You typed <strong>2</strong> in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>select a DELTA List for checking from a member selection list</td>
<td>See “Selecting a DELTA List to Check” on page 260 for instructions.</td>
</tr>
<tr>
<td>check a DELTA List</td>
<td>See “Checking a DELTA List” on page 261 for instructions.</td>
</tr>
<tr>
<td>execute a DELTA List</td>
<td>See “Executing a DELTA List” on page 272 for instructions.</td>
</tr>
</tbody>
</table>
Selecting a DELTA List to Check

The member selection list (the following figure) is the first panel accessed with option 2 if the DELTA List field on the DELTA List Edit/Execute Entry panel is blank or contains a masking pattern. If the DELTA List field was blank, it presents a scrollable selection list of all DELTA Lists in the DELTA PLUS PDS. If the DELTA List field contained a masking pattern, it presents a selection list of all DELTA Lists that matched the masking pattern. All entries on this panel display the member name and ISPF statistics for each member.

![Diagram showing the member selection list and related panels]

Figure 11: Member Selection List

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>contains the DELTA PLUS PDS member name for each DELTA List</td>
</tr>
<tr>
<td>VV MM</td>
<td>indicates the version number and modification of each DELTA List member</td>
</tr>
<tr>
<td>Created</td>
<td>identifies the creation date of each DELTA List</td>
</tr>
<tr>
<td>Changed</td>
<td>identifies the date and time of the last update of each DELTA List</td>
</tr>
<tr>
<td>Size</td>
<td>indicates the current number of lines, or size, of each DELTA List</td>
</tr>
<tr>
<td>Init</td>
<td>indicates the initial number of lines, or size, of each DELTA List</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Mod</td>
<td>identifies the number of times each DELTA List has been modified</td>
</tr>
<tr>
<td>ID</td>
<td>identifies the individual responsible for either the creation or the last update of each DELTA List</td>
</tr>
</tbody>
</table>

**To Select a DELTA List to Check**

1. Type **S** next to one of the DELTA PLUS PDS member names listed on the panel.
2. Press **Enter** to select the DELTA list for checking.

**Where to go from here**

Perform either of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>check a DELTA List</td>
<td>See “Checking a DELTA List” on page 261 for instructions.</td>
</tr>
<tr>
<td>execute a DELTA List</td>
<td>See “Executing a DELTA List” on page 272 for instructions.</td>
</tr>
</tbody>
</table>

**Checking a DELTA List**

The DELTA List Execution panel is the panel you use to check or execute a DELTA List. A DELTA List Check behaves exactly as a DELTA List Execute does, except that Check does not implement the requested changes to IMS, nor does it actually execute IMS commands stored in the DELTA List. Nothing is logged as a result of the Check function.
Before you begin

When you run the Check function in one-element-at-a-time mode and elements are defined in the DELTA List that are related to other elements, the possibility exists that the Check function may return errors that would not occur during actual DELTA List execution.

For example, if you are adding a series of applications and transactions, the addition of the transactions will return an error because the associated applications were not actually added and do not exist. BMC Software recommends that you run the Check function in optimized mode to prevent these types of errors from occurring.

To Check a DELTA List

1 Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Decide if you want to check a specific existing DELTA List or choose an existing DELTA List for checking. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>check a specific existing DELTA List</td>
<td>Type 2 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for checking</td>
<td>Type 2 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4 View Profile — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   Note

   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.
<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 2 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Execution panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to check by typing **S** next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**.

The DELTA List Execution panel is displayed.

```
<table>
<thead>
<tr>
<th>File</th>
<th>Edit</th>
<th>View</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>DELTA PLUS</td>
<td></td>
</tr>
<tr>
<td>Command ===&gt;</td>
<td>DELTA List Execution</td>
<td>DELTA List: VDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution type. Select one.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Check only (no updates to IMS)</td>
<td>2. Execute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target IMSIDs or Groups ........ IMSA</td>
<td>Override Variable Definition Set. (Optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options. Select if desired.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Reset results list</td>
<td>2. Coordinate elements across IMS systems within each specified Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Execute Marked elements only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Execution mode. Select one.

1. Optimize execution
   2. One element at a time (All DELTA Lists will be independent)
      If mode 2, pause after elements with errors

F1=Help     F3=Exit     F4=Clear     F5=Edit     F6=Preview     F12=Cancel
```

7 Type **1** in the **Execution type** selection field.

8 Type the name of the target IMSID(s) or Group(s) against which you want to check this DELTA List in the **Target IMSIDs or Groups** entry fields.

9 Type the name of the Variable Definition Set in the **Override Variable Definition Set** field that contains the variable definitions you want for this execution of the DELTA List.

The Variable Definition Set you specify will be used to resolve symbolic variables for this execution of DELTA List instead of the Variable Definition Set specified in the DELTA List Options for this DELTA List.

Leave this field blank if you want to use the Variable Definition Set specified in the DELTA List.
The Override Variable Definition Set will be used to resolve symbolic variables in any nested DELTA Lists.

Type a / in the selection field next to one or more of the following options to select the option(s):

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset results list</td>
<td>Resets the results list. A results list is the information returned at the completion of a DELTA List detailing the outcome of DELTA List Check or Execute. Resetting the results list indicates to DELTA PLUS to discard the output from any previous DELTA List Check or Execute.</td>
</tr>
<tr>
<td>Coordinate elements across IMS systems within each specified group</td>
<td>Ensures that changes to resources contained in the DELTA LIST are coordinated across all IMS control regions in the Group. If there is an error in any element in the DELTA List on any of the IMS control regions, then no changes will occur on any IMS control region to ensure that the systems remain in synchronization. This option is valid only when the target is a Group.</td>
</tr>
<tr>
<td>Execute Marked elements only</td>
<td>Indicates that only those elements in the DELTA List that have been marked for execution will be processed. Any element that is not marked will be ignored. If this option is not selected, then all elements in the DELTA List are processed.</td>
</tr>
</tbody>
</table>

Type the appropriate option number in the **Execution mode** selection field to indicate whether you want to execute the DELTA List in optimized mode or one element at a time.

If you choose optimized mode, the entire DELTA List is sent to the target IMS control region(s) and all the elements are processed together. This mode processes a DELTA List in a more efficient manner. If the DELTA List contains a mixture of dependent and independent DELTA Lists, then processing may occur in multiple passes as each dependent or independent collection of elements is processed as a single unit of work.

If you choose to process the DELTA List one element at a time, each element in the DELTA List is sent to the target IMS control region(s) individually and processed before the next element in sequence is processed.

Optional. If you select the One element at a time option in the **Execution mode** field, you can type a / in the selection field under it to have the processing of the DELTA List pause when any errors are encountered. You will then be given the option of continuing the DELTA List processing with the next element or canceling the DELTA List processing.
Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform error recovery during a DELTA List Check</td>
<td>See “Recovering from Errors during a DELTA List Check” on page 265 for instructions.</td>
</tr>
<tr>
<td>view the execution results from a DELTA List Check</td>
<td>See “Displaying the Execution Results List” on page 266 for instructions.</td>
</tr>
<tr>
<td>execute a DELTA List</td>
<td>See “Executing a DELTA List” on page 272 for instructions.</td>
</tr>
</tbody>
</table>

Recovering from Errors during a DELTA List Check

If you have selected one-element-at-a-time execution mode with the option of pausing at errors and any elements in the DELTA List encounter errors during the check processing, you will be presented with an Element Error pop-up window (the following figure). This pop-up window indicates the element that encountered the error and describes the error. The pop-up window provides the options of continuing DELTA List processing with the next element or canceling the Check of the DELTA List.

Figure 12: Element Error Pop-up Window

If you have selected one-element-at-a-time execution mode with the option of pausing at errors and any elements in the DELTA List encounter errors during the check processing, you will be presented with an Element Error pop-up window (the following figure). This pop-up window indicates the element that encountered the error and describes the error. The pop-up window provides the options of continuing DELTA List processing with the next element or canceling the Check of the DELTA List.

Figure 12: Element Error Pop-up Window

Recovering from Errors during a DELTA List Check

If you have selected one-element-at-a-time execution mode with the option of pausing at errors and any elements in the DELTA List encounter errors during the check processing, you will be presented with an Element Error pop-up window (the following figure). This pop-up window indicates the element that encountered the error and describes the error. The pop-up window provides the options of continuing DELTA List processing with the next element or canceling the Check of the DELTA List.

Figure 12: Element Error Pop-up Window

If you have selected one-element-at-a-time execution mode with the option of pausing at errors and any elements in the DELTA List encounter errors during the check processing, you will be presented with an Element Error pop-up window (the following figure). This pop-up window indicates the element that encountered the error and describes the error. The pop-up window provides the options of continuing DELTA List processing with the next element or canceling the Check of the DELTA List.

Figure 12: Element Error Pop-up Window
Table 37: Fields Available on the Element Error Pop-up Window

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Type the option number of your choice for Check processing of the DELTA List. Possible values are:</td>
</tr>
<tr>
<td></td>
<td>■ 1 - Yes, continue executing the DELTA List on the next element</td>
</tr>
<tr>
<td></td>
<td>■ 2 - No, cancel execution</td>
</tr>
<tr>
<td>Element Type</td>
<td>Identifies the type of the IMS system resource element in the DELTA List. Possible values are:</td>
</tr>
<tr>
<td></td>
<td>■ APPLCTN - application programs that run under the control of the IMS DB/DC environment</td>
</tr>
<tr>
<td></td>
<td>■ TRANSACT - IMS exclusive, IMS Fast Path potential, or IMS Fast Path exclusive transactions</td>
</tr>
<tr>
<td></td>
<td>■ DATABASE - a physical database that IMS manages</td>
</tr>
<tr>
<td></td>
<td>■ RTCODE - route codes</td>
</tr>
<tr>
<td></td>
<td>■ TERMINAL - IMSGEN-defined terminals</td>
</tr>
<tr>
<td></td>
<td>■ LTERM - IMSGEN-defined LTERMs</td>
</tr>
<tr>
<td></td>
<td>■ SUBPOOL - IMSGEN-defined subpools</td>
</tr>
<tr>
<td></td>
<td>■ COMMAND - selected IMS operator commands</td>
</tr>
<tr>
<td></td>
<td>■ DELTALST - a DELTA List nested, or embedded, in the parent DELTA List</td>
</tr>
<tr>
<td>Element Name</td>
<td>Identifies the name of the IMS system resource element in the DELTA List</td>
</tr>
<tr>
<td>DELTA List</td>
<td>Identifies the DELTA List being checked</td>
</tr>
<tr>
<td>DELTA Action</td>
<td>Identifies the DELTA Action taken against the associated IMS system resource element. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ ADD</td>
</tr>
<tr>
<td></td>
<td>■ ADD/REVISE</td>
</tr>
<tr>
<td></td>
<td>■ REVISE</td>
</tr>
<tr>
<td></td>
<td>■ DELETE</td>
</tr>
<tr>
<td></td>
<td>■ RELOAD</td>
</tr>
<tr>
<td>IMSID</td>
<td>Identifies the IMSID(s) of the IMS system(s) where the element was checked.</td>
</tr>
<tr>
<td>Error Message</td>
<td>Identifies the error message for the error encountered by the element.</td>
</tr>
</tbody>
</table>

Displaying the Execution Results List

Once a DELTA List has been checked or executed, the Execution Results panel (the following figure) is displayed, which provides details about each element that was processed. This panel shows a summary of each element and the information related to it. You may obtain more detail for a specific element by selecting that row in the table. Also, the results list can be sorted and reformatted to your specifications using
the Sort and Options pull-down menus on the action bar. The online help panels provide more information about this panel and the use of the Sort and Options pull-down menus.

**Figure 13: Execution Results Panel**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong></td>
<td>Type one of the following action codes in this field next to one of the elements listed on the panel:</td>
</tr>
<tr>
<td></td>
<td>■ E - Access the DELTA List Edit panel.</td>
</tr>
<tr>
<td></td>
<td>■ S - Access more details related to the element.</td>
</tr>
<tr>
<td><strong>Element Name</strong></td>
<td>Identifies the name of the IMS system resource element in the DELTA List</td>
</tr>
<tr>
<td><strong>Element Type</strong></td>
<td>Identifies the type of the IMS system resource element in the DELTA List. Possible values are</td>
</tr>
<tr>
<td></td>
<td>■ APPLCTN - application programs that run under the control of the IMS DB/DC environment</td>
</tr>
<tr>
<td></td>
<td>■ TRANSACT - IMS exclusive, IMS Fast Path potential, or IMS Fast Path exclusive transactions</td>
</tr>
<tr>
<td></td>
<td>■ DATABASE - physical database that IMS manages</td>
</tr>
<tr>
<td></td>
<td>■ RTCODE - route codes</td>
</tr>
<tr>
<td></td>
<td>■ TERMINAL - IMSGEN-defined terminals</td>
</tr>
<tr>
<td></td>
<td>■ LTERM - IMSGEN-defined LTERMs</td>
</tr>
<tr>
<td></td>
<td>■ SUBPOOL - IMSGEN-defined subpools</td>
</tr>
<tr>
<td></td>
<td>■ COMMAND - selected IMS operator commands</td>
</tr>
<tr>
<td></td>
<td>■ DELTALST - a DELTA List nested, or embedded, in the parent DELTA List</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DELTA Action</td>
<td>Identifies the DELTA Action taken against the associated IMS system resource element. Possible values are ADD, ADD/REVISE, REVISE, DELETE, RELOAD.</td>
</tr>
<tr>
<td>IMSID</td>
<td>Identifies the IMSID of the IMS system where the element was checked or executed.</td>
</tr>
<tr>
<td>Run</td>
<td>Indicates the number of the run (Check or Execute) with which the element was associated. For the first Check or Execute, this will be 0001, for the second it will be 0002. This field increments with each Check or Execute. Details of subsequent DELTA Lists will continue to be added to the results list until the you exit and access the DELTA PLUS Main Menu again.</td>
</tr>
<tr>
<td>Pass</td>
<td>PASS depends on what type of execution mode was chosen for this DELTA List, and if this DELTA List or nested DELTA Lists were dependent. For the One element at a time execution mode, PASS will increment by one for each element executed in this DELTA List. If the execution mode was Optimize execution, PASS will display as 1. If there are nested DELTA Lists that mix the usage of the dependent option, PASS will reflect how many units of work were required to complete this request.</td>
</tr>
<tr>
<td>DELTA List</td>
<td>contains the DELTA PLUS PDS member name for the DELTA List</td>
</tr>
<tr>
<td>Result</td>
<td>Reports a short status message related to this elements success or failure. A detailed description is available by selecting this element individually, or entering DETAILS on the Command line (or pressing F5). Possible values for this field are *Element Error - Element was NOT executed due to an error such as a TRANSACT being added that already exists. *Element Warning - Element encountered a warning condition such as an APPLCTN being added, but the ACB does not exist in the active ACBLIB. OK - Element was successfully executed, no action required *Not Processed - This element was not processed due to an error. Review the message returned by selecting this line in the display. A possible cause is a dependent request that has failed. *Request Error - The entire DELTA List execution has failed. A possible cause is one element failing in a dependent request which requires the entire DELTA List to fail. *System Error - The entire DELTA List execution has failed. A possible cause is an ABEND in BMCXLINK. Review the message returned by selecting this line in the display.</td>
</tr>
</tbody>
</table>
WARNING
In the event that the results list contains a row for which the **Element Name**, **Element Type** and **DELTA Action** values are blanks, this row indicates a severe error was encountered while processing the DELTA List. Select this row to display the details about this error.

---

**Executing DELTA Lists Online**

Once a DELTA List has been created or modified, it can be executed against one or more IMS control regions or Groups. The Execute function sends the elements in the DELTA List to each target IMS and processes the elements which causes the IMS system to be updated as indicated. Successful elements are recorded to the DELTA PLUS Log for restart purposes and the DELTA PLUS History File for auditing and tracking purposes.

You access the panels that allow you to execute a DELTA List from the DELTA PLUS Main Menu panel. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.

---

**Before you begin**

You should verify that the DELTA List you are preparing to execute is without errors by using the Check function. See “Checking DELTA Lists Online” on page 257 for more information.

**To Begin a DELTA List Session to Execute a DELTA List**

1. Go to the DELTA List Edit/Execute Entry panel.
From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>You know the name of the DELTA List you want to execute</td>
<td>Type 2 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>You want to select from a list an existing DELTA List for executing</td>
<td>Type 2 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3 Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4 View Profile — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   **Note**
   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 2 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Execution panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>select a DELTA List for executing from a member selection list</td>
<td>See “Selecting a DELTA List to Execute” on page 271 for instructions.</td>
</tr>
</tbody>
</table>
Selecting a DELTA List to Execute

The member selection list (Figure 14 on page 271) is the first panel accessed with option 2 if the DELTA List field on the DELTA List Edit/Execute Entry panel is blank or contains a masking pattern. If the DELTA List field was blank, it presents a scrollable selection list of all DELTA Lists in the DELTA PLUS PDS. If the DELTA List field contained a masking pattern, it presents a selection list of all DELTA Lists that matched the masking pattern. All entries on this panel display the member name and ISPF statistics for each member.

![Diagram of member selection list process]

Figure 14: Member Selection List

<table>
<thead>
<tr>
<th>Menu Functions</th>
<th>Utilities</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDIT GCB.DLP.DELTAPDS</td>
<td>Row 00001 of 00029</td>
<td>Scroll PAGE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command -&gt;</th>
<th>Name</th>
<th>VV MM Created Changed Size Init Mod ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>.SAMPLST</td>
<td>01.00 03/10/20 98/10/20 10:17 3 3 0 RIHGCB2</td>
<td></td>
</tr>
<tr>
<td>.SAMP01</td>
<td>01.13 03/10/19 98/10/22 12:08 7 4 0 RIHGCB4</td>
<td></td>
</tr>
<tr>
<td>.SAMP02</td>
<td>01.13 03/10/20 98/11/13 06:19 11 4 0 RIHGCB2</td>
<td></td>
</tr>
<tr>
<td>.SAMP03</td>
<td>01.15 03/10/20 98/11/16 08:58 15 4 0 RIHGCB2</td>
<td></td>
</tr>
<tr>
<td>.SAMP04</td>
<td>01.02 03/10/20 98/10/22 12:25 6 6 0 RIHGCB4</td>
<td></td>
</tr>
<tr>
<td>.SAMP05</td>
<td>01.06 03/10/20 98/10/22 12:25 7 6 0 RIHGCB4</td>
<td></td>
</tr>
<tr>
<td>.SAMP06</td>
<td>01.04 03/10/20 98/10/22 12:26 7 7 0 RIHGCB4</td>
<td></td>
</tr>
<tr>
<td>.SAMP07</td>
<td>01.02 03/10/20 98/11/13 06:20 3 3 0 RIHGCB2</td>
<td></td>
</tr>
<tr>
<td>.SAMP08</td>
<td>01.10 03/10/22 98/11/13 06:29 6 6 0 RIHGCB2</td>
<td></td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>contains the DELTA PLUS PDS member name for each DELTA List</td>
<td></td>
</tr>
<tr>
<td>VV MM</td>
<td>indicates the version number and modification of each DELTA List member</td>
<td></td>
</tr>
<tr>
<td>Created</td>
<td>identifies the creation date of each DELTA List</td>
<td></td>
</tr>
<tr>
<td>Changed</td>
<td>identifies the date and time of the last update of each DELTA List</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>indicates the current number of lines, or size, of each DELTA List</td>
<td></td>
</tr>
<tr>
<td>Init</td>
<td>indicates the initial number of lines, or size, of each DELTA List</td>
<td></td>
</tr>
<tr>
<td>Mod</td>
<td>identifies the number of times each DELTA List has been modified</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>identifies the individual responsible for either the creation or the last update of each DELTA List</td>
<td></td>
</tr>
</tbody>
</table>

To Select a DELTA List to Execute

1. Type 2 next to one of the DELTA PLUS PDS member names listed on the panel.
2. Press Enter to select the DELTA list for executing.

Where to go from here

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>execute a DELTA List</td>
<td>See “Executing a DELTA List” on page 272 for instructions.</td>
</tr>
</tbody>
</table>

Executing a DELTA List

The DELTA List Execution panel is the panel you use to check or execute a DELTA List. A DELTA List Execute implements the requested changes to IMS, and it actually executes IMS commands stored in the DELTA List. The Execute function logs all IMS changes which have been made.
To Execute a DELTA List

1. Go to the DELTA List Edit/Execute Entry panel.
   
   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to execute a specific existing DELTA List or choose an existing DELTA List for executing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>execute a specific existing DELTA List</td>
<td>Type 2 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for executing</td>
<td>Type 2 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.

4. *View Profile* — Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   *Note*

   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.

   This field may not display on the panel if no View Profile data set is specified in the Global Options.
5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 2 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Execution panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to execute by typing **S** next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**.

The DELTA List Execution panel is displayed.

7 Type **2** in the **Execution type** selection field.

8 Type the name of the target IMSID(s) or Group(s) against which you want to execute this DELTA List in the **Target IMSIDs or Groups** entry fields.

9 Type the name of the Variable Definition Set in the **Override Variable Definition Set** field that contains the variable definitions you want for this execution of the DELTA List.

The Variable Definition Set you specify will be used to resolve symbolic variables for this execution of DELTA List instead of the Variable Definition Set specified in the DELTA List Options for this DELTA List.

Leave this field blank if you want to use the Variable Definition Set specified in the DELTA List.

**Note**
The Override Variable Definition Set will be used to resolve symbolic variables in any nested DELTA Lists.

10 Type a **/** in the selection field next to one or more of the following options to select option(s):

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset results list</td>
<td>Resets the results list. A results list is the information returned at the completion of a DELTA List detailing the outcome of DELTA List Check or Execute. Resetting the results list indicates to DELTA PLUS to discard the output from any previous DELTA List Check or Execute.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Coordinate elements across IMS systems within each specified group</td>
<td>Ensures that changes to resources contained in the DELTA LIST are coordinated across all IMS control regions in the Group. If there is an error in any element in the DELTA List on any of the IMS control regions, then no changes will be occur on any IMS control region to ensure that the systems remain in synchronization. This option is valid only when the target is a Group.</td>
</tr>
<tr>
<td>Execute Marked elements only</td>
<td>Indicates that only those elements in the DELTA List that have been marked for execution will be processed. Any element that is not marked will be ignored. If this option is not selected, then all elements in the DELTA List are processed.</td>
</tr>
</tbody>
</table>

11 Type the appropriate option number in the **Execution mode** selection field to indicate whether you want to execute the DELTA List in optimized mode or one element at a time.

**Note**
If you choose optimized mode, the entire DELTA List is sent to the target IMS control region(s) and all the elements are processed together. This mode processes a DELTA List in a more efficient manner. If the DELTA List contains a mixture of dependent and independent DELTA Lists, then processing may occur in multiple passes as each dependent or independent collection of elements is processed as a single unit of work.

If you choose to process the DELTA List one element at a time, each element in the DELTA List is sent to the target IMS control region(s) individually and processed before the next element in sequence is processed.

12 Optional. If you select the **One element at a time** option in the **Execution mode** field, you can type a / in the selection field under it to have the processing of the DELTA List pause when any errors are encountered.

You will then be given the option of continuing the DELTA List processing with the next element or canceling the DELTA List processing.

13 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform error recovery during a DELTA List Execute</td>
<td>See “Recovering from Errors during a DELTA List Execute” on page 276 for instructions.</td>
</tr>
</tbody>
</table>
### Activity
- view the execution results from a DELTA List Execute

### Reference
- See “Displaying the Execution Results List” on page 278 for instructions.

---

**Recovering from Errors during a DELTA List Execute**

If you have selected one-element-at-a-time execution mode with the option of pausing at errors and any elements in the DELTA List encounter errors during the execute processing, you will be presented with an Element Error pop-up window (the following figure). This pop-up window indicates the element that encountered the error and describes the error. The pop-up window provides the options of continuing DELTA List processing with the next element or canceling the Execute of the DELTA List.

**Figure 15: Element Error Pop-up Window**

![Element Error Pop-up Window](image)

**Table 39: Fields Available on the Element Error Pop-up Window**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Type the option number of your choice for Execute processing of the DELTA List. Possible values are</td>
</tr>
<tr>
<td></td>
<td>- 1 - Yes, continue executing the DELTA List on the next element</td>
</tr>
<tr>
<td></td>
<td>- 2 - No, cancel execution</td>
</tr>
</tbody>
</table>

---

276  *DELTA PLUS User Guide*
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element Type</td>
<td>Identifies the type of the IMS system resource element in the DELTA List. Possible values are:</td>
</tr>
<tr>
<td></td>
<td>■ APPLCTN - application programs that run under the control of the IMS DB/DC environment</td>
</tr>
<tr>
<td></td>
<td>■ TRANSACT - IMS exclusive, IMS Fast Path potential, or IMS Fast Path exclusive transactions</td>
</tr>
<tr>
<td></td>
<td>■ DATABASE - a physical database that IMS manages</td>
</tr>
<tr>
<td></td>
<td>■ RTCODE - route codes</td>
</tr>
<tr>
<td></td>
<td>■ TERMINAL - IMSGEN-defined terminals</td>
</tr>
<tr>
<td></td>
<td>■ LTERM - IMSGEN-defined LTERMs</td>
</tr>
<tr>
<td></td>
<td>■ SUBPOOL - IMSGEN-defined subpools</td>
</tr>
<tr>
<td></td>
<td>■ COMMAND - selected IMS operator commands</td>
</tr>
<tr>
<td></td>
<td>■ DELTALST - a DELTA List nested, or embedded, in the parent DELTA List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element Name</th>
<th>Identifies the name of the IMS system resource element in the DELTA List.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DELTA List</th>
<th>Identifies the DELTA List being executed.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DELTA Action</th>
<th>Identifies the DELTA Action taken against the associated IMS system resource element. Possible values are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>■ ADD</td>
</tr>
<tr>
<td></td>
<td>■ ADD/REVISE</td>
</tr>
<tr>
<td></td>
<td>■ REVISE</td>
</tr>
<tr>
<td></td>
<td>■ DELETE</td>
</tr>
<tr>
<td></td>
<td>■ RELOAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMSID</th>
<th>Identifies the IMSID(s) of the IMS system(s) where the element was executed.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ErrorMessage</th>
<th>Identifies the error message for the error encountered by the element.</th>
</tr>
</thead>
</table>
Displaying the Execution Results List

Once a DELTA List has been checked or executed, the Execution Results panel (Figure 16 on page 278) is displayed, which provides details about each element that was processed. This panel shows a summary of each element and the information related to it. You may obtain more detail for a specific element by selecting that row in the table. Also, the results list can be sorted and reformatted to your specifications using the Sort and Options pull-down menus on the action bar. The online help panels provide more information about this panel and the use of the Sort and Options pull-down menus.

Figure 16: Execution Results Panel

<table>
<thead>
<tr>
<th>File</th>
<th>View</th>
<th>Sort</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DELTA PLUS                      Execution Results                 Element error
Command ===>

Type one or more action codes. Then press Enter. Sorted by:
S=Detail  E=Edit DELTA List

--- Element ---  DELTA
S   Name     Type    Action  IMSID  Run    Pass     List      Result
- -------- -------- -------- -----  ---- -------- -------- ----------------
CTSCMD   TRANSACT DELETE   WXC5   0001 00000001 DOCRLIST *Element Warning
CTSCMD   APPLCTN DELETE   WXC5   0001 00000001 DOCRLIST *Element Warning
CTSCMD   APPLCTN ADD     WXC5   0001 00000001 DOCRLIST OK
CTSCMD   APPLCTN ADDREV WXC5   0001 00000001 DOCRLIST OK
MTDFP1   APPLCTN ADD     WXC5   0001 00000001 DOCRLIST *Element Warning
MTDFP1   RTCODE   ADD      WXC5   0001 00000001 DOCRLIST OK
MTDFP1   TRANSACT ADD    WXC5   0001 00000001 DOCRLIST OK
MTDFP1   RTCODE   REVISE  WXC5   0001 00000001 DOCRLIST OK
MTDFPDB1 DATABASE ADD    WXC5   0001 00000001 DOCRLIST *Element Warning
MTDFPDB1 DATABASE REVISE WXC5   0001 00000001 DOCRLIST OK
F1=Help      F3=Exit      F4=Options   F5=Details   F6=Errors    F7=Up
F8=Down     F12=Cancel |

Fields Available on Panel

Table 40: Fields Available on the Execution Results List

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| S          | Type one of the following action codes in this field next to one of the elements listed on the panel:
  ■ E - Access the DELTA List Edit panel.
  ■ S - Access more details related to the element. |
<p>| Element Name | Identifies the name of the IMS system resource element in the DELTA List |</p>
<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| Element Type       | Identifies the type of the IMS system resource element in the DELTA List. Possible values are  
  ■ APPLCTN - application programs that run under the control of the IMS DB/DC environment  
  ■ TRANSACT - IMS exclusive, IMS Fast Path potential, or IMS Fast Path exclusive transactions  
  ■ DATABASE - a physical database that IMS manages  
  ■ RTCODE - route codes  
  ■ TERMINAL - IMSGEN-defined terminals  
  ■ LTERM - IMSGEN-defined LTERMs  
  ■ SUBPOOL - IMSGEN-defined subpools  
  ■ COMMAND - selected IMS operator commands  
  ■ DELTALST - a DELTA List nested, or embedded, in the parent DELTA List                                                                                                                                                                                                 |
| DELTA Action       | Identifies the DELTA Action taken against the associated IMS system resource element. Possible values are  
  ■ ADD  
  ■ ADD/REVISE  
  ■ REVISE  
  ■ DELETE  
  ■ RELOAD                                                                                                                                                                                                                                                                                                                                 |
| IMSID              | Identifies the IMSID of the IMS system where the element was checked or executed.                                                                                                                                                                                                                                                            |
| Run                | Indicates the number of the run (Check or Execute) with which the element was associated. For the first Check or Execute, this will be 0001, for the second it will be 0002. This field increments with each Check or Execute. Details of subsequent DELTA Lists will continue to be added to the results list until you exit and access the DELTA PLUS Main Menu again. |

Executing DELTA Lists Online

Chapter 7  Using DELTA List Check and Execute  279
Pass  
PASS depends on what type of execution mode was chosen for this DELTA List, and if this DELTA List or nested DELTA Lists were dependent. If the execution mode was **One element at a time**, PASS will increment by one for each element executed in this DELTA List. If the execution mode was **Optimize execution**, PASS will display as 1. If there are nested DELTA Lists that mix the usage of the dependent option, PASS will reflect how many units of work were required to complete this request.

DELTA List  
contains the DELTA PLUS PDS member name for the DELTA List

Result  
Reports a short status message related to this element's success or failure. A detailed description is available by selecting this element individually, or entering DETAILS on the Command line (or pressing F5). Possible values for this field include:

- **Element Error** - Element was NOT executed due to an error such as a TRANSACT being added that already exists.
- **Element Warning** - Element encountered a warning condition such as an APPLCTN being added, but the ACB does not exist in the active ACBLIB.
- **OK** - Element was successfully executed, no action required
- **Not Processed** - This element was not processed due to an error. Review the message returned by selecting this line in the display. A possible cause is a dependent request that has failed.
- **Request Error** - The entire DELTA List execution has failed. A possible cause is one element failing in a dependent request which requires the entire DELTA List to fail.
- **System Error** - The entire DELTA List execution has failed. A possible cause is an ABEND in BMCXLINK. Review the message returned by selecting this line in the display.

**WARNING**

In the event that the results list contains a row for which the **Element Name**, **Element Type** and **DELTA Action values** are blanks, this row indicates a severe error was encountered while processing the DELTA List. Select this row to display the details about this error.

---

### Checking and Executing Single Elements Online

The DELTA PLUS Editor has been enhanced to accept the CHECK, CK, and EXecute commands from the DELTA List Element Edit panel, and EX/CK action codes from the DELTA List Edit panel. These enhancements allow you to check and execute a single element in a DELTA List.
Checking a Single Element

The DELTA List Element Execution panel is the panel you use to check or execute a single element. A DELTA List Element Check behaves exactly as a DELTA List Element Execute does, except that Check does not implement the requested changes to IMS, nor does it actually execute IMS commands stored in the DELTA List. Nothing is logged as a result of the Check function.

To Check a Single Element

1. Go to the DELTA List Edit/Execute Entry panel.
   
   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to check an element for a specific existing DELTA List or choose an existing DELTA List for element checking. Perform the appropriate action.
### Activity | Action
--- | ---
check an element in a specific existing DELTA List | Type 1 in the selection field and the name of an existing DELTA List in the **DELTA List** field.  
choose an existing DELTA List for element checking | Type 1 in the selection field and leave the **DELTA List** field blank or type a masking pattern in the **DELTA List** field.

3. Type the data set name of the library in which the existing DELTA List resides in the **DELTA List library** field.

4. **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

   **Note**  
   When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWn for DELTA PLUS VIRTUAL TERMINAL or DDCKWn for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.  
   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

6. If you are on a member selection list panel, select a DELTA List to check by typing a `/` next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7. Type **CK** in the **Actn** field next to the element you want to check and press **Enter**. The DELTA List Element Execution panel is displayed.

   Alternately, you could type **S** in the **Actn** field next to the element you want to check and press **Enter** to display the DELTA List Element Edit panel. From the DELTA List Element Edit panel, enter the **CHECK E** primary command to display the DELTA List Element Execution panel.
8 Type 1 in the **Execution type** selection field.

9 Type the name of the target IMSID(s) or Group(s) against which you want to check this element in the **Target IMSIDs or Groups** entry fields.

10 Type the name of the Variable Definition Set in the **Override Variable Definition Set** field that contains the variable definitions you want for this check of the element.

The Variable Definition Set you specify will be used to resolve symbolic variables for this check of the element instead of the Variable Definition Set specified in the DELTA List Options for this DELTA List.

Leave this field blank if you want to use the Variable Definition Set specified in the DELTA List.

**Note**

The Override Variable Definition Set will be used to resolve symbolic variables in any nested DELTA Lists.

11 Type a / in the selection field next to one or more of the following options to select the option(s):

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset results list</td>
<td>Resets the results list. A results list is the information returned at the completion of a DELTA List detailing the outcome of DELTA List Check or Execute. Resetting the results list indicates to DELTA PLUS to discard the output from any previous DELTA List Check or Execute.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Coordinate elements across IMS systems within each specified group</td>
<td>Ensures that changes to resources contained in the DELTA LIST are coordinated across all IMS control regions in the Group. If there is an error in any element in the DELTA List on any of the IMS control regions, then no changes will occur on any IMS control region to ensure that the systems remain in synchronization. This option is valid only when the target is a Group.</td>
</tr>
</tbody>
</table>

12 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform error recovery during a DELTA List Check</td>
<td>See “Recovering from Errors during a DELTA List Check” on page 265 for instructions.</td>
</tr>
<tr>
<td>view the execution results from a DELTA List Check</td>
<td>See “Displaying the Execution Results List” on page 278 for instructions.</td>
</tr>
<tr>
<td>execute a single element</td>
<td>See “Executing a Single Element” on page 284 for instructions.</td>
</tr>
</tbody>
</table>

**Executing a Single Element**

Once a DELTA List has been created or modified, it can be executed against one or more IMS control regions or Groups. The Execute function sends the elements in the DELTA List to each target IMS and processes the elements which causes the IMS system to be updated as indicated. Successful elements are recorded to the DELTA PLUS Log for restart purposes and the DELTA PLUS History File for auditing and tracking purposes.
To Execute a Single Element

1. Go to the DELTA List Edit/Execute Entry panel.
   
   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to execute an element for a specific existing DELTA List or choose an existing DELTA List for element execution. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>execute an element in a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for element execution</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the DELTA List library field.
4 **View Profile**—Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

**Note**
When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT
nn for DELTA PLUS VIRTUAL TERMINAL or DDCKWT
nn for DELTA PLUS for DBCTL, where
nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to execute by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing 1. The DELTA List Edit panel is displayed.

7 Type **EX** in the **Actn** field next to the element you want to check and press 1. The DELTA List Element Execution panel is displayed.

Alternately, you could type **S** in the **Actn** field next to the element you want to execute and press **Enter** to display the DELTA List Element Edit panel. From the DELTA List Element Edit panel, enter the **Execute E** primary command to display the DELTA List Element Execution panel.

8 Type 2 in the **Execution type** selection field.

9 Type the name of the target IMSID(s) or Group(s) against which you want to check this element in the **Target IMSIDs or Groups** entry fields.

10 Type the name of the Variable Definition Set in the **Override Variable Definition Set** field that contains the variable definitions you want for this execution of the element.

The Variable Definition Set you specify will be used to resolve symbolic variables for this execution of the element instead of the Variable Definition Set specified in the DELTA List Options for this DELTA List.
Leave this field blank if you want to use the Variable Definition Set specified in the DELTA List.

**Note**
The Override Variable Definition Set will be used to resolve symbolic variables in any nested DELTA Lists.

11 Type a / in the selection field next to one or more of the following options to select the option(s):

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset results list</td>
<td>Resets the results list. A results list is the information returned at the completion of a DELTA List detailing the outcome of DELTA List Check or Execute. Resetting the results list indicates to DELTA PLUS to discard the output from any previous DELTA List Check or Execute.</td>
</tr>
<tr>
<td>Coordinate elements across IMS systems within each specified group</td>
<td>Ensures that changes to resources contained in the DELTA LIST are coordinated across all IMS control regions in the Group. If there is an error in any element in the DELTA List on any of the IMS control regions, then no changes will occur on any IMS control region to ensure that the systems remain in synchronization. This option is valid only when the target is a Group.</td>
</tr>
</tbody>
</table>

12 Press **Enter**.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform error recovery during a DELTA List Execute</td>
<td>See “Recovering from Errors during a DELTA List Execute” on page 276 for instructions.</td>
</tr>
<tr>
<td>view the execution results from a DELTA List Execute</td>
<td>See “Displaying the Execution Results List” on page 278 for instructions.</td>
</tr>
</tbody>
</table>

**Using DELTA List Check and Execute in Batch**

In addition to checking and executing DELTA Lists through the ISPF interface, you can run the Check and Execute functions in batch. Batch execution is helpful when
you want to execute a DELTA List during non-peak times and the job can be scheduled to be executed by a job scheduler.

Two methods exist for running the Check and Execute functions is batch. The decision to use one versus the other is based on whether you leave your BMCXLINK started task active or not. Your DELTA Lists that implement changes to IMS can be checked and executed in batch mode using one of the following methods:

- If your BMCXLINK is not active, then you must use the DLP#BEX1 in the DLPCNTL data set.
- If your BMCXLINK is active, then you must use the DLP#BEX2 in the DLPCNTL data set.

When BMCXLINK is not active, the DLP#BEX1 job serves as a batch BMCXLINK and sends the DELTA List to the specified target IMS control region(s). DLP#BEX1 can run on any MVS system which can communicate with the target IMS systems using XCF.

When BMCXLINK is active, the DLP#BEX2 job serves as a TSO session and sends the DELTA List to the BMCXLINK associated with the target IMS control region(s). DLP#BEX2 can run on any MVS system that can communicate with the target BMCXLINK using VTAM because the communication between DLP#BEX2 and BMCXLINK utilizes VTAM in the same way that the ISPF interface does.

Using the Batch Commands

DLP#BEX1 and DLP#BEX2 utilize the exact same command set for processing DELTA Lists. The commands are free form and consist of three fields separated by at least one blank, see the following table. All three fields must be contained in positions one through 71 of one SYSIN record.

Note

The following considerations apply to using batch commands:

- A label on the command is optional, but it enables other statements to branch to the command. Labels must begin in column 1 and be followed by a blank. Statements without labels must leave column 1 blank.

- The operation code must be preceded and followed by a blank. It is required in all commands. Commands must be contained on a single input record and may not be continued.
- Not all commands require an operand; however, some commands can have more than one operand. When required, they consist of one or more positional and/or keyword-type parameters separated by commas. A blank terminates the operand field. Optional operands shown in Table 41 on page 289 are enclosed in brackets; all others are required. Do not code brackets in the instruction.

- Comment lines may be inserted anywhere in the job stream and are distinguished by an asterisk (*) in column 1.

Table 41 on page 289 shows the DELTA List batch commands.

### Table 41: DELTA List Batch Commands

<table>
<thead>
<tr>
<th>Op Code</th>
<th>Operands</th>
<th>Description</th>
</tr>
</thead>
</table>
| CHECK   | list,TARGET=id,MODE=mode,MARK=YES,TYPE=COORD | list - Member name in the DELTA PDS to be checked  
id - Target IMSID or Group  
mode - OPTIMIZE - optimized execution mode -  
ELEMENT - element-at-a-time execution mode  
MARK=YES - If MARK=YES is specified, only those elements in the DELTA List which are marked for execution will be processed. If this is operand is omitted, all elements in the DELTA List are processed.  
TYPE=COORD - If TYPE=COORD is specified, then the DELTA List changes will be coordinated across all the IMS control regions in the target Group. The id specified for the TARGET= must be a Group and not an IMSID. |
| EXEC    | list,TARGET=id,MODE=mode,MARK=YES,TYPE=COORD | list - Member name in the DELTA PDS to be executed  
id - Target IMSID or Group  
mode - OPTIMIZE - optimized execution mode -  
ELEMENT - element-at-a-time execution mode  
MARK=YES - If MARK=YES is specified, only those elements in the DELTA List which are marked for execution will be processed. If this is operand is omitted, all elements in the DELTA List are processed.  
TYPE=COORD - If TYPE=COORD is specified, then the DELTA List changes will be coordinated across all the IMS control regions in the target Group. The id specified for the TARGET= must be a Group and not an IMSID. |
<table>
<thead>
<tr>
<th>Op Code</th>
<th>Operands</th>
<th>Description</th>
</tr>
</thead>
</table>
| IF      | cc, ro, value,GOTO=label | A condition code is set during Check/Execute. LASTCC reflects the result of the last operation, whereas MAXCC reflects the highest code received in all operations. Condition codes set are:  
- 0 - OK  
- 4 - Minor error (for example, ACBLIB BLDL failed)  
- 8 - DELTA List not found  
- 12 - Major error during Check/Execute  
- 16 - PDS I/O error  
  cc - The keyword LASTCC or MAXCC  
  ro - One of the following relational operators:  
- EQ - Equal  
- LE - Less than or equal to  
- GE - Greater than or equal to  
- NE - Not equal  
- LT - Less than  
- GT - Greater than  
  value - Compared to cc and can be from 0 to 20  
  label - Branch to label if the tested condition is true |
| EXIT    |                | Terminate the job step.                                                                                                                     |
| ABEND   |                | Terminate job with a U4068 abend.                                                                                                             |

**Output from Batch DELTA List Check and Execute**

As each DELTA List element is executed or checked by a batch job, a record is written to SYSPRINT showing the date, time, action, element type, and the element name. The date and time may not match exactly the date and time written to the DELTA Log.

If the DELTA List contains an IMS /DISPLAY command, the report generated is written to SYSPRINT following an image of the command.
A BMC $nnnn$-type message will immediately follow any report line whose element caused an error. If the command does not Execute or Check successfully, a DFS message documenting the error is written to SYSPRINT following an image of the command. MAXCC is returned as the job step completion code.
Using Variable Definitions

This chapter describes how to create and use Variable Definitions during DELTA List processing.

What are Variable Definitions?

DELTA PLUS has been enhanced to add support for the use of variables in a DELTA List. This enhancement enables one DELTA List to be used for multiple IMS systems with differing parameter values.

Variable Definitions allow installations to assign unique values to individual fields for certain DELTA List elements. The element field values can be IMS system dependent, or an installation can define default element field values to be used by all IMS systems when processing DELTA Lists.

You can define unique values for individual fields for certain DELTA List elements using variables. A variable is a 1- to 8-character name. This variable can have different values assigned to it based on the IMSID of the IMS systems where the DELTA List will be processed. By assigning different values to the variable, you can process the same DELTA List with different data on different IMS systems.

You can enter variable names as the values for certain DELTA List element fields. Any element field that does not have set values may contain a variable as a value. You enter a reference to the variable when editing a DELTA List element field by typing an ampersand (&) followed by the variable name and delimited by a period (.). The ampersand means the value of, and DELTA PLUS interprets the value of the listed variables when processing a DELTA List that contains variables.

If a variable string is too long for an element field when you are editing a DELTA List element, you can position the cursor on the field and press Prompt (F4) to access the Expanded Field Input panel. This panel allows you to enter a variable string up to 32 characters in length, or to select from a list of available variables.
Allocating a New Variable Definition Library

The Variable Definition Library is the data set that will store the Variable Definition Sets. The Variable Definition Sets are members that contain the definitions for the variables used by DELTA PLUS in DELTA List processing.

Before you begin

You can allocate the Variable Definition Library data set with the DELTA PLUS Data Set Allocation Menu accessed from the Administration Menu; however, you must have the proper DELTA PLUS authority to create Variable Definition Sets to store in the new data set.

To Allocate a Variable Definition Library

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 7 in the selection field and press Enter. The DELTA PLUS Data Set Allocation Menu (Figure 17 on page 294) is displayed.

   **Figure 17: DELTA PLUS Data Set Allocation Menu**

   Menu Options Help
   __________________________________________________________________________
   DELTA PLUS DELTA PLUS Data Set Allocation Menu
   Command ===> _________________________________________________________________
   Choose the type of data set to allocate.
   1. DELTA List library - Contains DELTA Lists
   2. Options library - Contains IMSID and Group Options
   3. View Profile library - Contains Edit View Profiles
   4. Variable Definition library - Contains Variable Definition Sets
   5. Log data set - Primary or Secondary Log data set
   6. History File data set - Primary or Secondary History File data set
   7. Report output data set - Output data set for reports or conversions

   Specify the data set to allocate.
   Data set name . . . DLP.VARDEF.LIB

3. Type the data set name of the library in which the Variable Definition Sets will reside in the Data set name field and press Enter. The Allocate New Variable Definition Library panel is displayed.

   Menu Options Help
   __________________________________________________________________________
   Allocate New Variable Definition Library
   Command ===> _________________________________________________________________
   Enter information below to allocate the data set. Then press Enter.
4 Edit the following fields, as necessary:

Table 42: Fields Available on the Allocate New Variable Definition Library Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Definition library</td>
<td>Displays the data set name of the Variable Definition Set library. This is not an editable field.</td>
</tr>
<tr>
<td>SMS Management Class</td>
<td>Specify the SMS Management class to be used for this DELTA PLUS data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>SMS Storage Class</td>
<td>Specify the SMS Storage class to be used for this DELTA PLUS data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>Volume serial</td>
<td>Specify the DASD volume serial (VOLSER) where this DELTA PLUS data set will be allocated.</td>
</tr>
<tr>
<td>Generic unit</td>
<td>Type the generic unit name to be used for data set allocation. Generic names (also referred to as esoteric) are given to groups, or pools of DASD volumes. Some common generic/esoteric names are SYSDA, SYSCALLDA, and SCRATCH.</td>
</tr>
<tr>
<td>Space Units</td>
<td>Specify the space unit type to be used for data set allocation. Valid values are TRKS or CYLS.</td>
</tr>
<tr>
<td>Primary quantity</td>
<td>Specify the number of space units to be used for the DELTA PLUS data set allocation. The space unit type was previously specified on this panel.</td>
</tr>
<tr>
<td>Secondary quantity</td>
<td>Specify the number of space units to be used for the DELTA PLUS data set allocation. The space unit type was previously specified on this panel.</td>
</tr>
<tr>
<td>Directory blocks</td>
<td>Specify the number of directory blocks to be provided for a partitioned data set. Specify zero for a sequential data set.</td>
</tr>
<tr>
<td>Block size</td>
<td>Specify the DASD block size to be used for the DELTA PLUS data set.</td>
</tr>
</tbody>
</table>

5 Press Enter. The DELTA PLUS Data Set Allocation Menu is displayed, and the data set is allocated.
Where to go from here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create or Edit Variable Definition Sets.</td>
<td>See “Specifying a Variable Definition Library” on page 296 for instructions.</td>
</tr>
</tbody>
</table>

Specifying a Variable Definition Library

The Variable Definition Library is the data set where the Variable Definition Sets reside. The Variable Definition Sets are members that contain the definitions for the variables used by DELTA PLUS in DELTA List processing.

Before you begin

When global options have been changed, other DELTA PLUS users must re-enter DELTA PLUS to obtain these revised options. For proper operation, it is recommended that you recycle BMCXLINK.

To Specify a Variable Definition Library

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 1 in the selection field and press Enter. The Global Options Entry panel (Figure 18 on page 296) is displayed.

   **Figure 18: Global Options Entry Panel**

   Specify the library containing the Global Options.

3. Type the data set name of the library in which the global options module - DLP $GBL0 will reside in the Global Options library field and press Enter. The Edit Global Options panel is displayed.
The DELTA PLUS interface obtains the global options module from one of the following sources:

- TSO logon procedure \\STEPLIB concatenation
- DELTA PLUS CLIST ISPLLIB concatenation

4 In the **Variable Definition library** field, specify the name of the data set that will store the Variable Definition Sets which allow user customization of values for element fields in the ISPF interface. For more information on how to allocate the Variable Definition Library data set, see “Allocating a New Variable Definition Library” on page 294.

5 Save your changes.

   a  Press F3. The Confirm Save pop-up window is displayed.

   b  Type 1 in the selection field and press Enter. DELTA PLUS saves the global options.

   c  Press F3 twice. The DELTA PLUS Main Menu is displayed.

Where to Go from Here

Perform any of the following actions:
Creating and Editing Variable Definition Sets

Variable Definitions Sets are members of the Variable Definition library. The Variable Definition Sets contain the variables and their definitions. The variables can be used by DELTA PLUS in DELTA List processing.

Available Command

You can issue several primary commands from the Variable Definition List panel. Primary commands are typed on the Command line. Uppercase characters indicate the minimum text required to execute the command.

**HIDE \[imsid | ALL \]**

Enter the HIDE command without any parameters to display the Show IMSID Value panel that allows you to hide the variable values for a specified IMSID on the current display.

Specify a particular \(imsid\) with the HIDE command to hide the variable values for the specified IMSID on the current display.

Specify the ALL parameter with the HIDE command to hide all IMSID-specific variable values and display only the variable values that are the default values for all IMS systems.
Insert \textit{variable}

Enter the Insert command without any parameters to display the Insert Variable panel. Use this panel to add a new variable to the displayed Variable Definition Set.

Specify the name of the variable you want to add with the Insert command to add a new variable to the displayed Variable Definition Set.

Locate \textit{string}

Locate specified string in the results list. \textit{string} is compared with the values of the field on which the results list is currently sorted.

RESet

Reset the current display by including all hidden variable values.

SAVe

Save the Variable Definition List.

SHOW [imsid | ALL]

Enter the SHOW command without any parameters to display the Show IMSID Value panel that allows you to show the variable values for a specified IMSID on the current display.

Specify a particular \textit{imsid} with the SHOW command to show the variable values for the specified IMSID on the current display.

Specify the ALL parameter with the SHOW command to show all variable values for all IMS systems.

SORT \textit{arg}

Sort the display of the variable values. The optional parameter \textit{arg} can specify one sort field, which can optionally be followed by a sort direction of ASCENDING or DESCENDING. The default sort order is by Variable. The possible sort fields are

- Variable
- IMSID
- Value
- Description
To Create or Edit a Variable Definition Set

1. From the DELTA PLUS Main Menu, type 4 in the selection field and press Enter. The Administration Menu is displayed.

2. Type 6 in the selection field and press Enter. The View Profile Edit Entry panel (Figure 19 on page 300) is displayed.

Figure 19: Variable Definition Edit Entry Panel

<table>
<thead>
<tr>
<th>Menu Options Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS Variable Definition Edit Entry</td>
</tr>
<tr>
<td>Command ===&gt; _________________________________________________________________</td>
</tr>
<tr>
<td>Specify the Variable Definition Set you wish to edit.</td>
</tr>
<tr>
<td>Variable Definition Set . ________ (blank for selection list)</td>
</tr>
</tbody>
</table>

3. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate a specific Variable Definition Set you want to edit or create.</td>
<td>Type the name of the Variable Definition Set in the Variable Definition Set field.</td>
</tr>
<tr>
<td>Choose a Variable Definition Set you want to edit from a list of Variable Definition Sets.</td>
<td>Leave the Variable Definition Set field blank.</td>
</tr>
</tbody>
</table>

4. Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed a specific Variable Definition Set name in the Variable Definition Set field.</td>
<td>The Variable Definition List panel is displayed. Go to Step 8 on page 303.</td>
</tr>
<tr>
<td>You left the Variable Definition Set field blank.</td>
<td>A Member Selection List panel is displayed, allowing you to select a Variable Definition Set. Go to Step 5 on page 300.</td>
</tr>
</tbody>
</table>

5. Type S next to the Variable Definition Set you want to edit, and press Enter. The Variable Definition List panel is displayed.
6 Edit the following fields, as necessary:

Table 43: Fields Available on the Variable Definition List Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Definition Set</td>
<td>Displays the name of the Variable Definition Set you are creating or modifying. This is not an editable field.</td>
</tr>
<tr>
<td>Title</td>
<td>Type a descriptive title for this set of variables and their definitions.</td>
</tr>
<tr>
<td>A</td>
<td>Type one or more of the following action codes in the field next to a variable, and press Enter to edit a variable defined in the Variable Definition Set:</td>
</tr>
<tr>
<td></td>
<td>■ D - Delete the variable and all associated IMSID values when the D action code is entered on the default value for a variable.</td>
</tr>
<tr>
<td></td>
<td>Delete just the associated IMSID value for a variable when the D action code is entered on a particular IMSID value other than the default value.</td>
</tr>
<tr>
<td></td>
<td>■ I - Insert a new IMSID value for a listed variable</td>
</tr>
<tr>
<td>Variable</td>
<td>Displays the name of the variable to be edited. This is not an editable field.</td>
</tr>
<tr>
<td></td>
<td>To insert a new variable, type INSERT on the Command line.</td>
</tr>
<tr>
<td></td>
<td>You can define unique values for individual fields for certain DELTA List elements using variables. A variable is a 1- to 8-character name. This variable can have different values assigned to it based on the IMSID of the IMS systems where the DELTA List will be processed. By assigning different values to the variable, you can process the same DELTA List with different data on different IMS systems.</td>
</tr>
<tr>
<td></td>
<td>Note: Variable names cannot begin with the Z character. These are reserved names.</td>
</tr>
</tbody>
</table>
### Field Name | Description
---|---
IMSID | Displays the IMSID of the target IMS system where the value for the variable is to be used during DELTA List processing. This is not an editable field.
  
  Type the I action code next to a listed variable for which you want to add a value for a specific IMSID.
  
  A * in this field indicates that the variable value is the default value for all IMS systems.

Value | Specify the value to be assigned to the listed variable.
  
  The value is a 1- to 32-character string. The value can contain constants and other variable names. When the listed variable name is referenced in a DELTA List element field, the value defined for the variable is inserted as the value for that DELTA List element field during DELTA List processing.

Description | Specify a description of the variable definition.

---

7 Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert a new variable.</td>
<td>Type the <strong>Insert</strong> command on the <strong>Command</strong> line, and press <strong>Enter</strong>. The Insert Variable pop-up window (Figure 20 on page 302) is displayed. Go to Step 8 on page 303.</td>
</tr>
</tbody>
</table>

| Insert a new IMSID value for a listed variable. | Type the I action code next to a listed variable for which you want to add a value for a specific IMSID. Press **Enter**. The Insert IMSID pop-up window (Figure 21 on page 303) is displayed. Go to Step 9 on page 303. |

| Delete the variable and all associated IMSID values. | Enter the D action code on the default value for a variable. Press **Enter**. Go to Step 10 on page 303. |

| Delete just the associated IMSID value for a variable. | Enter the D action code on a particular IMSID value other than the default value. Press **Enter**. Go to Step 10 on page 303. |

---

**Figure 20: Insert Variable Pop-up Window**

```
D | DELTA PLUS            Insert Variable                       | 1 to 8 of 21
C | Command ===> ______________________________________________ | 11 ===> CSR
V | Type the name of the variable you want to insert.           | VARIABLE
T | Variable name . . ________                                 |
```
8 Specify the name of the variable to be created, and press Enter. Go to Step 10 on page 303.

**Figure 21: Insert IMSID Pop-up Window**

9 Specify the name of the IMSID for which you want to add variable values, and press Enter. Go to Step 10 on page 303.

10 Save your changes.

   a Press **F3**. The Confirm Save pop-up window is displayed.

   b Type **1** in the selection field and press **Enter**. DELTA PLUS saves the Variable Definition Set.

   c Press **F3** twice. The DELTA PLUS Main Menu is displayed.

**Where to go from here**

Perform any of the following actions:
### Specifying a Default Variable Definition Set

You can specify a default Variable Definition Set that contains the variables to be used by DELTA PLUS automatically in the processing of a DELTA List. The Variable Definition Set name you specify will be used each time you edit a new DELTA List.

**Note**

This value can be manually overridden for any DELTA List at execution time.

#### To Specify a Default Variable Definition Set

1. From the DELTA PLUS Main Menu, type `PREF` on the Command line and press Enter. The DELTA PLUS User Preferences pop-up window is displayed.

2. In the Variable Definition Set field, specify the name of the default Variable Definition Set that contains the definitions for the variables to be used by DELTA PLUS in DELTA List processing.
This Variable Definition Set will be inserted into the DELTA List when you edit a new DELTA List.

3 Press **Enter** to save your changes.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifying a Variable for a Field Value.</td>
<td>See “Specifying a Variable for a Field Value” on page 308 for instructions.</td>
</tr>
</tbody>
</table>

**Using Variables in DELTA List Processing**

When you edit a DELTA List, you can define unique values for individual fields for certain DELTA List elements using variables. A variable is a 1- to 8-character name. This variable can have different values assigned to it based on the IMSID of the IMS systems where the DELTA List will be processed. By assigning different values to the variable, you can process the same DELTA List with different data on different IMS systems.

You can enter variable names as the values for certain DELTA List element fields. Any element field that does not have set, or discrete, values (such as **YES** or **NO**) may contain a variable as a value. You enter a reference to the variable when editing a DELTA List element field by typing an ampersand (**&**) followed by the variable name and delimited by a period (**.**). The ampersand means the value of, and DELTA PLUS interprets the value of the listed variables when processing a DELTA List that contains variables.

If a variable string is too long for an element field when you are editing a DELTA List element, you can position the cursor on the field and press Prompt (**F4**) to access the Expanded Field Input panel. This panel allows you to enter a variable string up to 32 characters in length, or to select from a list of available variables.

**Specifying a Variable Definition Set for a DELTA List**

If you have not already specified a default Variable Definition Set in your DELTA PLUS User Preferences, you should specify a Variable Definition Set for use by a DELTA List before you use variables in DELTA List processing.
Before you begin

This task describes the edit action of specifying a Variable Definition Set. If you want to insert elements in a DELTA List or perform other edit actions, see “Creating and Editing DELTA Lists” on page 151 for more task instructions.

To Specify a Variable Definition Set for a DELTA List

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4. Type the name of the View Profile in the View Profile field.
When UPF security is in effect, this field will be labeled **IMSID or Group**. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT*nn* for DELTA PLUS VIRTUAL TERMINAL or DDCKWT*nn* for DELTA PLUS for DBCTL, where *nn* is from the applicable UPF record.

This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press **Enter**.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and left the <strong>DELTA List</strong> field blank or typed a masking pattern in the <strong>DELTA List</strong> field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List for editing.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing **Enter**. The DELTA List Edit panel is displayed.

7 In the **Variable Definition Set** field, specify the name of the Variable Definition Set that contains the definitions for the variables to be used by DELTA PLUS in DELTA List processing.

8 Save your changes.
   a Press **F3**. The Confirm Save pop-up window is displayed.
   b Type 1 in the selection field and press **Enter**. DELTA PLUS saves the DELTA List Edits.
   c Press **F3** twice. The DELTA PLUS Main Menu is displayed.

**Where to go from here**

Perform any of the following actions:
Specifying a Variable for a Field Value

You can define unique values for individual fields for certain DELTA List elements using variables.

A variable is a 1- to 8-character name. This variable can have different values assigned to it based on the IMSID of the IMS systems where the DELTA List will be processed. By assigning different values to the variable, you can process the same DELTA List with different data on different IMS systems.

Figure 23: Panel Flow

Before you begin

This task describes the edit action of specifying a variable for a field value. If you want to insert elements in a DELTA List or perform other edit actions, see “Creating and Editing DELTA Lists” on page 151 for more task instructions.
To Specify a Variable for a Field Value

1. Go to the DELTA List Edit/Execute Entry panel.

   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4. Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   **Note**
   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT nn for DELTA PLUS VIRTUAL TERMINAL or DDCKWT nn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
<tr>
<td>You typed 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Edit panel is displayed, beginning a DELTA List Edit session for that DELTA List.</td>
</tr>
</tbody>
</table>
You typed 1 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.

The member selection list is displayed, allowing you to select a DELTA List for editing.

6. If you are on a member selection list panel, select a DELTA List to edit by typing a / next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter. The DELTA List Edit panel is displayed.

7. Type S in the Actn field next to the element you want to edit and press Enter. The DELTA List Element Edit panel is displayed.

8. Enter a variable name as the value for any DELTA List element field that does not have set values.

You enter a reference to the variable by typing an ampersand (&) followed by the variable name and delimited by a period (.). The ampersand means the value of, and DELTA PLUS interprets the value of the listed variables when processing a DELTA List that contains variables.

If a variable string is too long for an element field when you are editing a DELTA List element field, you can position the cursor on any field that does not have a + to the right of it and press Prompt (F4) to access the Expanded Field Input panel. This panel allows you to enter a variable string up to 32 characters in length, or to select from a list of available variables. Edit the following fields

9. Save your changes.

   a. Press F3 twice. The Confirm Save pop-up window is displayed.

   b. Type 1 in the selection field and press Enter. DELTA PLUS saves the DELTA List Edits.

   c. Press F3. The DELTA PLUS Main Menu is displayed.

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolving a Variable for a Field Value.</td>
<td>See Resolving a Variable for a Field Value on page 311 for instructions.</td>
</tr>
</tbody>
</table>
Resolving a Variable for a Field Value

After you have set a variable as the value for an individual field for a certain DELTA List element, you can see beforehand what actual value the variable will resolve to during DELTA List processing by using the RESOLVE command.

Before you begin

This task describes the edit action of resolving a variable for a field value. If you want to insert elements in a DELTA List or perform other edit actions, see “Creating and Editing DELTA Lists” on page 151 for more task instructions.

To allow resolved variables in the DELTA List to be prominent, you must use a color attribute that differs from other attributes on the panel. Type the COLors command on the DELTA PLUS command line and press Enter. Ensure the Emphasized Text field is set to a value that is unique and obvious. For example, you could use YELLOW for the color and BLINK or REVERSE for the highlight functionality as in the following example.

Menu       Options      Help
Command ===> _____________________________________________________________
          CUA Attribute Change Utility
          Change colors, intensities, or highlights for DELTA PLUS VT panel
          attribute elements.
Panel element         Color       Intensity       Highlight
More: +
Emphasized Text       YELLOW +    HIGH +         BLINK +
Error Emphasis        TURQ +      HIGH +         NONE +
To Specify a Variable for a Field Value

1. Go to the DELTA List Edit/Execute Entry panel.
   
   From the DELTA PLUS Main Menu, type 1 in the selection field and press Enter. The DELTA List Edit/Execute Entry panel is displayed.

2. Decide if you want to create a new DELTA List, edit a specific existing DELTA List, or choose an existing DELTA List for editing. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>create a new DELTA List</td>
<td>Type 1 in the selection field and the name of a new DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>edit a specific existing DELTA List</td>
<td>Type 1 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
</tr>
<tr>
<td>choose an existing DELTA List for editing</td>
<td>Type 1 in the selection field and leave the DELTA List field blank or type a masking pattern in the DELTA List field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides, or where you want the new DELTA List placed, in the DELTA List library field.

4. Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

   **Note**
   
   When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWTnn for DELTA PLUS VIRTUAL TERMINAL or DDCKWTnn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
   
   This field may not display on the panel if no View Profile data set is specified in the Global Options.

5. Press Enter.
6 If you are on a member selection list panel, select a DELTA List to edit by typing a /
next to one of the DELTA PLUS PDS member names listed on the panel and
pressing Enter. The DELTA List Edit panel is displayed.

7 Type S in the Actn field next to the element you want to edit and press Enter. The
DELTA List Element Edit panel is displayed.

8 Type the RESOLVE command without any parameters to display the Resolve
Variables pop-up window (Figure 24 on page 313) that allows you to specify the
IMSID for which you want to resolve the variable values.

Specify a particular IMSID with the RESOLVE command to resolve the variable
values for the specified IMSID on the current display.

Figure 24: Resolve Variables Pop-up Window

9 Type the IMSID of the target IMS system for which you want to resolve the
variable values in the Resolve for IMSID field.

10 Press Enter. The DELTA List Element Edit panel is displayed with all variables in
the DELTA List resolved to the values that will be used during DELTA List
execution.

11 Save your changes.
   a Press F3 twice. The Confirm Save pop-up window is displayed.
   b Type 1 in the selection field and press Enter. DELTA PLUS saves the DELTA
      List Edits.
   c Press F3. The DELTA PLUS Main Menu is displayed.
Viewing Variable Resolution Errors

If DELTA PLUS experienced errors resolving variables during DELTA List processing (execute or check) or from the RESOLVE command, the Variable Resolution Errors panel (the following figure) displays with a list of any errors. Review the error messages to determine what variable definition changes are needed to resolve the variables correctly.

Figure 25: Variable Resolution Errors Panel

Sample Variable Definitions and their Resolved Values

The following samples show how variables can be defined and resolved.

*PREFIX* is a variable name and its values are defined for the following IMSIDs:

- AA for IMSA
- BB for IMSB
- CC for IMSC

*SUFFIX* is a variable name and its values are defined for the following IMSIDs:

- XX for IMSA
- YY for IMSB
- ZZ for IMSC
When you reference a variable as the value for a DELTA List element field, you must precede the variable name with an ampersand (&) and delimited by a period (.).

If you type &PREFIX as the value for the Name field of a DELTA List element, the variable will resolve to:
- AA for IMSA
- BB for IMSB
- CC for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

If you type &PREFIX.TRAN as the value for the Name field of a DELTA List element, the variable will resolve to:
- AATRAN for IMSA
- BBTRAN for IMSB
- CCTRAN for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

If you type &PREFIX& SUFFIX as the value for the Name field of a DELTA List element, the variable will resolve to:
- AAXX for IMSA
- BBYY for IMSB
- CCZZ for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

If you type &PREFIX.TRAN& SUFFIX as the value for the Name field of a DELTA List element, the variable will resolve to:
- AATRANXX for IMSA
- BBTRANYY for IMSB
- CCTRANZZ for IMSC

as the values of the Name field for each IMSID during DELTA List processing.
Overriding a Default Variable Definition Set

You can override the default Variable Definition Set specified for a DELTA List at Check or Execution time by using the **Override Variable Definition Set** field on the DELTA List Execution panel.

**Before you begin**

This task describes the action of overriding the default variable definition set for a DELTA List at Check or Execution time. If you want more information on Checking or Executing a DELTA List, see “Using DELTA List Check and Execute” on page 257 for more task instructions.

**To Override the Default Variable Definition Set for a DELTA List**

1. Go to the DELTA List Edit/Execute Entry panel. From the DELTA PLUS Main Menu, type **1** in the selection field and press **Enter**. The DELTA List Edit/Execute Entry panel is displayed.

2. Perform the appropriate action.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>You know the name of the DELTA List you want to check</td>
<td>Type <strong>2</strong> in the selection field and the name of an existing DELTA List in the <strong>DELTA List</strong> field.</td>
</tr>
<tr>
<td>You want to select from a list an existing DELTA List for checking</td>
<td>Type <strong>2</strong> in the selection field and leave the <strong>DELTA List</strong> field blank or type a masking pattern in the <strong>DELTA List</strong> field.</td>
</tr>
</tbody>
</table>

3. Type the data set name of the library in which the existing DELTA List resides in the **DELTA List library** field.
4 Type the name of the View Profile in the View Profile field; otherwise, accept the default View Profile.

**Note**
When UPF security is in effect, this field will be labeled IMSID or Group. Enter the IMSID or Group for which you intend to execute the DELTA List. The view profile used will be of the form DLAKWT nn for DELTA PLUS VIRTUAL TERMINAL or DDCKWT nn for DELTA PLUS for DBCTL, where nn is from the applicable UPF record.
This field may not display on the panel if no View Profile data set is specified in the Global Options.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 2 in the selection field and the name of an existing DELTA List in the DELTA List field.</td>
<td>The DELTA List Execution panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the selection field and left the DELTA List field blank or typed a masking pattern in the DELTA List field.</td>
<td>The member selection list is displayed, allowing you to select a DELTA List.</td>
</tr>
</tbody>
</table>

6 If you are on a member selection list panel, select a DELTA List to check by typing S next to one of the DELTA PLUS PDS member names listed on the panel and pressing Enter.

The DELTA List Execution panel is displayed.

7 Type 1 in the Execution type selection field to Check the DELTA List execution or type 2 in the Execution type selection field to Execute the DELTA List.

8 Type the name of the target IMSID(s) or Group(s) against which you want to check this DELTA List in the Target IMSIDs or Groups entry fields.

9 Type the name of the Variable Definition Set in the Override Variable Definition Set field that contains the variable definitions you want for this execution of the DELTA List.

The Variable Definition Set you specify will be used to resolve variables for this execution of DELTA List instead of the Variable Definition Set specified in the DELTA List Options for this DELTA List.

Leave this field blank if you want to use the Variable Definition Set specified in the DELTA List.
The Override Variable Definition Set will be used to resolve variables in any nested DELTA Lists.

10 Type a / in the selection field next to one or more of the following options to select the option(s):

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset results list</td>
<td>Resets the results list. A results list is the information returned at the completion of a DELTA List detailing the outcome of DELTA List Check or Execute. Resetting the results list indicates to DELTA PLUS to discard the output from any previous DELTA List Check or Execute.</td>
</tr>
<tr>
<td>Coordinate elements across IMS systems within each specified group</td>
<td>Ensures that changes to resources contained in the DELTA LIST are coordinated across all IMS control regions in the Group. If there is an error in any element in the DELTA List on any of the IMS control regions, then no changes will occur on any IMS control region to ensure that the systems remain in synchronization. This option is valid only when the target is a Group.</td>
</tr>
<tr>
<td>Execute Marked elements only</td>
<td>Indicates that only those elements in the DELTA List that have been marked for execution will be processed. Any element that is not marked will be ignored. If this option is not selected, then all elements in the DELTA List are processed.</td>
</tr>
</tbody>
</table>

11 Type the appropriate option number in the **Execution mode** selection field to indicate whether you want to execute the DELTA List in optimized mode or one element at a time.

**Note**

If you choose optimized mode, the entire DELTA List is sent to the target IMS control region(s) and all the elements are processed together. This mode processes a DELTA List in a more efficient manner. If the DELTA List contains a mixture of dependent and independent DELTA Lists, then processing may occur in multiple passes as each dependent or independent collection of elements is processed as a single unit of work.

If you choose to process the DELTA List one element at a time, each element in the DELTA List is sent to the target IMS control region(s) individually and processed before the next element in sequence is processed.

12 Optional. If you select the **One element at a time** option in the **Execution mode** field, you can type a / in the selection field under it to have the processing of the DELTA List pause when any errors are encountered.
You will then be given the option of continuing the DELTA List processing with the next element or canceling the DELTA List processing.

13 Press **Enter**.

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>perform error recovery during a DELTA List Check</td>
<td>See “Recovering from Errors during a DELTA List Check” on page 265 for instructions.</td>
</tr>
<tr>
<td>view the execution results from a DELTA List Check</td>
<td>See “Displaying the Execution Results List” on page 278 for instructions.</td>
</tr>
</tbody>
</table>
DELTA PLUS Log and History File

This chapter describes how to maintain the DELTA PLUS Log and History File.

Introduction

Two key components of DELTA PLUS are the DELTA PLUS Log and the DELTA PLUS History File. Both the Log and History File are pairs of formatted BSAM data sets used to record all DELTA PLUS updates to an IMS control region. Dual data sets are maintained for both the Log and the History File for recovery and reliability reasons because both are integral to the operation of DELTA PLUS. Both the dual Log data sets and the dual History File data sets must be available before any updates can be made to the IMS control region. Only one Log data set and History File data set is necessary for the Log and History File utilities to function.

When updates are made to the IMS control regions, BMCXLINK records the information associated with that update in the Log and History File data sets. The DELTA PLUS Log data sets contain a copy of the element that was executed and is used at IMS initialization and restart time to apply that update to the IMS system. The DELTA PLUS History File data sets contain a copy of the element, but also contain both the before- and after-image of the resource that was added, deleted, or revised. You can use the DELTA PLUS History File data sets for reporting and generating DELTA Lists and Stage-1 macros that update your SYSGEN input.

You can associate the DELTA PLUS Log and History File data sets with one or more IMS control regions. If you are using grouping (IMS shared queues, n-way data sharing, or grouping of similar systems), then the Log and History File data sets are used by all the IMS systems associated with the Group. Otherwise, they are associated with a single IMS system.

If you are using Groups, you must specify the Log and History File data set names on the Edit Group Options panel. Otherwise, you supply the data set names on the Edit IMSID Options panel. You can allocate and format the Log and History File data sets with panels that are explained in this chapter.
As with many IMS data sets, the placement of the DELTA PLUS Log and History File data sets should be given careful consideration. Both copies of the Log and History File should not be placed on the same DASD volume.

If the DELTA PLUS Log data sets are to be accessed from multiple CPUs in a shared-DASD environment, they must be protected from simultaneous modifications. A systems-level ENQUEUE using the 8-byte qname of DELTA PLUS and a 44-byte rname containing the Log dsname is used for brief periods to synchronize individual I/O operations within each system. This same ENQUEUE must be propagated to all systems in a shared-DASD environment using a product such as IBM’s GRS package or its equivalent.

**Note**
During the update process, DELTA PLUS Log data sets determine which DELTA PLUS changes are still active based on the IMS RESLIB being used. DELTA PLUS Log data sets should be backed up and protected in the same manner as the IMS RESLIB.

**Log Control Record**

The first record in each Log data set is the Log control record. This record is mapped by LGCDSECT ($DLPMAP LGC=0). The Log control record is created when the Log data set is formatted and it is updated during normal DELTA PLUS operation. The Log control record contains information about the Log as well as the IMS environment it is supporting. You should not update this record (with EDIT or SUPERZAP).

The Log control record contains the IMSID or Group name for which the Log data set were formatted. It also contains an entry for each IMS control region that has elements on the Log. Each time the Log data sets are opened, the Log control record is validated to ensure that the correct Log data sets are used. Any mismatch will result in an error and the termination of processing. The Log control record also describes the Log data set, including the number of blocks, number of records, and current end-of-file.

**IMS SYSGEN Dates**

The Log control record also contains the IMS SYSGEN dates as of the most recent IMS restart or online change. The SYSGEN date is recorded with each DELTA PLUS request to IMS. An IMS element added through DELTA PLUS is considered active if the SYSGEN date that was current at the time of the update matches the current SYSGEN date. During IMS restart, DELTA PLUS reapplies active elements to IMS.
Table 44 on page 323 provides additional information about SYSGEN dates.

Table 44: SYSGEN Information Used by DELTA PLUS

<table>
<thead>
<tr>
<th>SYSGEN</th>
<th>Used for</th>
<th>Date defined as assembly date of</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
<td>databases, programs, transactions, and route codes</td>
<td>CSECT DFSISMB0 in module DFSSMB00 (in the MODBLKS data set)</td>
<td>The current DB SYSGEN date may change after an IMS online change (/MODIFY PREPARE and /MODIFY COMMIT commands). A change in the DB SYSGEN date is reflected in the Log control record with the next DELTA PLUS request or restart of the IMS control region.</td>
</tr>
<tr>
<td>DC</td>
<td>LTERM, subpools, and nodes</td>
<td>CSECT DFSICLL0 in the IMS nucleus</td>
<td></td>
</tr>
</tbody>
</table>

**Note**

Because SYSGEN dates contain only dates and no times, multiple online changes for MODBLKS on the same day could cause unpredictable results. The specific problem that will occur depends upon the elements on the Log when DELTA PLUS attempts to determine which elements are active or inactive.

If you perform one MODBLKS gen and then back it off, no problem will occur.

### Maintenance of DELTA PLUS Log Data Sets

Several panels are provided to enable you to maintain the DELTA PLUS Log data sets.

You access the panels that allow you to maintain the DELTA PLUS Log data sets from the DELTA PLUS Main Menu panel.

See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.
**Before you begin**

To use the Log Maintenance Menu options, you must have Update Parms authority. Refer to the installation guide for information on customizing DELTA PLUS to add user access authorization.

**To Begin DELTA PLUS Log Maintenance**

1. Go to the Utilities Menu panel.

   From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.

2. Type 1 in the Utility option selection field and press Enter. The Log Maintenance Menu panel is displayed.

   DELTA PLUS Log Maintenance Menu
   Command ===> _________________________________________________________________

   DELTA PLUS Log Maintenance Option. Choose a selection.
   1. Status - Display status of Log data sets
   2. Purge - Purge inactive Log records
   3. Recover - Recover from Log error conditions
   4. Format - Allocate (if necessary) and Format the Log data sets

   Specify Target.
   IMSID or Group... IMSI

3. Type the number of one of the following options in the **DELTA PLUS Log Maintenance Option** selection field:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Status</td>
<td>Read the DELTA PLUS Log and report on its usage and any unusual conditions present. See “Log Status” on page 325 for information.</td>
</tr>
<tr>
<td>2. Purge</td>
<td>Delete inactive records from the DELTA PLUS Log, thereby compressing the Log. See “Log Purge” on page 327 for information.</td>
</tr>
<tr>
<td>3. Recover</td>
<td>Re-create the DELTA PLUS Log and retain all Log records currently on file. See “Log Recovery” on page 328 for information.</td>
</tr>
<tr>
<td>4. Format</td>
<td>Allocate and/or format a new pair of DELTA PLUS Log data sets. See “Log Allocate and Format” on page 330 for information.</td>
</tr>
</tbody>
</table>

4. Type the name of the target IMSID or IMS data-sharing group for the specified Log Utility function in the **Specify Target IMSID or Group** field.

5. Press Enter.
<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the DELTA PLUS Log Maintenance Option selection field.</td>
<td>The Log Status panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the DELTA PLUS Log Maintenance Option selection field.</td>
<td>The Confirm Log Purge panel is displayed.</td>
</tr>
<tr>
<td>You typed 3 in the DELTA PLUS Log Maintenance Option selection field.</td>
<td>The Confirm Log Recovery panel is displayed.</td>
</tr>
<tr>
<td>You typed 4 in the DELTA PLUS Log Maintenance Option selection field.</td>
<td>Either the Allocate New DELTA PLUS Log Data Set panel or the Confirm Log Format panel is displayed.</td>
</tr>
</tbody>
</table>

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>read the DELTA PLUS Log and report on its usage and any unusual conditions present</td>
<td>See “Log Status” on page 325 for information.</td>
</tr>
<tr>
<td>delete inactive records from the DELTA PLUS Log, thereby compressing the Log</td>
<td>See “Log Purge” on page 327 for information.</td>
</tr>
<tr>
<td>re-create the DELTA PLUS Log data sets and retain all Log records currently on file</td>
<td>See “Log Recovery” on page 328 for information.</td>
</tr>
<tr>
<td>allocate and format a new pair of DELTA PLUS Log data sets</td>
<td>See “Log Allocate and Format” on page 330 for information.</td>
</tr>
<tr>
<td>format an existing pair of DELTA PLUS Log data sets</td>
<td>See “Log Format Completion” on page 332 for information.</td>
</tr>
</tbody>
</table>

**Log Status**

The Log Status panel (shown in the following figure) is displayed after selecting option 1 from the Log Maintenance Menu.

Before being displayed, the DELTA PLUS Log is read, its usage is analyzed, and any unusual conditions are noted. The Log Status panel is provided for information only.

**Figure 26: Log Status Panel**

```
| Command ===| Log Status | Row 1 to 1 of 1 | Scroll ===>
|------------|------------|----------------|----------------|
| D          | Command ===| Log Status | Row 1 to 1 of 1 | Scroll ===>
| C          | Target     | D           | Group          |
| 1          | Primary Log| 1           | WXC.DLP.GRPA.LOG1 |
```
### Table 45: Fields Available on the Log Status Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target</strong></td>
<td>The name of the target IMSID or Group.</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Indicates whether the target is a specific IMS or Group. The valid values are IMSID and GROUP.</td>
</tr>
<tr>
<td><strong>Primary Log Data Set Name</strong></td>
<td>The data set name of the primary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td><strong>Primary Log Volume Serial</strong></td>
<td>The volume serial number of the primary Log data set. It is obtained from the system catalog.</td>
</tr>
<tr>
<td><strong>Secondary Log Data Set Name</strong></td>
<td>The data set name of the secondary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td><strong>Secondary Log Volume Serial</strong></td>
<td>The volume serial number of the secondary Log data set. It is obtained from the system catalog.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>The number of 512-byte Log records possible in each Log data set. It is 100 percent of the records in each data set.</td>
</tr>
<tr>
<td><strong>Used</strong></td>
<td>The number of records used, which includes two records for the Log control record plus two records for each DELTA List ADD, DELETE, REVISE, RELOAD, and operator command (except DISPLAY) issued by DELTA List. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td><strong>Available</strong></td>
<td>The number of records available is the difference between the total records in the Log and the records used. The percent is the percentage of the total number of records.</td>
</tr>
</tbody>
</table>
### Field Name | Description
--- | ---
Active | Those records (both before and after update) with IMSGEN dates that match the current (or active) IMS IMSGEN date. Operator commands and reloads are never considered active. The percent is the percentage of the total number of records.
Inactive | All commands, reloads, and other updates with IMSGEN dates that do not match the current IMSGEN date. The percent is the percentage of the total number of records.
IMSID | IMSID against which the Log Status option was run. This field shows multiple IMSIDs if this IMS system is part of a Group. All IMS systems in a Group share the same Log and History File.
Active | Those records (both before and after update) with IMSGEN dates that match the current (or active) IMS IMSGEN date for this IMSID or GROUP. Operator commands and reloads are never considered active. The percent is the percentage of the total number of records.
Inactive | All commands, reloads, and other updates with IMSGEN dates that do not match the current IMSGEN date for this IMSID or GROUP. The percent is the percentage of the total number of records.
DB Asm Date | The DB assembly date for this IMS system.
DC Asm Date | The DC assembly date for this IMS system.

### Log Purge

The Confirm Log Purge panel (shown in the following figure) is displayed after selecting option 2 from the Log Maintenance Menu.

Use this option to delete inactive entries from the DELTA PLUS Log. These entries include all IMS operator commands and responses and other inactive elements which include adds, deletes, and revisions that are not applicable to the current IMSGEN.

The Purge option unloads active records from the DELTA PLUS Log to a temporary data set, then reformats and reloads the Log data sets one at a time. The Purge option requires permission to proceed. Observe the caution displayed on the panel, and then select the appropriate option to continue or not.
***WARNING***

Always be careful when you use the Purge function to delete inactive entries from the Log. You should first use the Log Status option to ensure that the DB and DC SYSGEN dates that are indicated in the Log control record are correct. These dates are updated with each IMS restart and each time a DELTA PLUS request is executed against an IMS control region. However, if you use an IMS Online Change to activate a new MODBLKS and no DELTA PLUS requests are executed before the system is shut down, the DB SYSGEN date will not reflect the new MODBLKS date.

Figure 27: Confirm Log Purge Panel

![Confirm Log Purge Panel](image)

Table 46: Fields Available on the Confirm Log Purge Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Enter the appropriate option to indicate whether you want to continue the Log purge or cancel the Log purge.</td>
</tr>
<tr>
<td>Primary</td>
<td>The data set name of the primary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Secondary</td>
<td>The data set name of the secondary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
</tbody>
</table>

Log Recovery

A DELTA PLUS Log recovery is required after an I/O error (or other type of error) occurs on one of the Log data sets.
If the Log recovery process does not clear the problem, you will need to rebuild and/or expand your DELTA PLUS Log data sets. An out of space condition also requires you to recover and expand your Log data sets.

**To recover and expand your Log data sets**

1. Quiesce all DELTA PLUS request processing on all IMS systems that use these DELTA PLUS Log data sets.

2. Copy the current DELTA PLUS Log data sets to a backup data set using IEBGENER or equivalent.

3. Delete the current DELTA PLUS Log data sets using ISPF options.

4. Reallocate and reformat the new DELTA PLUS Log data sets with the new larger space requirements. The Allocate New DELTA PLUS Log Data Set panel is available as option 4 on the Log Maintenance Menu. Refer to “Log Allocate and Format” on page 330 for information on this panel.

5. Copy the backup data set to the new DELTA PLUS Log data sets using IEBGENER or an equivalent utility.

6. Run a Log recovery to clear any existing error conditions. Recover from Log error conditions is option 3 on the Log Maintenance Menu.

7. Execute a new DELTA List, or execute an IMS operator command directly from DELTA PLUS (option 2 from the DELTA PLUS Main Menu), to verify that logging is functioning correctly.

**Figure 28: Confirm Log Recovery Panel**

```
Menu | Options | Help
----------------------------------------------
D    | Command ===> Confirm Log Recovery
D    | Do you wish to rebuild the Log datasets for IMSID IMSA?
S    | Choose one selection.
S    | 1. Yes, rebuild the Logs.
S    | 2. No, cancel the Log recovery.
S    | Log Data Sets:
S    | Primary. : 'IMI.PRI.LOG'
S    | Secondary. : 'IMI.SEC.LOG'
S    | CAUTION: Log Recovery processing will temporarily destroy both DELTA PLUS Log data sets. During this time period, an IMS restart will not be possible.
```
Ensure that you have a current backup of the Log data sets before continuing.

<table>
<thead>
<tr>
<th>F1=Help</th>
<th>F12=Cancel</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1=Help</td>
<td>F3=Exit</td>
</tr>
</tbody>
</table>

### Field Name | Description
--- | ---
selection field | Enter the appropriate option to indicate whether you want to rebuild the Log or cancel the Log recovery.
Primary | The data set name of the primary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.
Secondary | The data set name of the secondary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.

---

## Log Allocate and Format

The Allocate New DELTA PLUS Log Data Set panel (the following figure) is displayed after selecting option 4 from the Log Maintenance Menu if no DELTA PLUS Log data sets exist for the specified IMSID or Group. Use this panel to initially allocate and format or reformat the DELTA PLUS Log data sets online.

You can also access the Allocate New DELTA PLUS Log Data Set panel (Figure 29 on page 330) from the DELTA PLUS Data Set Allocation Menu. For more information, see “Allocating New DELTA PLUS Data Sets” on page 148.

The IMS control region must have UPDATE authority for the DELTA PLUS Log and History File data sets.

**Note**

During IMS control region initialization, the IMS DB/DC SYSGEN linkedit dates are written to the Log and History File control record (if required). The Log and History File SYSGEN dates are also updated following an online change MODBLKS GEN implementation.

**WARNING**

If you reformat an existing DELTA PLUS Log, you destroy the contents of the Log. This action requires that the next IMS restart be a cold start.

---

**Figure 29: Allocate New DELTA PLUS Log Data Set Panel**

<table>
<thead>
<tr>
<th>Menu</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Command</td>
<td>Allocate New DELTA PLUS Log Data Set</td>
</tr>
</tbody>
</table>
To allocate DELTA PLUS Log data sets online

1. Enter the information for the fields available on the Allocate New DELTA PLUS Log Data Set panel for the primary DELTA PLUS Log data set.

The following table show which fields are available on the panel.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Data Set Name</td>
<td>Type the data set name for the DELTA PLUS Log.</td>
</tr>
<tr>
<td>SMS Management Class</td>
<td>Specify the SMS Management class to be used for Log data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>SMS Storage Class</td>
<td>Specify the SMS Storage class to be used for Log data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>Volume serial</td>
<td>Type the volume serial number of the DASD where the STATUS=NEW Log data set is to be allocated. This field is ignored if STATUS=OLD. The Log data set, whether new or old, must be completely allocated on a single volume with only a primary space allocation.</td>
</tr>
<tr>
<td>Generic unit</td>
<td>Type the generic unit name to be used for Log allocation. Generic names (also referred to as esoteric) are given to groups, or pools of DASD volumes. Some common generic/esoteric names are SYSDA, SYSALLDA, and SCRATCH.</td>
</tr>
<tr>
<td>Space Units</td>
<td>Type the units of space allocation for the Log data set in either CYLS or TRKS.</td>
</tr>
<tr>
<td>Primary quantity</td>
<td>Type the quantity (in the units specified in the Space Units field) to be allocated and formatted for each Log data set.</td>
</tr>
<tr>
<td>Block size</td>
<td>Type the block size for the Log data sets as a multiple of 512; otherwise, it is adjusted to the next lower multiple of 512.</td>
</tr>
</tbody>
</table>
2 Press Enter to allocate the primary DELTA PLUS Log data set. The Allocate New DELTA PLUS Log Data Set panel is displayed again.

3 Enter the information for the fields available on the Allocate New DELTA PLUS Log Data Set panel for the secondary DELTA PLUS Log data set.

4 Press Enter to allocate the secondary DELTA PLUS Log data set. The Confirm Log Format panel is displayed.

**Where to go from here**

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>confirm the DELTA PLUS Log format</td>
<td>See “Log Format Completion” on page 332 for instructions.</td>
</tr>
</tbody>
</table>

**Log Format Completion**

The Confirm Log Format panel shown (Figure 30 on page 332) is displayed after pressing Enter on the Allocate New DELTA PLUS Log Data Set panel or selecting option 4 from the Log Maintenance Menu when the selected DELTA PLUS Log data sets already exist. The Confirm Log Format function requires permission to proceed. This function requires that the next IMS restart be a cold start.

**WARNING**

Log format processing deletes all DELTA PLUS Log entries. After this is done, an IMS warm start (/NRE without CHKPT 0) or emergency restart (/ERE) is not possible. Therefore, you must cold start IMS after formatting the Log data sets, which will cause all restart information in the DELTA PLUS log data sets to be lost.

**Figure 30: Confirm Log Format**

![Confirm Log Format](image)
- Current active log entries will be removed and therefore will not be reapplied.
- Any restart information in the DELTA PLUS logs will be lost.

F1=Help    F12=Cancel

Table 47: Fields Available on the Confirm Log Format Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Enter the appropriate option to indicate whether you want to format the Log data sets or cancel the Log format process.</td>
</tr>
<tr>
<td>Primary</td>
<td>The data set name of the primary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Secondary</td>
<td>The data set name of the secondary Log data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
</tbody>
</table>

Log Maintenance in Batch

Figure 31 on page 333 shows sample JCL that executes the Log Maintenance utility you can use to perform Log maintenance in batch. You can view the sample JCL in the member DLP#LOGU in the DLPCNTL data set. You must have authority to update the parameters for the IMSID specified.

Figure 31: Sample Batch Log Maintenance Utility JCL

```jcl
//DLP#LOGU JOB (ACCT#),LOG.UTILITIES,CLASS=A,MSGCLASS=X
//LOGUTIL EXEC PGM=IKJEFT01,
  //         PARM=DLPGUTL0,DYNAMNBR=16,REGION=2M
  //*
  //STEPLIB DD DISP=SHR,DSN=BMCNODE.DLPLIB
  //SYSTSPRT DD SYSOUT=*  
  //SYSPRINT DD SYSOUT=*  
  //SYSDUMP DD SYSOUT=*   
  //SYSTSIN DD *          
  FORMAT IIII LOG  /* IIII = IMSID OR GROUP NAME */
  STATUS IIII LOG  /* IIII = IMSID OR GROUP NAME */
  PURGE IIII LOG   /* IIII = IMSID OR GROUP NAME */
  RECOVER IIII LOG /* IIII = IMSID OR GROUP NAME */
  END
  /*

Table 48 on page 334 describes the batch Log maintenance commands.
Table 48: Log Maintenance Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMAT imsid LOG</td>
<td>Clears and formats the Log data sets.</td>
</tr>
<tr>
<td>STATUS imsid LOG</td>
<td>Displays the current Log data set status.</td>
</tr>
<tr>
<td>PURGE imsid LOG</td>
<td>Deletes inactive Log records.</td>
</tr>
<tr>
<td>RECOVER imsid LOG</td>
<td>Re-creates the Log or clears Log errors.</td>
</tr>
</tbody>
</table>

Maintenance of the DELTA PLUS History File

Several panels are provided to enable you to list and maintain the DELTA PLUS History File data sets.

You access the panels that allow you to maintain the DELTA PLUS History File data sets from the DELTA PLUS Main Menu panel. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.

Before you begin

To use the History File Maintenance Menu options, you must have Update Parms authority. Refer to the installation guide for information on customizing DELTA PLUS to add user access authorization.

To Begin DELTA PLUS History File Maintenance

1. Go to the Utilities Menu panel.

   From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.

2. Type 2 in the Utility option selection field and press Enter. The History File Maintenance Menu panel is displayed.
DELTA PLUS History File Maintenance Option. Choose a selection.
- 1. Status - Display status of History File data sets
- 2. Purge - Purge inactive History File records
- 3. Recover - Recover from History File error conditions
- 4. Format - Allocate (if necessary) and Format the History File data sets

Specify Target.
IMSID or Group . . . IMSI

3 Type the number of one of the following options in the DELTA PLUS History File Maintenance Option selection field:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Status</td>
<td>Read the History File data sets and report on their usage and any unusual conditions present. See “History File Status” on page 336 for information.</td>
</tr>
<tr>
<td>4. Format</td>
<td>Allocate and/or format the History File data sets. See “History File Allocate and Format” on page 341 for information.</td>
</tr>
</tbody>
</table>

4 Type the name of the target IMSID or Group for the specified History File Utility function in the Specify Target IMSID or Group field.

5 Press Enter.

<table>
<thead>
<tr>
<th>Previous Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>You typed 1 in the DELTA PLUS History File Maintenance Option selection field.</td>
<td>The History File Status panel is displayed.</td>
</tr>
<tr>
<td>You typed 2 in the DELTA PLUS History File Maintenance Option selection field.</td>
<td>The Confirm History Purge panel is displayed.</td>
</tr>
<tr>
<td>You typed 3 in the DELTA PLUS History File Maintenance Option selection field.</td>
<td>The Confirm History Recovery panel is displayed.</td>
</tr>
<tr>
<td>You typed 4 in the DELTA PLUS History File Maintenance Option selection field.</td>
<td>Either the Allocate New DELTA PLUS History File Data Set panel or the Confirm History File Format panel is displayed.</td>
</tr>
</tbody>
</table>

Where to go from here

Perform any of the following actions:
read the History File data sets and report on their usage and any unusual conditions present
See “History File Status” on page 336 for information.

delete inactive History File records
See “History File Purge” on page 338 for information.

recover from History File error conditions
See “History File Recovery” on page 339 for information.

allocate and format a new pair of History File data sets
See “History File Allocate and Format” on page 341 for information.

format an existing pair of History File data sets
See “History File Format Completion” on page 343 for information.

### History File Status

The History File Status panel (the following figure) is displayed after selecting option 1 from the History File Maintenance Menu.

Before being displayed, the DELTA PLUS History File is read, its usage is analyzed, and any unusual conditions are noted. The History File Status panel is provided for information only.

**Figure 32: History File Status Panel**

<table>
<thead>
<tr>
<th>Target</th>
<th>Type</th>
<th>Primary History File.</th>
<th>Secondary History File.</th>
<th>Record Counts:</th>
<th>IMSID</th>
<th>Active</th>
<th>Inactive</th>
<th>DB Asm Date</th>
<th>DC Asm Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRPA</td>
<td>GROUP</td>
<td>'WXC.DLP.GRPA.HIST1'</td>
<td>'WXC.DLP.GRPA.HIST2'</td>
<td>Total</td>
<td>WXC5</td>
<td>28</td>
<td>0</td>
<td>1999.015</td>
<td>1998.362</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume Serial</td>
<td></td>
<td>Used</td>
<td></td>
<td>28</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Available</td>
<td></td>
<td>2402</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Active</td>
<td></td>
<td>28</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inactive</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**F1=Help  F3=Exit  F7=Up  F8=Down  F12=Cancel**
### Table 49: Fields Available on the History File Status Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>The name of the target IMSID or Group.</td>
</tr>
<tr>
<td>Type</td>
<td>Indicates whether the target is a specific IMS or IMS data-sharing group. The valid values are IMSID and GROUP.</td>
</tr>
<tr>
<td>Primary History File Data Set Name</td>
<td>The data set name of the primary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Primary History File Volume Serial</td>
<td>The volume serial number of the primary History File data set. It is obtained from the system catalog.</td>
</tr>
<tr>
<td>Secondary History File Data Set Name</td>
<td>The data set name of the secondary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Secondary History File Volume Serial</td>
<td>The volume serial number of the secondary History File data set. It is obtained from the system catalog.</td>
</tr>
<tr>
<td>Total</td>
<td>The number of 150-byte history records possible in each History File data set. It is 100 percent of the records in each data set.</td>
</tr>
<tr>
<td>Used</td>
<td>The number of records used which includes two records for the control record plus two records for each DELTA List add, delete, revise, reload, and operator command (except DISPLAY) issued by DELTA List. This percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>Available</td>
<td>The number of records available is the difference between the total records in the Log and the records used. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>Active</td>
<td>Those records (both before and after update) with IMSGEN dates that match the current (or active) IMS IMSGEN date. Operator commands and reloads are never considered active. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>Inactive</td>
<td>All commands, reloads, and other updates with IMSGEN dates that do not match the current IMSGEN date. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>IMSID</td>
<td>The IMSID you specified on the History File Maintenance Menu panel.</td>
</tr>
<tr>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Active</td>
<td>Those records (both before and after update) with IMSGEN dates that match the current (or active) IMS IMSGEN date for this IMSID or GROUP. Operator commands and reloads are never considered active. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>Inactive</td>
<td>All commands, reloads, and other updates with IMSGEN dates that do not match the current IMSGEN date for this IMSID or GROUP. The percent is the percentage of the total number of records.</td>
</tr>
<tr>
<td>DB Asm Date</td>
<td>The DB assembly date for this IMS system.</td>
</tr>
<tr>
<td>DC Asm Date</td>
<td>The DC assembly date for this IMS system.</td>
</tr>
</tbody>
</table>

### History File Purge

The Confirm History Purge panel (the following figure) is displayed after selecting option 2 from the History File Maintenance Menu. Use this option to delete inactive entries from the DELTA PLUS History File. These entries include all IMS operator commands and responses, ACB and DMB reload requests, and other inactive elements which include adds, deletes, and revisions that are not applicable to the current IMSGEN.

The Purge option unloads active records from the DELTA PLUS History File to a temporary data set, then reformats and reloads the History File data sets one at a time. The Purge option requires permission to proceed. Observe the caution displayed on the panel, and then select the appropriate option to continue or not.

**WARNING**

Always be careful when you use the Purge function to delete inactive entries from the History File. You should first use the History File Status option to ensure that the DB and DC SYSGEN dates that are indicated in the Log control record in the History File are correct. These dates are updated with each IMS restart and each time a DELTA PLUS request is executed against an IMS control region. However, if you use an IMS Online Change to activate a new MODBLKS and no DELTA PLUS requests are executed before the system is shut down, the DB SYSGEN date will not reflect the new MODBLKS date.

**Figure 33: Confirm History Purge Panel**

```
Menu Options  Help
-------------------------------------------------------------
Command ===> Confirm History Purge
Do you wish to purge the History File data sets for IMSID IMSI?
Choose one selection.
  _ 1. Yes, purge the History data sets
```
2. No, cancel the History purge.

History File Data Sets:
Primary.  : 'IMI.PRI.HIST'
Secondary. : 'IMI.SEC.HIST'

Note: History Purge processing will temporarily destroy both DELTA PLUS History File data sets. During this period, any DELTA PLUS request will be rejected until the purge process has completed.

Ensure that you have a current backup of the History File data sets before continuing.

F1=Help    F12=Cancel

---

Table 50: Fields Available on the Confirm History Purge Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Enter the appropriate option to indicate whether you want to continue the History File purge or cancel the History File purge.</td>
</tr>
<tr>
<td>Primary</td>
<td>The data set name of the primary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Secondary</td>
<td>The data set name of the secondary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
</tbody>
</table>

---

History File Recovery

A DELTA PLUS History File recovery is required after an I/O error (or other type of error) occurs on one of the History File data sets. If the History File recovery process does not clear the problem, you will need to rebuild and/or expand your DELTA PLUS History File data sets.

To recover and expand your History File data sets

1. Quiesce all DELTA PLUS request processing on all IMS systems that use the History File.

2. Copy the current DELTA PLUS History File to a backup data set using IEBGENER or equivalent.

3. Delete the current History File data sets using ISPF options.

4. Reallocate and reformat the new, larger DELTA PLUS History File data sets. The Allocate New DELTA PLUS History File Data Set panel is available as option 4 on the History File Maintenance Menu. Refer to “History File Allocate and Format” on page 341 for information on this panel.
5 Copy the backup data set to the new History File data sets using IEBGENER or an equivalent utility.

6 Run a History File recovery to clear any existing error conditions. Recover from History File error conditions is option 3 on the History File Maintenance Menu.

The Confirm History Recovery panel shown in Figure 34 on page 340 is displayed after selecting option 3 from the History File Maintenance Menu. Use the History File recovery process to re-create the DELTA PLUS Log and retain all records.

The History File recovery process requires permission to proceed. Observe the caution displayed on the panel and then select the appropriate option to continue or not.

7 Execute a new DELTA List, or execute an IMS operator command directly from DELTA PLUS (option 2 from the DELTA PLUS Main Menu), to verify that History File logging is functioning correctly.

Figure 34: Confirm History Recovery Panel

Table 51: Fields Available on the Confirm History Recovery Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Enter the appropriate option to indicate whether you want to rebuild the History File or cancel the History File recovery.</td>
</tr>
<tr>
<td>Primary</td>
<td>The data set name of the primary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ# grpid) for the target in question.</td>
</tr>
</tbody>
</table>
### Field Name | Description
--- | ---
Secondary | The data set name of the secondary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ# grpid) for the target in question.

**History File Allocate and Format**

The Allocate New DELTA PLUS History File Data Set panel (the following figure) is displayed after selecting option 4 from the History File Maintenance Menu if no data sets have been allocated for the History File.

Use this panel to initially allocate the DELTA PLUS History File data sets online.

You can also access the Allocate New DELTA PLUS History File Data Set panel (Figure 29 on page 330) from the DELTA PLUS Data Set Allocation Menu. For more information, see “Allocating New DELTA PLUS Data Sets” on page 148.

---

**WARNING**

If you reformat an existing DELTA PLUS History File data set, you destroy the contents of the data set. You will lose all audit information concerning any changes that have been made to the IMS control regions associated with the History File.

---

**Figure 35: Allocate New DELTA PLUS History File Data Set Panel**

![Allocate New DELTA PLUS History File Data Set Panel](image)

**To allocate and format History File data sets**

1. Enter the information for the fields available on the Allocate New DELTA PLUS History File Data Set panel for the primary History File data set.
Table 52: Fields Available on the Allocate New DELTA PLUS History File Data Set Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>History Data Set Name</td>
<td>Type the data set name for the DELTA PLUS History File.</td>
</tr>
<tr>
<td>SMS Management Class</td>
<td>Specify the SMS Management class to be used for History File data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>SMS Storage Class</td>
<td>Specify the SMS Storage class to be used for History File data set allocation. This field is not required unless your installation requires SMS to be used.</td>
</tr>
<tr>
<td>Volume serial</td>
<td>Type the volume serial number of the DASD where the STATUS=NEW History File data set is to be allocated. This field is ignored if STATUS=OLD. The History File data set, whether new or old, must be completely allocated on a single volume with only a primary space allocation.</td>
</tr>
<tr>
<td>Generic unit</td>
<td>Type the generic unit name to be used for History File allocation. Generic names (also referred to as esoteric) are given to groups, or pools of DASD volumes. Some common generic/esoteric names are SYSDA, SYSALLDA, and SCRATCH.</td>
</tr>
<tr>
<td>Space Units</td>
<td>Type the units of space allocation for the History File data set in either <strong>CYLS</strong> or <strong>TRKS</strong>.</td>
</tr>
<tr>
<td>Primary quantity</td>
<td>Type the quantity (in the units specified in the <strong>Space Units</strong> field) to be allocated and formatted for each History File data set.</td>
</tr>
<tr>
<td>Block size</td>
<td>Type the block size for the History File data sets as a multiple of 1024; otherwise, it is adjusted to the next lower multiple of 1024.</td>
</tr>
</tbody>
</table>

2 Press **Enter** to allocate the primary History File data set. The Allocate New DELTA PLUS History File Data Set panel is displayed again.

3 Enter the information for the fields available on the Allocate New DELTA PLUS History File Data Set panel for the secondary History File data set.

4 Press **Enter** to allocate the secondary History File data set. The Confirm History File Format panel is displayed.
Where to go from here

Perform the following action:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>confirm the History File format</td>
<td>See History File Format Completion on page 343 for instructions.</td>
</tr>
</tbody>
</table>

History File Format Completion

The Confirm History File Format panel shown (the following figure) is displayed after pressing Enter on the Allocate New DELTA PLUS History File Data Set panel or selecting option 4 from the History File Maintenance Menu when the selected DELTA PLUS History File data sets already exist. The Confirm History File Format function requires permission to proceed.

WARNING

The History File Format function will temporarily destroy both DELTA PLUS History File data sets. During this period, any DELTA PLUS request will be rejected until the format process has completed. Ensure that you have a current backup of the History File data sets before you continue with this function.

Figure 36: Confirm History File Format

<table>
<thead>
<tr>
<th>Menu Options Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ==&gt; Confirm History File Format</td>
</tr>
<tr>
<td>Do you wish to format the History File data sets for Group GRPA? Choose one selection.</td>
</tr>
<tr>
<td>1. Yes, format the History File data sets</td>
</tr>
<tr>
<td>2. No, cancel the History File format</td>
</tr>
<tr>
<td>History File Data Sets.</td>
</tr>
<tr>
<td>Primary : 'yyy.DLP.GRPA.HIST1'</td>
</tr>
<tr>
<td>Secondary: 'yyy.DLP.GRPA.HIST2'</td>
</tr>
<tr>
<td>Note: History File Format processing will temporarily destroy both DELTA PLUS History File data sets. During this period, any DELTA PLUS request will be rejected until the format process has completed. Ensure that you have a current backup of the History File data sets before continuing.</td>
</tr>
</tbody>
</table>

F1=Help  F12=Cancel
Table 53: Fields Available on the Confirm History File Format Panel

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection field</td>
<td>Enter the appropriate option to indicate whether you want to format the History File data sets or cancel the History File format process.</td>
</tr>
<tr>
<td>Primary</td>
<td>The data set name of the primary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
<tr>
<td>Secondary</td>
<td>The data set name of the secondary History File data set obtained from the IMSID basic options module (DLP#imsid) or from the group options module (DLPZ#grpid) for the target in question.</td>
</tr>
</tbody>
</table>

History File Maintenance in Batch

The following figure shows sample JCL that executes the History File Maintenance utility you can use to perform History File maintenance in batch. You can view the sample JCL in the member DLP#HSTU in the DLPCNTL data set. You must have authority to update the parameters for the IMSID specified.

Figure 37: Sample Batch History File Maintenance Utility JCL

```
//DLP#HSTU JOB (ACCT#),HIST.UTILITIES,CLASS=A,MSGCLASS=X
//*
//LOGUTIL EXEC PGM=IKJEFT01,
//         PARM=DLPGUTL0,DYNAMNBR=16,REGION=2M
//*
//STEPLIB DD DISP=SHR,DSN=BMCNODE.DLPLIB
//SYSTSPRT DD SYSOUT=*  
//SYSPRINT DD SYSOUT=*  
//SYSDUMP DD SYSOUT=*  
//SYSTSIN DD *  
   FORMAT I### HISTORY /* I### = IMSID OR GROUP NAME */  
   STATUS I### HISTORY /* I### = IMSID OR GROUP NAME */  
   PURGE I### HISTORY /* I### = IMSID OR GROUP NAME */  
   RECOVER I### HISTORY /* I### = IMSID OR GROUP NAME */  
   END
/*
//*/
```

Table 54 on page 344 describes the batch History File maintenance commands.

Table 54: History File Maintenance Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMAT $imsid HISTORY</td>
<td>Clears and formats the History File data sets.</td>
</tr>
<tr>
<td>STATUS $imsid HISTORY</td>
<td>Displays the current History File data set status.</td>
</tr>
<tr>
<td>PURGE $imsid HISTORY</td>
<td>Deletes inactive History File records.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RECOVER <em>imsid</em> HISTORY</td>
<td>Re-creates the History File or clears History File errors.</td>
</tr>
</tbody>
</table>
DELTA PLUS repository

This chapter describes how to use the optional DELTA PLUS repository.

Overview of the DELTA PLUS repository

The DELTA PLUS repository is an alternative medium for storing resource definitions from the MODBLKS data set and any updates made during DELTA PLUS List processing.

Note

The repository is disabled by default. To enable it, perform the instructions in “Enabling the DELTA PLUS repository” on page 348.

The repository stores objects in paired BSAM-formatted data sets that are accessed by relative record number. To optimize recovery and reliability, the repository maintains dual data sets: a primary (REP1) and a secondary (REP2). Both data sets must be available for updates to the control region, but only one is necessary for reading resources during a restart or for running DELTA PLUS utilities.

Repository guidelines are as follows:

- Using the repository is optional.
- You can use the repository with one or more IBM IMS control regions.
- You specify repository data set names in the IMSID options, where you can allocate and format the data sets. For more information, see “Enabling the DELTA PLUS repository” on page 348.
- The REP1 and REP2 data sets are updated during IMS shutdown when all DDIR, PDIR, SMB, and RCTE control blocks defined in the system are written to the repository.
- The repository’s configuration refers to all resources logged to the repository at a given time. At IMS shutdown, the product creates a new configuration that
contains all DDIR, PDIR, SMB, and RCTE control blocks. All records logged for this configuration are keyed with the same STCK time stamp.

- The repository can contain many configurations, but only the most recent configuration (the active configuration) is used at cold start. The repository is accessed during warm and emergency restarts, but not for reading resource definitions.

- The repository can contain configurations for one or multiple IMS systems.

- The DELTA IMS and DELTA PLUS products can share the same repository. No repository conversion is necessary if you decide to convert from DELTA IMS to DELTA PLUS.

- New configurations are logged during normal shutdown, but not during abnormal termination:
  - During shutdown, the product does not create a new configuration if no DELTA PLUS dynamic updates or MODBLKS online changes have occurred since the last restart.
  - Any other online change type (such as ACBLIB OLC) has no effect on the records in the repository.
  - Old or inactive configurations remain in the repository until space is needed to create a new configuration; at that point, an automatic purge removes the unused resources to reclaim space.
  - The repository does not store resources related to data communications (DC). The DELTA PLUS Log saves DC-related updates to NODES, LTERMS, and SUBPOOLS (that is, updates made in DELTA PLUS List processing).

- BMCLINK continues to manage DELTA PLUS Lists across a single IMS.

- XRF backup and FDR systems continue to run. Their resource definitions are rebuilt from checkpoint records on the OLDS.

- If you choose to enable the repository, you can continue to use MODBLKS online change operations, but BMC does not recommend doing so. However, you may leave MODBLKS data sets in place for compatibility. For more information, see “Enabling the DELTA PLUS repository” on page 348.

---

**Enabling the DELTA PLUS repository**

Use the following procedure to enable the optional DELTA PLUS repository.
Before you begin

To discontinue using MODBLKS (recommended), you can remove MODBLKSA/MODBLKSB from the IMS procedure. Also, if your IMS instance is part of an IMSPLEX, you can disable MODBLKS support by changing the parameter MODBLKS=OLC to MODBLKS=DYN (in DFSDFxxx).

To enable the repository

1. Define the primary (REP1) and secondary (REP2) data sets by using ISPF Option 3.3.4 or the new sample JCL member DLP#REPA (see DLPCNTL Library):

   Menu Options Help
   -----------------------------------------------------
   Repository Maintenance Menu
   Command ==>

   Repository Maintenance Option. Choose a selection.
   - 1. Status - Display status of Repository data sets
   - 2. Purge - Purge inactive Repository records
   - 3. Recover - Recover from Repository error conditions
   - 4. Format - Allocate (if necessary) and Format the Repository data sets
   Specify Target.
   IMSID or Group . . GPFZ

2. Update the IMSID Options (or Group Options) to define the primary (REP1) and secondary (REP2) data sets to DELTA PLUS.

   DELTA PLUS IMSID Options - Basic Options
   Command ==>

   IMSID . . . . . . . . . . . : GPFZ
   The following fields will be overridden by the Group Options if an XCF Group is specified above.
   BMCXLINK task network LUNAME GPF6LINK
   DELTA PLUS Log Data Set Names.
   Primary Log . . . . . . . . RIHGPF.DLP.GPF3.LOG1
   Secondary Log . . . . . . . . RIHGPF.DLP.GPF3.LOG2
   DELTA PLUS History File Data Set Names.
   Primary History File . . RIHGPF.DLP.GPF3.HLOG1
   Secondary History File . . RIHGPF.DLP.GPF3.HLOG2
   DELTA PLUS Repository Data Set Names (optional).
   Primary Repository . . . RIHGPF.DLP.GPF3.REP1
   Secondary Repository . . . RIHGPF.DLP.GPF3.REP2

3. Restart IMS, either a cold start or a warm start.

   Example messages displayed at restart:

   DLP186131I DELTA PLUS detected the Delta Repository is formatted and available

   DLP186132I Configuration 2014098F/14352517 USED at COLD START

   DLP186141I Count of resources in configuration: PDIR- 122, DDIR- 23, SMB- 102, RCT- 1

After IMS restarts, the repository is enabled, and DELTA PLUS creates the repository's first configuration containing all DDIR, PDIR, SMB, and RCT control blocks defined in that IMS instance. At the next cold start, IMS will read the DDIR, PDIR, SMB, and RCT resources from the repository. MODBLKSA and MODBLKSB
data sets are no longer used. At normal shutdown, DELTA PLUS will create a new repository configuration if you made changes by executing DELTA PLUS Lists to modify or add new resource definitions.

**Creating DELTA PLUS repository reports**

You can display information about your DELTA PLUS repository's content by using ISPF panels and batch reports.

**Creating repository reports by using ISPF**

Use the following procedure to create DELTA PLUS repository reports via ISPF.

1. From the Primary Menu, select **Utilities** (option 6).

2. From the Utilities Menu, select **List DELTA Repositories** (option 3).

The DELTA IMS VT - Repository List panel is displayed:

```
File Edit Options Help

DELTA PLUS                              Report Specifications
Command ===> _________________________________________________________________

Enter the report specifications below. Then press Enter to generate the report.
Target . . . ______________
Report Type. Choose one selection.
- 1. Terse - Brief report, one line per update
- 2. Complete - Complete report with before and after data
- 3. Changes - Complete report with changed data only
- 4. User - Call user exit (enter output exit suffix below)
Element Type. Select one or more element types to be listed.
- APPLCTN - Changed program directory entries
- TRANSACT - Changed transaction codes
- DATABASE - Changed database directory entries
- RTCODE - Changed Fast Path route codes
- TERMINAL - Renamed VTAM terminal nodes
- LTERM - Changed logical terminals
- SUBPOOL - Changed VTAM LU 6.1 subpools
- COMMAND - Executed IMS operator commands
- ZAP - IMS storage zaps
- HEADER - Group or Coordinated Request Header records

Record status. Select one or more.
- Active - Used in most recent IMS restart
- Inactive - Not used in most recent IMS restart
Sort fields. Valid sort field values are:
- Sort field 1 . . . ______ + LIFO - Descending date/time sequence
- Sort field 2 . . . ______ + FIFO - Ascending date/time sequence
- Sort field 3 . . . ______ + TYPE - Element Type
- Sort field 4 . . . ______ + NAME - Element Name
- Sort field 5 . . . ______ + USERID - Updated by

View Profile . . . . DEFAULT
Output data set . . . . DLPYRPO
Output exit suffix  . DLPYRPO
Input exit suffix . . . DLPYRPI
```
3 Specify your preferences for the report in the appropriate fields according to the following table:

**Table 55: Repository List fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report type</td>
<td>Type / by option 1 if you want a terse report (only one line per element) or by option 2 if you want a complete (detailed) report.</td>
</tr>
<tr>
<td>APPLCTN</td>
<td>Type / in this field to include program directory entries in the report.</td>
</tr>
<tr>
<td>TRANSACT</td>
<td>Type / in this field to include transaction codes in the report.</td>
</tr>
<tr>
<td>DATABASE</td>
<td>Type / in this field to include database directory entries in the report.</td>
</tr>
<tr>
<td>RTCODE</td>
<td>Type / in this field to include Fast Path route codes in the report.</td>
</tr>
<tr>
<td>Active</td>
<td>Type / in this field to include records in the active (current) configuration.</td>
</tr>
<tr>
<td>Inactive</td>
<td>Type / in this field to include records not in the active configuration (records no longer used).</td>
</tr>
<tr>
<td>LIFO</td>
<td>To sort repository entries in the report, specify the numerical sort order you prefer (where 1 is highest priority and 4 is lowest) in the LIFO, FIFO, TYPE, and NAME fields. You can leave some or all of the fields blank for no sort order.</td>
</tr>
<tr>
<td>FIFO</td>
<td>Name</td>
</tr>
<tr>
<td>TYPE</td>
<td>Name</td>
</tr>
<tr>
<td>NAME</td>
<td>Name</td>
</tr>
</tbody>
</table>

4 Press Enter.

A message indicates that a repository report is pending.

5 Press Enter again to generate the report.

The following example shows a terse report:
Creating repository reports in batch

The Repository Report utility enables you to run the SELECT and REPORT commands in batch, in a similar manner to reporting on the DELTA Log or History File. The Repository Report utility is a convenient way to report on the resource definitions in the repository for all configurations (active and inactive).

To create repository reports in batch

1. From member DLP#REPL in the DLPCNTL data set, copy the sample JCL for running the Repository Report utility:

2. Change the copied JCL as needed based on your report preferences:

   a. Edit the SELECT command to specify the record types to be read in the repository, and whether to report on active records (in the current configuration) or inactive records (configurations no longer in use).

      For more information, see “SELECT” on page 352.

   b. Edit the REPORT command to enter your target and report-type criteria.

      The target parameter is required. The OUTDSN, TYPE, and SORT parameters are optional. For more information, see “REPORT” on page 353.

SELECT

Use the SELECT command to enter a list of record types to be read in the repository. You can also specify whether to select active records (in the current configuration) or inactive records (configurations no longer being used).

A plus sign (+) continuation mark is required when commands are continued to another line.

The default parameter for the SELECT command is ALL (all record types). Following is the SELECT command syntax:

```
SELECT {DATABASE | APPLCTN | TRANSACT | RTCODE | ALL} {ACTIVE | INACTIVE}
```
The following table describes the parameters that you can use with the SELECT command:

**Table 56: SELECT command parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATABASE (or DBD)</td>
<td>Reads all database definitions (DDIRs) from the repository</td>
</tr>
<tr>
<td>APPLCTN (or APL)</td>
<td>Reads all application definitions (PDIRs) from the repository</td>
</tr>
<tr>
<td>TRANSACT (or TRN)</td>
<td>Reads all transaction definitions (SMBs) from the repository</td>
</tr>
<tr>
<td>RTCODE (or RCT)</td>
<td>Reads all route code definitions from the repository</td>
</tr>
<tr>
<td>ALL</td>
<td>Reads all resource definitions from the repository</td>
</tr>
<tr>
<td>ACTIVE</td>
<td>Limits the records read to the records in the active (current) configuration</td>
</tr>
<tr>
<td>INACTIVE</td>
<td>Limits the records read to the records not in the active configuration (records no longer used)</td>
</tr>
</tbody>
</table>

**REPORT**

Use the REPORT command to enter the target and report-type criteria. The target parameter is required. The OUTDSN, TYPE, and SORT parameters are optional.

Following is the REPORT command syntax:

```
REPORT target [OUTDSN(dsname)]
[TYPE(REPTERS | REPCOMP)]
[SORT(LIFO | FIFO | TYPE | NAME)]
```

The following conditions apply:

- **target** is the required four-character DELTA PLUS group name or IMSID.
- A plus sign (+) continuation mark is required for the REPORT when the commands are continued to another line.

The following table describes the keywords to use with the REPORT command:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTDSN(dsname)</td>
<td>Writes the report to the specified preallocated data set</td>
</tr>
<tr>
<td>TYPE(REPTERS)</td>
<td>Generates a terse report (a brief report that includes a one-line description of each element)</td>
</tr>
<tr>
<td>TYPE(REPCOMP)</td>
<td>Generates a complete report with a detailed description of each element</td>
</tr>
<tr>
<td>SORT(LIFO)</td>
<td>Sorts report lines in last in, first out (descending) order</td>
</tr>
<tr>
<td>SORT(FIFO)</td>
<td>Sorts report lines in first in, first out (ascending) order</td>
</tr>
</tbody>
</table>
Changing the active configuration (CHGREP)

You can use the CHGREP utility to modify which configuration you want to be active. This changes which configuration IMS will use at cold start for building DDIR, PDIR, SMB, and RCT resources.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SORT(TYPE)</td>
<td>Sorts report lines by element type</td>
</tr>
<tr>
<td>SORT(NAME)</td>
<td>Sorts report lines by element name</td>
</tr>
</tbody>
</table>

The following example shows a complete repository report:

```
DELTA PLUS Rep List - Detailed format Target: CUST 05/08/2014 Page: # 1
Date       Time  IMSID Userid   Action Ele_type List      After    Before    Act
04/08/2014 14.35 D13Q           ADD    DATABASE             Limited to: D13Q YES
   Name of database . . . . . . . . . . . . CAP32KO
   Model after (valid for ADD,REV,ADDREV).
   DBD resident in storage? . . . . . . No
   Access is EX, RO, RD, or UP . . . . . . EX
   Auto-reload sensitive ACBs? . . . . . . No
   Reload DEDB randomizer? . . . . . . . . No
04/08/2014 14.35 D13Q           ADD    DATABASE             Limited to: D13Q YES
   Name of database . . . . . . . . . . . . CAP32KV
   Model after (valid for ADD,REV,ADDREV).
   DBD resident in storage? . . . . . . No
   Access is EX, RO, RD, or UP . . . . . . EX
   Auto-reload sensitive ACBs? . . . . . . No
   Reload DEDB randomizer? . . . . . . . . No
04/08/2014 14.35 D13Q           ADD    DATABASE             Limited to: D13Q YES
   Name of database . . . . . . . . . . . . DBFSAMD3
   Model after (valid for ADD,REV,ADDREV).
   DBD resident in storage? . . . . . . Yes
   Access is EX, RO, RD, or UP . . . . . . UP
   Auto-reload sensitive ACBs? . . . . . . No
   Reload DEDB randomizer? . . . . . . . . No
   Program is an MPP or BMP . . . . . . BMP
   Schedule serial or parallel . . . . . . Parallel
   Fast Path program? . . . . . . . . . . . No
   Dynamic PSB option? . . . . . . . . . . . No
```

The end of the report (complete or terse) lists all of the repository's configurations. This section also lists the associated IMSID, create date and time, resource type counts, and whether the configurations are active or inactive, as shown in the following example:

```
D13Q Configuration 2014098F/13152631 created on 04/08/2014 13.15
   PDIR- 1 DDIR- 0 SMB- 0 RCT- 0, configuration is INACTIVE
D13Q Configuration 2014098F/13244547 created on 04/08/2014 13.24
   PDIR- 3 DDIR- 2 SMB- 0 RCT- 0, configuration is INACTIVE
D13Q Configuration 2014098F/14352517 created on 04/08/2014 14.35
   PDIR- 122 DDIR- 23 SMB- 102 RCT- 1, configuration is ACTIVE
D13R Configuration 2014099F/10461879 created on 04/09/2014 10.46
   PDIR- 228 DDIR- 59 SMB- 423 RCT- 29, configuration is ACTIVE
```
You use this utility when you have issues with the active configuration. Only one configuration is considered active for each IMS.

**Note**

BMC recommends that you contact BMC Customer Support before using the CHGREP utility.

The following figure shows sample JCL for running the CHGREP utility. You can view sample JCL in member DLP#XUT2 in the DLPCNTL data set.

---

### Maintaining the DELTA PLUS repository

ISPF panels are provided to enable you to maintain the DELTA PLUS repository data sets. You can access the panels from the DELTA PLUS repository Maintenance Utility.

You can also maintain the repository by using batch jobs. For more information, see “Repository maintenance in batch jobs” on page 360.

### Access to the repository maintenance utilities

You need UPDATE authority to the repository data sets themselves to use the repository maintenance utilities. Additionally, if you are securing DELTA PLUS functions using SAF, you need READ access to the following SAF resources in the Delta product class.

In the following table, *target* is a four-character IMSID.

#### Table 57: READ access requirements in the Delta product class

<table>
<thead>
<tr>
<th>Repository utility name</th>
<th>SAF resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPORT</td>
<td><code>target.LIST</code></td>
</tr>
</tbody>
</table>
Using ISPF for repository maintenance

Use the following procedure if you want to maintain the repository by using ISPF.

To maintain the repository with ISPF

1. From the Primary Menu, select **Utilities functions** (option 6).
2. From the Utilities Menu, select **Maintain DELTA repositories** (option 4).
3. From the Repository Utility panel, select from the available utilities:
   - Status
   - Purge
   - Recover
   - Format

For more information about the available utilities, see these topics:

- “Repository status” on page 356
- “Repository purge” on page 357
- “Repository recovery” on page 358
- “Repository format and data set allocation” on page 360

Repository status

Use the Status utility to view information about the DELTA PLUS repository. Selecting **Status** (option 1) from the Repository Utility panel displays the Repository Status panel.

**Figure 38: Repository Status panel**

**Table 58: Repository Status panel field descriptions**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display configuration list</td>
<td>Field that lists the configurations that are currently in the repository</td>
</tr>
<tr>
<td></td>
<td>Enter / in this field to display a the list.</td>
</tr>
<tr>
<td>Primary data set name</td>
<td>Name of the primary repository data set</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Primary volume serial</td>
<td>VOLSER where the primary repository data set resides</td>
</tr>
<tr>
<td>Secondary data set name</td>
<td>Name of the secondary repository data set</td>
</tr>
<tr>
<td>Secondary volume serial</td>
<td>VOLSER where the secondary repository data set resides</td>
</tr>
<tr>
<td>Number of Records</td>
<td>Total number of 512-byte records possible in the repository</td>
</tr>
<tr>
<td>Records used</td>
<td>Total number and percentage of records in use for the repository</td>
</tr>
<tr>
<td>Records available</td>
<td>Total number of the active or inactive records, and the percentage of the repository that they use</td>
</tr>
<tr>
<td>Records active</td>
<td>Total number and percentage of the repository used by active or inactive records</td>
</tr>
<tr>
<td>IMSID</td>
<td>IMS instance for which you are viewing the status</td>
</tr>
</tbody>
</table>
| Records Active Count (IMSID)  | Total number of repository records used by active configurations for this IMS system  
                              | This count also includes configuration header records.                       |
| Records Inactive Count (IMSID)| Total number of repository records used by inactive configurations for this IMS system  
                              | This count also includes configuration header records.                       |

Selecting the **Display configuration list** field displays the Repository Configuration List panel. This panel shows the configurations in the repository, and the date and time each configuration was saved. In addition to the number of changes for each type of element, the list shows whether the configuration is active.

**Figure 39: Repository Configuration List panel**

<table>
<thead>
<tr>
<th>IMSID</th>
<th>Date</th>
<th>Time</th>
<th>Total</th>
<th>APPLCTNs</th>
<th>TRANs</th>
<th>DBs</th>
<th>RCTs</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPF3</td>
<td>09/15/2015</td>
<td>14:38:22</td>
<td>133</td>
<td>68</td>
<td>51</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Repository purge**

You can use the Purge utility to copy and rebuild the Repository data sets while deleting inactive configurations. The utility determines whether a configuration is active or inactive by comparing the date of the configuration's entries against the configuration date in the control record.

Selecting option 2 from the Repository Utility panel displays the Repository Purge panel.

**Figure 40: Repository Purge panel**
The control record is the first record in the Repository. If the entry’s date does not match the configuration date in a control record, the entry is considered inactive and a candidate to be purged. However, the utility saves one inactive configuration along with the active configuration after the purge runs successfully.

**Note**

When creating a new configuration of DDIR, PDIR, SMB, and RCTE resources in the Repository at IMS shutdown, DELTA checks whether sufficient space exists in the Repository before proceeding. If there is insufficient space to create a new configuration, an automated PURGE reclaims unused space before logging any additional resource definitions.

### Repository recovery

You can recover the repository from error conditions by using the Recover utility, which copies and re-creates the repository data sets while retaining all logged records.

**WARNING**

Ensure that you have a current backup of the repository data sets before you run a recovery.

Selecting option 3 from the Repository Utility panel displays the Repository Recover panel.

**Figure 41: Repository Recover panel**

```
Confirm Repository Purge
Command ===> ______________________________________________________________
Do you wish to purge the Repository data sets for Group GRPA?
Choose one selection.
- 1. Yes, purge the Repository data sets
- 2. No, cancel the Repository purge.
Repository Data Sets.
   Primary : 'WXC.GRPA.REP1'
   Secondary: 'WXC.GRPA.REP2'
Note: Repository Purge processing will temporarily destroy both DELTA PLUS Repository data sets. During this period, any request will be rejected until the purge process has completed.
Ensure that you have a current backup of the Repository data sets before continuing.
```

```
Confirm Repository Recovery
Command ===> ______________________________________________________________
Do you wish to rebuild the Repository data sets for Group GRPA
Choose one selection.
- 1. Yes, rebuild the Repository data sets
- 2. No, cancel the Repository recovery
Repository Data Sets.
   Primary : 'WXC.GRPA.REP1'
```

Using dual data sets (primary and secondary repository) during the recovery helps to minimize integrity problems. A DELTA PLUS repository recovery is required after an I/O error (or other type of error) occurs. If the recovery does not clear the problem, you must rebuild or expand your repository data sets as follows.

**To rebuild or expand the repository data sets**

1. Quiesce all DELTA PLUS request processing on all IMS systems that use these DELTA Repository data sets.

2. Copy the current DELTA PLUS repository data sets to a backup data set by using IEBGENER or an equivalent utility.

3. Delete the current DELTA PLUS repository data sets by using ISPF options.

4. Select option 4 on the Repository Utility panel to reallocate and reformat the new DELTA IMS repository data sets.

   For more information, see “Repository format and data set allocation” on page 360.

5. Copy the backup data set to the new DELTA PLUS repository data sets by using IEBGENER or an equivalent utility.

6. On the Repository Utility panel, select option 3 to recover the repository.

7. On the Repository Recover panel, select **Continue the repository recovery** (option 1) to proceed.

   **WARNING**
   
   The recovery will destroy both DELTA repository data sets; ensure that you backed up both repository data sets before continuing. Also, do not restart IMS during the recovery. The recovery clears any existing error conditions, re-creates the repository, and retains all records.

8. Execute a new DELTA PLUS List to verify that the repository is functioning correctly.
Repository format and data set allocation

You use the Format utility to allocate and format new repository data sets. Additionally, you can reformat existing repository data sets.

Normally, you allocate and format the repository only once, before first using it. However, you might need to reformat it on rare occasions.

**WARNING**
Reformatting the repository deletes all previously recorded updates. In this situation, you must restore from a backup copy of the repository data sets.

Selecting option 4 from the Repository Utility panel displays the Repository Format panel.

**Figure 42: DELTA IMS VT - Repository Format panel**

<table>
<thead>
<tr>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm Repository Format</td>
</tr>
<tr>
<td>Do you wish to format the Repository data sets for Group GRPA?</td>
</tr>
<tr>
<td>Choose one selection.</td>
</tr>
<tr>
<td>1. Yes, format the repository.</td>
</tr>
<tr>
<td>2. No, cancel the repository format.</td>
</tr>
</tbody>
</table>

**Repository Data Sets.**
- Primary: 'WXC.GRPA.REP1'
- Secondary: 'WXC.GRPA.REP2'

**CAUTION:** Current active repository entries will be removed and therefore will not be reapplied.

The repository data set names are obtained from the DELTA options library for the IMSID name specified. You must verify that the correct IMSID name is being used, and verify that the repository data set name is correct for the IMSID name in the DELTA options library.

Repository maintenance in batch jobs

DELTA PLUS repository batch support includes sample JCL members. The following JCL samples are in the DLPCNTL data set.

**Table 59: Sample JCL members for batch repository maintenance**

<table>
<thead>
<tr>
<th>Sample name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLP#REPA</td>
<td>Allocate and format the DELTA PLUS repository data sets</td>
</tr>
<tr>
<td>DLP#REPL</td>
<td>Produce a DELTA PLUS repository report</td>
</tr>
</tbody>
</table>
The following sample JCL runs the utility that you use to perform repository maintenance in batch:

<table>
<thead>
<tr>
<th>Sample name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLP#REPU</td>
<td>Run DELTA PLUS repository maintenance</td>
</tr>
<tr>
<td>DLP#XUT2</td>
<td>Alter the active configuration date in the DELTA PLUS repository</td>
</tr>
</tbody>
</table>

Table 60: DELTA IMS Repository batch commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMAT imsid REP</td>
<td>Clears and formats the repository data sets</td>
</tr>
<tr>
<td>STATUS imsid REP</td>
<td>Displays the current repository data set status</td>
</tr>
<tr>
<td>PURGE imsid REP</td>
<td>Deletes inactive records in the repository</td>
</tr>
<tr>
<td>RECOVER imsid REP</td>
<td>Re-creates the repository or clears error status</td>
</tr>
</tbody>
</table>
Generating DELTA Lists and Stage-1 Input

This chapter describes how to use DELTA PLUS to generate Stage-1 SYSGEN input in batch and ISPF environments. It also describes alternative methods, other than the DELTA PLUS List Edit, for generating DELTA Lists.

Introduction

Maintenance of IMS systems sometimes requires the incorporation of changes made by DELTA PLUS into the IMS SYSGEN or the incorporation of changes made in the SYSGEN into DELTA PLUS. A suite of utilities provided by DELTA PLUS can assist you with the following tasks:

- Convert the DELTA PLUS Log to IMS Stage-1 macros
- Convert the DELTA PLUS Log to a DELTA List
- Convert a DELTA List to IMS Stage-1 macros
- Generate a DELTA List from IMS RESLIB, IMS MODBLKS, or existing IMS Stage-1 input (this is available in batch only)

Using the Conversion Utilities Online

DELTA PLUS allows you to convert the DELTA PLUS Log to IMS Stage-1 macros with an online utility.

This task, along with other conversion tasks, can also be completed in batch. See “Using the Conversion Utilities in Batch” on page 370 for more information on the batch version of these utilities. All ISPF browse commands are supported when browsing the resulting report.
Converting the DELTA PLUS Log to Stage-1 Macros

When generating a Stage-1 report, DELTA PLUS sorts the generated macros as they would normally appear in the Stage-1 job stream. The macros are grouped by element type and then sorted alphanumerically for each type. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.

Figure 43: Panel Flow

To Convert the DELTA PLUS Log to Stage-1 Macros

1. Go to the Utilities Menu panel.

   From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.

2. Type 5 in the Utility option selection field and press Enter. The Conversion Utility Menu panel is displayed.

3. Type 1 in the DELTA PLUS Conversion Utility Option selection field and press Enter. The Convert Log to Stage-1 Macros panel is displayed.

Using the Conversion Utilities Online
4 Type the specific IMSID in the IMSID field for which you want to execute the conversion utility.

5 Specify the version/release of IMS for the IMSID in the IMS version/release level field.

6 Type a / in the selection field next to the Include comments in the Stage-1 Macro field to include comments in the Stage-1 output.

7 Type / in the Element Type selection fields beside each type of element that should be included in the report. Changed, as used on this panel, means added, revised, or reloaded. If none is selected, all types (except deleted) are selected by default.

Note

Deleted items are not included in the report.

8 Type / in the Record type selection fields to specify whether active elements (as of the last IMS restart), inactive elements (other than the last IMS restart), both inactive and inactive elements, or all elements used since the specified Date and Time should be considered when DELTA PLUS generates the report.

9 To generate machine readable output, enter the name of a preallocated sequential data set or preallocated PDS and member name to contain the report in the Output data set field. The report lines will be written without blank lines and headings. The record format is FB with a record length of 80.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

10 Press Enter. A browsable Log to Stage-1 report appears.
The generated macros appear as they would normally in the Stage-1 job stream. The macros are grouped by element type and then sorted alphanumerically for each type.

Updating Stage-1 Input

DELTA PLUS creates updates for the IMS Stage-1 system definition of those changes made to the IMS control region. You must insert the updates in the Stage-1 job stream.

DELTA PLUS attempts to relate elements that are logically related. TRANSACT and RTCODE statements can be related to APPLCTN statements. Where DELTA PLUS can establish the proper relationship, the related TRANSACT and RTCODE statements will immediately follow the APPLCTN. They will be indented to highlight the relationship. A similar convention is used for VTAM terminals and logical terminals (TERMINAL and NAME statements). The relationship, in this case, can only be established if the LTERM add or revise specified the name of the terminal assignment. While DELTA PLUS attempts to generate all necessary Stage-1 macro operands, in the following situations this generation is not possible:

- TRANSACT elements with an Input Edit routine
  Since the name of the Input Edit routine is not available from the IMS transaction control block (SMB), DELTA PLUS cannot determine the module name and therefore generates a macro operand such as EDIT=(UC,????????) to indicate that you must supply the name.

- TERMINAL definitions with special feature operands
  Since all TERMINAL updates use existing spare terminals, DELTA PLUS does not record information about certain macro operands such as TYPE, FEAT, and OUTBUF. You must identify and copy these types of macro operands based upon the spare terminal name.

Converting the DELTA PLUS Log to a DELTA List

You access the panels that allow you to use the DELTA PLUS Log to generate DELTA Lists online from the DELTA PLUS Main Menu.

See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.
To Convert the DELTA PLUS Log to a DELTA List

1. Go to the Utilities Menu panel.

   From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.

2. Type 5 in the Utility option selection field and press Enter. The Conversion Utility Menu panel is displayed.

3. Type 2 in the DELTA PLUS Conversion Utility option selection field and press Enter. The Convert Log to DELTA List panel is displayed.

   File  Edit  Options  Help
   ******************************************************************************
   DELTA PLUS VT  Convert Log to DELTA List
   Enter the conversion specifications below. Then press Enter to convert. More: +
   IMSID . . . . . . . . . . . . GRPA
   IMS version/release level : __ (810,910,101,111) (Optional)
   Output DELTA List library : 'WXC.DLP.DELTAPDS'
   Output DELTA List . . . . . . . . . . . .
   Element Type. Select one or more element types to be converted.
   / APPLCTN  - Changed program directory entries
   _ TRANSACT - Changed transaction codes
   _ DATABASE - Changed database directory entries
   _ RTCODE   - Changed Fast Path route codes
   _ TERMINAL - Renamed VTAM terminal nodes
   _ LTERM    - Changed logical terminals
   _ SUBPOOL  - Changed VTAM LU 6.1 subpools
   _ COMMAND  - Executed IMS operator commands
   Record type. Select one or more record types to process.
   / Active   - Used in most recent IMS restart
   _ Inactive - Not used in most recent IMS restart
   _ Start    - Since a particular time (mutually exclusive w/ Active,Inactive)
   Date _________ (mm/dd/yyyy)  Time _______ (hh.mm)

4. Type the specific IMSID in the IMSID field for which you want to execute the conversion utility.

5. Specify the version/release of IMS for the IMSID in the IMS version/release level field.

6. Type the name of the library in which the DELTA List created from the conversion should reside in the Output DELTA List Library field.
7 Type the name of the DELTA List to be created from the conversion in the **Output DELTA List** field.

8 Type `/` in the **Element Type** selection fields beside each type of element that should be included in the DELTA List. Changed, as used on this panel, means added, deleted, revised, or reloaded.

9 Type `/` in the **Record type** selection fields to specify whether active elements (as of the last IMS restart), inactive elements (other than the last IMS restart), both inactive and inactive elements, or all elements used since the specified **Date** and **Time** should be considered when DELTA PLUS generates the DELTA List.

10 Type `/` in the **Limitations** selection field to include in the converted DELTA List only those Log records that were created as a result of a coordinated request to a Group. You may want to select this option if you are building a DELTA List to make a new IMS system current with the other IMS systems in the Group.

A Coordinated request is one in which the DELTA List is executed on all IMS systems in a user-defined Group. The DELTA List must complete successfully on **ALL** of the IMS systems or it will not be completed on any of the systems.

11 Press **Enter** to generate the DELTA List.

Where to Go from Here

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit the DELTA List</td>
<td>See “Creating and Editing DELTA Lists” on page 151 for more information.</td>
</tr>
<tr>
<td>Check and/or execute the DELTA List</td>
<td>See “Using DELTA List Check and Execute” on page 257 for more information.</td>
</tr>
<tr>
<td>Create another DELTA List from the Log</td>
<td>Repeat this task.</td>
</tr>
</tbody>
</table>

### Converting a DELTA List to Stage-1 Macros

DELTA PLUS can produce IMS Stage-1 macros directly from a DELTA List, using the Convert function.

See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.
To Convert a DELTA List to Stage-1 Macros

1. From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.

2. Type 5 in the Utility option selection field and press Enter. The Conversion Utility Menu panel is displayed.

3. Type 3 in the DELTA PLUS Conversion Utility option selection field and press Enter. The Convert DELTA List to Stage-1 Macros panel is displayed.

4. Type the name of the DELTA PLUS PDS in the Input DELTA List Library field.

5. Type the name of the DELTA List to be converted in the Input DELTA List field.

6. Specify the version/release of IMS for the IMSID in the IMS version/release level field. This field determines the level of the converted Stage-1 macros.

7. This field is optional. Use the IMSID field to instruct DELTA PLUS to exclude all DELTA List elements with limiting IMSIDs from the conversion process unless the limiting IMSID matches the IMSID specified in this field. If you do not specify an IMSID in this field, DELTA PLUS ignores the limiting IMSIDs in the DELTA List.
8 Type a / in the selection field next to the **Include comments in the Stage-1 Macro** field to include comments in the Stage-1 output.

9 Type a / in the selection field next to the **Include Marked elements only** field to include only elements marked for execution in the Stage-1 output.

10 Type / in the **Element Type** selection fields beside each type of element that should be included in the report.

11 To generate machine readable output, enter the name of a preallocated sequential data set or preallocated PDS and member name to contain the report in the **Output data set** field. The report lines will be written without blank lines and headings. The record format is FB with a record length of 80.

   For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

12 Press Enter. A browsable DELTA List to Stage-1 report appears.

---

### Using the Conversion Utilities in Batch

Whenever using the online conversion utilities is inconvenient or undesirable, you may use the DELTA PLUS batch conversion utilities to complete the following tasks:

- Convert the DELTA PLUS Log to IMS Stage-1 macros
- Convert the DELTA PLUS Log to a DELTA List
- Convert a DELTA List to IMS Stage-1 macros
- Generate a DELTA List from IMS RESLIB, IMS MODBLKS, or existing Stage-1 input (this is available through batch only)

**Converting the DELTA PLUS Log to Stage-1 Macros in Batch**

The following figure shows a sample JCL that executes the conversion utility you can use to convert the DELTA PLUS Log to Stage-1 macros in batch. You can view the sample JCL in the member DLP#UTL3 in the DLPCNTL data set.

**Figure 44: Sample Batch DELTA PLUS Log Conversion Utility JCL**

```jcl
//DLP#UTL3 JOB (ACCT#),DELTA PLUS Log TO STAGE 1/DELTA LIST
//CONVERT EXEC PGM=IKJEFT01,DYNAMNBR=99,REGION=5M
//STEPLIB DD DISP=SHR,DSN=DELTA.PLUS.OPTIONS
// SYSTSPRT DD SYSOUT=*  
// SYSPRINT DD SYSOUT=*  
// SYSSUOMP DD SYSOUT=*  
// SYSTSIN DD *  
PROFILE MSGID
DLPGUTLD
SELECTX DATABASE +
   APPLCTN +
   TRANSACT +
   RTCODE +
   TERMINAL +
   LTERM +
   SUBPOOL +
   ACTIVE +
   INACTIVE +
REPORT IIII       
   TYPE(STAGE1) IMSLVL(810) +
   OUTDSN('OUTPUT.STAGE1PDS.OR.DELTAPDS(MEMBER)') <=== OUTPUT
   DSN/MEMBER
END
/*
 // WARNING
Review the Utility Parameters section of the member to determine the input criteria necessary to use this utility to convert the Log to Stage-1 macros because this utility can also be used to convert the Log to a DELTA List. Conversion to Stage-1 macros or a DELTA List is determined by the TYPE parameter. After the //SYSTSIN DD statement, type the appropriate commands to produce the desired output.

**Converting the DELTA PLUS Log to a DELTA List in Batch**

The following figure shows a sample JCL that executes the conversion utility you can use to convert the DELTA PLUS Log to a DELTA List in batch. You can view the sample JCL in the member DLP#UTL3 in the DLPCNTL data set.
Review the Utility Parameters section of the member to determine the input criteria necessary to use this utility to convert the Log to a DELTA List because this utility can also be used to convert the Log to Stage-1 macros. Conversion to Stage-1 macros or a DELTA List is determined by the TYPE parameter. After the //SYSTSIN DD statement, type the appropriate commands to produce the desired output.

Converting a DELTA List to Stage-1 Macros in Batch

The following figure shows a sample JCL that executes the conversion utility you can use to convert a DELTA List to Stage-1 macros in batch.
Be sure to review the sample JCL in the member DLP#UTL5 in the DLPCNTL data set to determine the necessary input criteria and the required user modifications to use this utility to convert a DELTA List to Stage-1 macros.

Generating a DELTA List in Batch

The following figure shows a sample JCL that executes the conversion utility you can use to generate a DELTA List from IMS RESLIB, IMS MODBLKS, or existing Stage-1 input. You can view the sample JCL in the member DLP#UTL1 in the DLPCNTL data set.

Review the Utility Commands Syntax and Documentation section of the member to determine the commands necessary to use this utility to convert the specified input source to a DELTA List. After the //SYSTSIN DD statement, type the appropriate commands to produce the desired output.

Figure 47: Sample Batch Generate a DELTA List Conversion Utility JCL

```plaintext
//DLP#UTL1 JOB (ACCT#),STAGE1 COMPARE/CONVERT UTILITY
//COMPARE EXEC PGM=IKJEFT01,DYNAMNBR=99,REGION=5M
//STEPLIB DD DISP=SHR,DSN=BMCNODE.DLPLIB
//DD DISP=SHR,DSN=HIGH.LEVEL.ASSEMBLER.LOADLIB
//SYSLIB DD DISP=SHR,DSN=IMSVS.OPTIONS          \ CHANGE IMS LEVEL
//DISP=SHR,DSN=IMSVS.GENLIB          \ CHANGE IMS LEVEL
//DD DISP=SHR,DSN=IMSVS.GENLIBA         \ CHANGE IMS LEVEL
//DD DISP=SHR,DSN=IMSVS.GENLIBB          \ CHANGE IMS LEVEL
//DD DISP=SHR,DSN=SYS1.MACLIB
//DD DISP=SHR,DSN=SYS1.MODGEN
//DD DISP=SHR,DSN=USER.COPYLIB \ OPTIONAL
//NSTAGE1 DD DISP=SHR,DSN=PROPOSED.STAGE1.DECK \ REQUIRED
//OSTAGE1 DD DISP=SHR,DSN=CURRENT.STAGE1.DECK \ OPTIONAL
//LISTOUT DD DISP=SHR,DSN=OUTPUT.DELTA.PLUS.PDS \ OPTIONAL
//MODBLKS DD DISP=SHR,DSN=CURRENT.MODBLKS \ OPTIONAL
//RESLIB DD DISP=SHR,DSN=CURRENT.RESLIB \ OPTIONAL
//REPOUT DD SYSOUT=* \ OPTIONAL
//PRINT DD SYSOUT=* \ OPTIONAL
//SYSTERM DD SYSOUT=* \ REQUIRED
//SYSDUMP DD SYSOUT=* \ REQUIRED
//SYSTSPRT DD SYSOUT=* \ REQUIRED
//SYSTSIN DD * \ REQUIRED
PROFILE MSGID
DLPUGEN0
FUNCTION COMPARE
INPUT1 STAGE1
INPUT2 STAGE1,MODBLKS(0),RESLIB(0)
```

Chapter 11 Generating DELTA Lists and Stage-1 Input
OUTPUT REPORT,DELTA LIST (LIST_NAME)
RESOURCE ALL
GENERATE ALL
VIEWPROF DEFAULT
MASKS NODE(NOMASK*), LTERM(LTMASK*), SUBPOOL(SPMASK*)
RUN
/*
*/
DELTA PLUS Reports

This chapter describes how to generate DELTA PLUS reports about changes made to IMS systems based on data stored in the DELTA PLUS History File.

This chapter provides information and instructions for generating these reports through the DELTA PLUS online interface and in batch. See “DELTA PLUS Log and History File” on page 321 for more information about the DELTA PLUS History File.

Using History File Utilities Online

Following are instructions for generating a History File report through the DELTA PLUS online interface.

Note
For more information see “Using History File and Log Utilities in Batch” on page 384 for information on generating a History File report in batch.

You access the panels that allow you to generate History File reports online from the DELTA PLUS Main Menu. See “DELTA PLUS Online Interface” on page 63 for information on invoking the DELTA PLUS online interface.

To generate a Report from the DELTA PLUS History File

1. From the DELTA PLUS Main Menu, type 3 in the selection field and press Enter. The Utilities Menu panel is displayed.
2 Type 3 in the **Utility option** selection field and press **Enter**. The Report Specifications panel is displayed.

You use this panel to select the elements by type and status to include in the report, to define the report format and sort sequence, and to specify what type of report you want to generate.

3 Type the specific IMSID or Group name in the **Target** field for which you want to execute the report.

4 Type the name of the View Profile in the **View Profile** field; otherwise, accept the default View Profile.

5 Complete each one of the activities listed in “page 376” to generate a History File report tailored to your specifications.

**Where to go from here**

Perform any of the following actions:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>select report input items</td>
<td>See “Selecting Report Input Items” on page 377 for more information.</td>
</tr>
<tr>
<td>define the report format and sort sequence</td>
<td>See “Selecting Report Format and Sort Sequence” on page 377 for more information.</td>
</tr>
<tr>
<td>generate a terse report</td>
<td>See “Generating a Terse Report” on page 379 for more information.</td>
</tr>
<tr>
<td>generate a complete or changed report</td>
<td>See “Generating Complete or Changed Reports” on page 381 for more information.</td>
</tr>
</tbody>
</table>
Selecting Report Input Items

Select the types of elements for the DELTA PLUS History File report and the status of the elements that should be considered. In the **Element Type** selection fields, type / beside each type of element that should be included in the report. Changed, as used on this panel, means added, deleted, revised, or reloaded. If none is selected, all types are selected by default.

In the **Record status** selection fields, type / to specify whether active elements, inactive elements, or both should be considered when DELTA PLUS generates the report. Active elements are those elements whose SYSGEN date matches the current SYSGEN date as recorded in the Log control record in the History File. Inactive elements are those elements whose SYSGEN date does not match the current SYSGEN date as recorded in the Log control record in the History File.

In the **Input exit suffix** field, type only the one-character suffix for your site’s History File input exit routine. If your site has special requirements for filtering the History File records before generating a report, you can use the sample user History File input exit as a starting point. The sample exit can be found in the DLPYRPI0 member in the DLPSAMP data set. The JCL to assemble and link the exit can be found in the DLP#RPI0 member in the DLPCNTL data set.

Selecting Report Format and Sort Sequence

Specify the appropriate information for the following fields:

The following types of reports can be generated:

**Report Type**

Select the type of output for each report run by typing the number of the report type. For the user report format, the name of a load module in **ppp LIB** that you have written will produce your own format of the report. The default type of report is option 1 (Terse).

- **Terse**, brief report, one line per update.
  
  The terse report will contain a one-line description of each update made to IMS. In the case of IMS commands executed from DELTA PLUS, only the first part of the command executed will be provided. See “Generating a Terse Report” on page 379 for additional information.

- **Complete report with before and after data.**
  
  This report contains a complete explanation of each update made to IMS. Each element attribute is listed and includes a short explanation. Changes
are accompanied by their original values, if they are meaningful. When IMS commands are executed from DELTA PLUS, the entire command executed is provided. See “Generating Complete or Changed Reports” on page 381 for additional information.

- Complete report with changed data only.

   The changed report is similar to the complete report except that only changed attributes are displayed. Attributes that are unchanged are suppressed from the display. When IMS commands are executed from DELTA PLUS, the entire command executed is provided. See “Generating Complete or Changed Reports” on page 381 for additional information.

- User report - call user exit.

   Select a user report by selecting this option and typing the suffix of the appropriate user report module in the **Output exit suffix** field. Many user reports may be defined by your site. The suffix is the character that, when concatenated with DLPYRPO, will form the name of a load module in pppLIB that will produce the desired report.

There is no need to specify outputs before generating each report. The previous outputs are used as default values.

**Sort fields**

**Sort fields 1,2,3,4,5** sort the report entries in prioritized major-to-minor (1-to-5) order. These multiple sort fields allow you to sort the entries for the report by descending date and time sequence, ascending date and time sequence, element type, element name, and the userid of the person who executed the update.

If you do not specify any sort options, the default sort order is FIFO—ascending date and time sequence.

To view a selection list of values for each of the sort fields, advance the cursor to the prompt field and press **F4**, or use the PROMPT command.

**Output data set**

To generate machine readable output, enter the name of a preallocated sequential data set or preallocated PDS and member name to contain the report. The report lines will be written without blank lines and headings. The record format is FB with a record length of 80.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.
Generating a Terse Report

After you have accessed the Report Specifications panel (see “To generate a Report from the DELTA PLUS History File” on page 375 for instructions) and completed the report input and format activities, press Enter to generate the History File terse report. The Terse History File Report on (IMSID or Group name) panel is displayed.

All ISPF browse commands are supported when browsing a History File report. Additionally, DELTA PLUS offers a ROUTE command and a PPRT command, which can be issued to generate a hard copy of the History File report. ROUTE and PPRT are the same, except when the destination operand is omitted. PPRT will assume R0 as the default JES destination, whereas ROUTE will prompt for the missing operand.

The following fields are available on this panel:

Date

The date that the update was originally performed.

Time

The time that the update was originally performed.

IMSID

The specific IMSID associated with the system where the update was performed.
Userid

The user ID of the TSO session that executed the update.

Note

An asterisk (*) is appended to the user ID if the specified user has initiated an action via a batch process.

Action

The type of action which DELTA PLUS took. The following actions are possible:

- **ADD** - An element was added to IMS.
- **ADD/REVISE** - An element was added to IMS if it did not exist or revised if it did exist prior to the change being executed.
- **REVISE** - An element was revised.
- **DELETE** - An element was deleted from IMS.
- **RELOAD** - Forced directory reinitialization and new ACBLIB BLDL for the existing IMS ACB or DMB.
- **EXEC** - Executed an IMS operator command.
- **ZAP** - Altered IMS storage.

Element Type

The type of IMS element acted upon. For EXEC action items, this column will contain the first or part of the command executed. For other than EXEC actions, this column contains the type of element added, deleted, revised, or reloaded.

Element Name

The name of the associated resource for this element.

Other Name

Other **Name** is populated if the DELTA List element includes a Rename, Spare Mask, or Model After on the ADDREV or REVISE action. The first eight positions display the new name, spare mask, or model after name. The ninth position is blank, the tenth position is the KEY to the type of Other Name. Possible KEY values are:

- **N** - identifies the new name of the renamed element
- **S** - identifies the name of the spare mask
- **M** - identifies the name of the model element

DELTA List

The name of the DELTA List.
Act

Indicates whether this History File record is considered active by DELTA PLUS. An active element is still appropriate and will be reapplied to IMS at the next restart.

Generating Complete or Changed Reports

After you have accessed the Report Specifications panel (see “To generate a Report from the DELTA PLUS History File” on page 375 for instructions) and completed the report input and format activities, press Enter to generate the History File complete or changed report. The Complete History File Report on (IMSID or Group name) panel or the History File Report on (IMSID or Group name) panel (Changed) is displayed.

All ISPF browse commands are supported when browsing a History File report. Additionally, DELTA PLUS offers a ROUTE command and a PPRT command, which can be issued to generate a hard copy of the History File report. ROUTE and PPRT are the same, except when the destination operand is omitted. PPRT will assume R0 as the default JES destination, whereas ROUTE will prompt for the missing operand.

The following fields are available on this panel:

Date

The date that the update was originally performed.
### Time

The time that the update was originally performed.

### IMSID

The specific IMSID associated with the system where the update was performed.

### Userid

The user ID of the TSO session that executed the update.

**Note**

An asterisk (*) is appended to the user ID if the specified user has initiated an action via a batch process.

### Action

The type of action which DELTA PLUS took. The following actions are possible:

- **ADD** - An element was added to IMS.
- **ADD/REVISE** - An element was added to IMS if it did not exist or revised if it did exist prior to the change being executed.
- **REVISE** - An element was revised.
- **DELETE** - An element was deleted from IMS.
- **RELOAD** - Forced directory reinitialization and new ACBLIB BLDL for the existing IMS ACB or DMB.
- **EXEC** - Executed an IMS operator command.
- **ZAP** - Altered IMS storage.

**Note**

For a REVISE action, only the revised elements will be displayed on the report.

### Element Type

The type of IMS element acted upon. For EXEC action items, this column will contain the first or part of the command executed. For other than EXEC actions, this column contains the type of element added, deleted, revised, or reloaded.
DELTA List

The name of the DELTA List.

After

The value for the field after the change was made.

Before

The value for the field before the change was made.

Act

Indicates whether this log record is considered active by DELTA PLUS. An active element is still appropriate and will be reapplied to IMS at the next restart.

Additional Information on Complete Reports

The following information is available on complete reports only:

- For IMS operator commands, the complete operator command image is shown. If necessary, the command is continued on subsequent lines.

- The command response, up to 120 characters, is continued on the next line. If the response is given as OK, the command executed successfully and no response is returned by IMS.

- Each element attribute is listed on a separate line with a short explanation and its value. If the attribute represents a change, the old attribute, if meaningful, will also be displayed.

- When reporting on revisions to transactions involving nonzero queue counts or the FORCE parameter, there are four situations to consider:

  — FORCE=YES was specified, and the revision was forced because of nonzero queue counts.

  — FORCE=YES was specified but the revision was not forced because of zero queue counts.

  — FORCE=NO was specified, and the revision was completed successfully.

  — FORCE=NO was specified, and the revision was ignored.
Using History File and Log Utilities in Batch

Whenever using the online log utilities is inconvenient or undesirable, you may use the DELTA PLUS batch History File and Log utilities. You can view the sample JCL in the member DLP#HSTL in the DLPCNTL data set.

Using the Batch History File Report Utility

The following figure shows sample JCL to execute the History File report utility.

**Figure 48: Sample Batch History File Report Utility JCL**

```apl
//DLP#HSTL JOB (ACCT#),BATCH.HIST.LIST.RPT,CLASS=A,MSGCLASS=A
//HISTLIST EXEC PGM=IKJEFT01,
  //   PARM=DLPGUTL0,DYNAMNBR=16,REGION=2048K
  //*
//STEPLIB DD DISP=SHR,DSN=BMCNODE.DLPLIB
//SYSTSPRT DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//SYSDUMP DD SYSOUT=* 
//SYSTSIN DD * BATCH COMMANDS 
/*
```

The History File report utility enables you to run the SELECT and REPORT commands in batch. The SELECT command enables you to enter a list of History File record types you want to read for report data. The REPORT command enables you to specify the type of report or indicate whether you want to create the updates for Stage-1 system definition macros from the History File. The following pages describe these commands and their parameters. Also shown are the syntax and the format of the commands.

Using the SELECT Command

Use the SELECT command to enter a list of History File record types to be read. You can also specify whether to select active or inactive records or to use a specific site-defined selection exit. The default for this command is ALL.
Figure 49 on page 385 shows the SELECT command syntax.

**Figure 49: Batch History File Report Utility SELECT Command**

You can use the following parameters with the SELECT command:

DATABASE (or DBD)

The DATABASE parameter reads database History File record updates from the History File.

APPLCTN (or APL)

The APPLCTN parameter reads application History File record updates from the History File.

COMMAND (or CMD)

The COMMAND parameter reads command History File record updates from the History File.

ALL

The ALL parameter reads all History File record updates from the History File.

TRANSACT (or TRN)

The TRANSACT parameter reads transaction History File record updates from the History File.

LTERM (or LTE)

The LTERM parameter reads LTERM History File record updates from the History File.

TERMINAL (or TER)

The TERMINAL parameter reads terminal History File record updates from the History File.
RTCODE (or RCT)

The RTCODE parameter reads route code History File record updates from the History File.

SUBPOOL (or SPL)

The SUBPOOL parameter reads subpool History File record updates from the History File.

ZAPS (or ZAP)

The ZAPS parameter reads zap History File record updates from the History File.

ACTIVE

The ACTIVE parameter reads the active History File record updates from the History File.

INACTIVE

The INACTIVE parameter reads the inactive History File record updates from the History File.

EXIT(n)

The EXIT(n) parameter uses an exit you specify with n.

Using the REPORT Command

Use the REPORT command to enter the IMSID and report type criteria.

The IMSID parameter is required. The OUTDSN, TYPE, and SORT parameters are optional.
The following figure shows the REPORT command syntax.

**Figure 50: Batch History File Report Utility REPORT Command**

When coding the SELECT command, the parameters can be either completely spelled out or abbreviated.

A plus sign (+) continuation mark is required for both SELECT and REPORT when the commands are continued to another line.

You can use the following keywords with the REPORT command:

**TYPE**

Select one of the following report types:

**TERSE**

The terse report consists of a one-line description of each update to IMS. For commands executed through DELTA PLUS, only the first part of the command is given. **TERSE** is the report type default.

**COMPLETE**

The complete report consists of a detailed description of each update. The attributes for each element will be listed along with a short explanation. For commands, the entire command is given.

**CHANGED**

The changed report is similar to the complete report; however, only those attributes that have been changed are given.
USER

Select the user report by indicating the suffix of the appropriate user report module (DLPYRPOn).

SORT

Select one of the following sort sequences:

- **LIFO** - The records are sorted in last in, first out (descending) order.
- **FIFO** - The records are sorted in first in, first out (ascending) order. This is the sort default.
- **TYPE** - The records are sorted by element type.
- **NAME** - The records are sorted by element name.
- **USERID** - The records are sorted by updating user ID.

OUTDSN

By specifying a data set name with the `OUTDSN` parameter, you can write the report to a preallocated data set.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

VPROFILE

Specify the name of a user-defined or default View Profile.

For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

Report Examples

The following are some report examples:

To select all active and inactive database, transactions, and command records for IMSID DLP4, use the formats shown in the following example:

```sql
SELECT DATABASE TRANSACTION COMMAND (or)
SELECT DBD TRN CMD
REPORT DLP4
END
```
To select IMSID DLP4 active LTERM and TERMINAL records using the site-defined selection exit, DLPYRPI0, you use the complete report type and sort the output by element type.

```
SELECT LTE TER +
    ACTIVE +
    EXIT(0)
REPORT DLP4 +
    TYPE(COMPLETE) +
    SORT(TYPE)
END
```

To create a list for IMSID DLP4 with all the changed records sorted by user ID, use the format shown in the following example:

```
SELECT ALL
REPORT DLP4 +
    TYPE(CHANGED) +
    SORT(USERID)
END
```

To create a report for IMSID DLP4 with all the changed records sorted by user ID and element type, use the format shown in the following example:

```
SELECT ALL
REPORT DLP4 +
    TYPE(CHANGED) +
    SORT(USERID TYPE)
END
```

**Using the Batch Log Report Utility**

The following figure shows sample JCL to execute the Log report utility. You can view the sample JCL in the member DLP#LOGL in the DLPCNTL data set.

**Figure 51: Sample Batch Log Report Utility JCL**

```
//DLP#LOGL JOB (ACCT#),BATCH.LOG.LIST.RPTS,CLASS=A,MSGCLASS=A
//LOGLIST EXEC PGM=IKJEFT01,
    // PARM=DLPGUTL0,DYNAMNBR=16,REGION=2048K
    //*
//STEPLIB DD DISP=SHR,DSN=BMCNODE.DLPLIB
//SYSTSPRT DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//SYSDUMP DD SYSOUT=* 
//SYSTSIN DD * BATCH COMMANDS 
/*
```

The Log report utility enables you to run the SELECT and REPORT commands in batch. The SELECT command enables you to enter a list of Log record types you want to read for report data. The REPORT command enables you to specify the type of report or indicate whether you want to create the updates for Stage-1 system definition macros from the Log. The following pages describe these commands and their parameters. Also shown are the syntax and the format of the commands.
Using the SELECT Command

Use the SELECT command to enter a list of Log record types to be read.

You can also specify whether to select active or inactive records or to use a specific site-defined selection exit. The default for this command is ALL.

Figure 52 on page 390 shows the SELECT command syntax.

**Figure 52: Batch Log Report Utility SELECT Command**

![SELECT Command Diagram]

You can use the following parameters with the SELECT command:

**DATABASE (or DBD)**

The DATABASE parameter reads database Log record updates from the Log.

**APPLCTN (or APL)**

The APPLCTN parameter reads application Log record updates from the Log.

**COMMAND (or CMD)**

The COMMAND parameter reads command Log record updates from the Log.

**ALL**

The ALL parameter reads all Log record updates from the Log.

**TRANSACT (or TRN)**

The TRANSACT parameter reads transaction Log record updates from the Log.

**LTERM (or LTE)**

The LTERM parameter reads LTERM Log record updates from the Log.
TERMINAL (or TER)

The TERMINAL parameter reads terminal Log record updates from the Log.

RTCODE (or RCT)

The RTCODE parameter reads route code Log record updates from the Log.

SUBPOOL (or SPL)

The SUBPOOL parameter reads subpool Log record updates from the Log.

ZAPS (or ZAP)

The ZAPS parameter reads zap Log record updates from the Log.

ACTIVE

The ACTIVE parameter reads the active Log record updates from the Log.

INACTIVE

The INACTIVE parameter reads the inactive Log record updates from the Log.

EXIT(n)

The EXIT(n) parameter uses an exit you specify with n.

Using the REPORT Command

Use the REPORT command to enter the IMSID and report type criteria. The IMSID parameter is required. The OUTDSN, TYPE, and SORT parameters are optional.
Figure 53 on page 392 shows the REPORT command syntax.

**Figure 53: Batch Log Report Utility REPORT Command**

When coding the SELECT command, the parameters can be either completely spelled out or abbreviated.

A plus sign (+) continuation mark is required for both SELECT and REPORT when the commands are continued to another line.

You can use the following keywords with the REPORT command:

**TYPE**

Select one of the following report types:

- **LOGTERSE** - The terse report consists of a one-line description of each update to IMS. For commands executed through DELTA PLUS, only the first part of the command is given. **TERSE** is the report type default.

- **LOGCOMP** - The complete report consists of a detailed description of each update. The attributes for each element will be listed along with a short explanation. For commands, the entire command is given.

**SORT**

Select one of the following sort sequences:

- **LIFO** - The records are sorted in last in, first out (descending) order.

- **FIFO** - The records are sorted in first in, first out (ascending) order. This is the sort default.

- **TYPE** - The records are sorted by element type.
- **NAME** - The records are sorted by element name.
- **USERID** - The records are sorted by updating user ID.

**OUTDSN**

By specifying a data set name with the **OUTDSN** parameter, you can write the report to a preallocated data set. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

**VPROFILE**

Specify the name of a user-defined or the default View Profile. For information on allocating this data set, see “Allocating New DELTA PLUS Data Sets” on page 148.

**Report Examples**

The following are some report examples:

To select all active database, transactions, and command records for IMSID DLP4, use the formats shown in the following example:

```sql
SELECT DATABASE TRANSACTION COMMAND (or)
SELECT DBD TRN CMD
REPORT DLP4
END
```

To select IMSID DLP4 active LTERM and TERMINAL records, you use the complete report type and sort the output by element type.

```sql
SELECT LTE TER +
  ACTIVE
REPORT DLP4 +
  TYPE(LOGCOMP) +
  SORT(TYPE)
END
```
Administration

This chapter describes several of the administrative functions and features DELTA PLUS provides. It also explains the various diagnostic features of the product that help you obtain information related to problems.

BMCXLINK

Communication from ISPF and batch to the IMS control region(s) is provided through a task called BMCXLINK. Communications between ISPF, batch, and BMCXLINK use VTAM. Communications between BMCXLINK and the IMS control regions use the cross-system coupling facility (XCF). Therefore, ISPF and BMCXLINK do not have to reside on the same MVS image. This allows a single point of control for systems in an IMSPLEX which allows coordination of changes across the IMSPLEX. BMCXLINK can be started and stopped asynchronously with IMS.

BMCXLINK maintains the DELTA PLUS Log and History File to ensure that all updates to the associated IMS control regions are recorded for reporting and restart purposes. All IMS control regions in a group use the same BMCXLINK and the same DELTA PLUS Log and History File.

BMCXLINK maintains an internal trace of all important activities. The trace is always active and can be printed on demand. It also appears in SVC dumps. The minimum size of the trace table is 16 K, but this may be expanded if necessary.

As previously stated, communications between ISPF, batch, and the BMCXLINK use VTAM. The BMCXLINK task specifies a VTAM ACBNAME as parameter data in the JCL. When started, BMCXLINK opens the VTAM ACB and permits logons. BMCXLINK then waits for input from an ISPF or batch user. When input is received, the PLU notifies BMCXLINK and BMCXLINK retrieves the data. BMCXLINK sends the request to the appropriate IMS control region(s) using XCF. When the IMS control region(s) has processed the request, the output is sent back to BMCXLINK using XCF. BMCXLINK processes the information and updates the DELTA PLUS Log and History File. The information is sent back to the ISPF or batch user through VTAM communications.
BMCXLINK Trace

The BMCXLINK Trace facility enables you to create a dump of the BMCXLINK Trace table on demand by replying `TRACE` to the BMCXLINK WTOR. The trace will also automatically produce a dump whenever BMCXLINK abends. The trace operates continually, using very little overhead.

You can specify trace criteria on the DELTA PLUS Global Options panel. See the installation guide for information on selecting global options.

Starting BMCXLINK

With the use of VTAM and XCF for communications, choosing an MVS image on which to execute the BMCXLINK task depends on your specific environment and use of DELTA PLUS. BMCXLINK does not have to reside on the same MVS image as your TSO users because VTAM is used for BMCXLINK communications with ISPF and batch. If the MVS images where your IMS control regions reside can communicate using XCF, then BMCXLINK does not have to reside on the same MVS image as your IMS control regions. The only restriction for BMCXLINK is that a single BMCXLINK must be used for all DELTA PLUS requests against a Group if you are using Groups.

After installation and customization are complete, DELTA PLUS is ready for use. At this point, activate BMCXLINK on the IMS CPU. Sample JCL for this job is distributed in the DLPNTL library in member DLP#LINK.

BMCXLINK can be started before or after the IMS control regions are started. Both BMCXLINK and the IMS control region must be active before any DELTA PLUS user session may access the IMS system.

**Note**
The BMCXLINK task must have WRITE access authority to the DELTA PLUS Log and History File data sets.

Successful initialization of BMCXLINK produces the following messages. Other messages are generated if there are any problems in activating BMCXLINK.

```
**BMCXLINK* ACTIVE (STC=BMCXLINK)
*BMCXLINK* VTAM INTERFACE ACTIVE
```

The reply associated with the first message can be used to communicate with BMCXLINK. It is also possible to communicate with BMCXLINK with the MVS MODIFY command. If desired, BMCXLINK eliminates the outstanding WTOR after
replying **DEL**. If the reply has been deleted, you must use the MODIFY command for further communications with BMCXLINK.

BMCXLINK honors a special HELP command. Enter this command in response to the BMCXLINK outstanding reply; it produces a display listing of all the commands available to the JES operator.

**Terminating BMCXLINK**

You can terminate BMCXLINK in three ways:

- Enter the MVS STOP command.
- Reply **END** or **STOP** to the outstanding reply.
- Reply **END** or **STOP** via the MODIFY command (an alternative to **STOP** is **DUMP**, which will produce either an SVC dump).

**Executing IMS operator commands online**

This topic describes how to use the DELTA PLUS Execute IMS Command panel to execute IMS commands. When you issue commands against an IBM IMS control region, responses are displayed on this panel.

You can use this panel to enter multiple IMS commands. Each IMS command must begin with a slash as the first character. Multiple commands can be any length and must be separated by semicolons (;). Any IMS command acceptable to the IMS Automated Operator Interface (AOI) is valid for DELTA PLUS.

---

**Note**

You must enter type-2 commands without a slash.

---

You can use the DELTA PLUS command interface to send commands to one or more IMS control regions simultaneously. If the target of the IMS command is a Group, DELTA PLUS sends the commands to all currently active members of the group. The panel displays the resulting command output from each command returned from all of the specified IMS control regions.

DELTA PLUS writes the commands that you issue to the history file if the **Write IMS Commands to History File** option is selected in the IMSID or group options.

You can use the following optional qualifying commands:
■ WAIT

Enter WAIT after a command if you want DELTA PLUS to pause before issuing the next command:

```
WAIT nnn
```

Replace `nnn` with the number of seconds pause (any number from 1 through 255).

**Example**

To pause for five seconds between two /DIS commands:

```
/DIS A; WAIT 5;/DIS TRAN PART;
```

■ RECALL

Use RECALL to populate the command field with the previously entered IMS command or group of commands. Subsequent RECALL commands recall the next previous commands, up to 10. Alternatively, you can click `F4` to enter the RECALL command.

You can execute an IMS operator command directly from DELTA PLUS by selecting option 2 from the DELTA PLUS Main Menu. The Execute IMS Command panel (Figure 54 on page 398) is displayed.

**Figure 54: Execute IMS Command panel**

![Execute IMS Command panel](image)

Routing IMS Type-2 commands to the IBM Operations Manager (OM) address space

IMS type-2 commands can be routed to the IBM Operations Manager (OM) address space and other member components.

You can route commands directly to IMSPLEX member components like ODBM and IMS Connect.

For sample JCL members, and the syntax changes to the IMS Command Batch interface, see the following DLPCNTL members:

- DLP#CMD1
You must allocate your IMS RESLIB from within the PRODUCT CLIST to use the target IMSPlex and Route in the IMS Commands ISPF option.

The following CLISTS include example changes that you would make in order to implement this support in ISPF:

- **DLPCI@00**
- **DLVCI@00**
- **DTDCI@00**

For examples of IMPLEX, and ROUTE field implementation, see “Using IMSPLEX and ROUTE TO command fields” on page 399.

### Using IMSPLEX and ROUTE TO command fields

The following samples demonstrate use of the IMSPLEX and ROUTE TO fields.

**Note**

The **IMSPLEX** and **ROUTE TO** fields are present only if the IMS RESLIB data set is allocated to the STEPLIB or TASKLIB through the product CLISTS.

The following sample issues IMS Connect to a specific IMS Connect within the IMSPLEX:

```
DELTA PLUS VT                           Execute IMS Command
Command ===> ________________________________________________ Scroll ===> CSR
Target IMSIDs or Groups ... ... ...        Target IMSPlex . . . . . . . GFP13 Route to GPFI3CON
Enter IMS command(s) below.
*QUERY IMSCON TYPE(CONFIG) SHOW(ALL)
```

Command result:  
Line 00000000 Col 001 080  
*************************** Top of Data ***************************  
IMSPlex: GFP13  
Command: QUERY IMSCON TYPE(CONFIG) SHOW(ALL)  
Member : GPFI3CON  
Type: IMSCON  
MbrName  CC  Version  IconID  IpAddress  MaxSoc  TimeOut  
GPFI3CON  0  V13  GPFI3CON  172.024.048.133  2000  0
The following sample issues a QRY TRAN command to a specific IMS within the IMSPLEX:

```
-----DELTA PLUS VT----- Execute IMS Command
Command ===>
Scroll ===>
CSR

Target IMSIDs or Groups . .
Target IMSPlex . . . . . . . GFP13    Route to  GPF3

Enter IMS command(s) below.
*QRY TRAN NAME(PART) SHOW(ALL)
```

Command result:                                      Line 00000000 Col 001 080
******************************************************************************
IMSPlex:        GFP13
Command:  QRY TRAN NAME(PART)
SHOW(ALL)

Member : GPF3   Type: IMS
Trancode  MbrName     CC  LPSBname  LCls     LQCnt   LLCT  LPLCT  LPLCTTime
LCP   PART   GPF3         0  DFSSAM02     1         0      2  65535
6553500

Command routing GLOBAL option

If your system is running in a Common Service Layer (CSL) environment, you can specify a GLOBAL option to Route IMS Commands to the IMS control region.

You can activate this option if you want BMCXLINK to route all commands issued from the interface to an IMS control region.

You can route all commands through IMS by selecting the Command routing option.

By default, BMCXLINK sends commands to the IMS Operations Manager (OM) for processing. OM then routes the command to the appropriate address space (for example IMS, or IMS Connect). Turning on the GLOBAL option causes BMCXLINK to send the command only to IMS, which forwards the command to OM if appropriate.

If you select the GLOBAL option and the target is a group, redundant commands are issued because the command is sent to each IMS in the group.

If you do not select the GLOBAL option, a Structured Call Interface (SCI) that is associated with the target’s IMSPLEX must be running on the same LPAR as BMCXLINK.

The following figure shows the command routing option panel.
DELTA PLUS provides additional IMS DISPLAY commands, which are useful for listing information that is not otherwise available. These commands can be used to display information concerning various IMS resources and DELTA PLUS options and statistics. The following section shows sample output from some of these commands. A syntax diagram is provided to illustrate the format of the added keywords.

Figure 56 on page 401 shows the /DISPLAY DLP command syntax.

**Figure 56: /DISPLAY Command**
You can use the following keyword and parameters with the /DISPLAY command to display DELTA PLUS resources:

**DLP**

Provides a report on DELTA PLUS resources.

- **CONV** - Provides a report of information regarding conversational transactions in the IMS system.
  - **ALL** - Specify ALL for all conversational transaction information.
  - **TRAN name** - Specify a transaction name after the TRAN parameter to display a report that lists the conversation information for the specified transaction.
  - **PSB name** - Specify a PSB name after the PSB parameter to display a report that lists the conversation information for the specified PSB.
  - **PRO name** - Specify a PSB name after the PRO parameter to display a report that lists the conversation information for the specified PSB.

- **DATA** - Provides a display of information about the IMS system.
  - **control block** - Specify one of the following control blocks: address, CIB, CLB, CNT, CTB, DDIR, MOD, PDIR, PST, RCTE, SCD, SMB, and SPQB.
  - **control block name** - Specify the appropriate name (nodename, ltermname, dbdname, modulename, progname, or tranname) of the control block to be displayed.

- **OPTIONS** - Provides a listing of the specified DELTA PLUS IMSID options.

- **RPSB** - Provides a report that lists all remote PSBs that have been applied by DELTA PLUS.
  - **psbname** - Specify a PSB name after the RPSB parameter to display a report that lists the specified PSB. If you do not specify a PSB name, the report will display information for all DELTA PLUS-defined remote PSBs.

- **STATS** - Provides a display of DELTA PLUS statistics.

- **XREF** - Provides a display of information about the relationships between IMS resources, such as databases, programs, randomizers, transactions, and compression routines.
  - **resource1** - Specify one of the following resources: PSB, DATABASE, RAND, TRAN, or COMP.
  - **resource1 name** - Specify the name of the resource to be displayed.
— **RELresource2** - Specify the related DMB, PSB, TRAN, or AREA to be displayed. The valid values are RELDMB, RELPSB, RELTRAN, or RELAREA.

### Sample DISPLAY commands

As the following samples show, you can use the DISPLAY command to show different types of information.

#### Sample DISPLAY Command of Conversational Transaction-Related Information

The following sample command will display information regarding all conversational transactions in the IMS system:

```plaintext
/DIS DLP CONV ALL
```

<table>
<thead>
<tr>
<th>Terminal</th>
<th>User</th>
<th>Tran</th>
<th>ID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTHB0018</td>
<td>VTHB0018</td>
<td>IVTCV</td>
<td>0001</td>
<td>ACTIVE, SCHEDULED</td>
</tr>
</tbody>
</table>

#### Sample DISPLAY Command of IMS System-Related Information

The following sample command will display information about the communications line block LC3E in the IMS system:

```plaintext
/DIS DLP DATA CLB L3CE
```

#### Sample DISPLAY Command and Output of DELTA PLUS IMSID Options

Issue the following command to display information about DELTA PLUS IMSID options:

```plaintext
/DIS DLP OPTIONS
```
The following sample output should display.

**DELTA PLUS PRODUCT LEVEL V1.0.00 FOR IMSID IMSA**

<table>
<thead>
<tr>
<th>IMS Version/Release</th>
<th>810</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Options timestamp</td>
<td>99069-16:18:35</td>
</tr>
<tr>
<td>IMS Options changed by</td>
<td>USERYYY</td>
</tr>
<tr>
<td>IMS Options reloaded</td>
<td>0 times</td>
</tr>
<tr>
<td>IMS Options reloaded by</td>
<td></td>
</tr>
<tr>
<td>Copy IMS Opt to RESLIB</td>
<td>No</td>
</tr>
<tr>
<td>DELTA PLUS Group</td>
<td>GRPZ</td>
</tr>
<tr>
<td>Copy Grp Opt to RESLIB</td>
<td>No</td>
</tr>
<tr>
<td>DISPLAY / ZAP facility</td>
<td>Display storage: Yes / Zap storage: Yes</td>
</tr>
<tr>
<td>BMCLINK LUname</td>
<td>CB51LINK</td>
</tr>
<tr>
<td>DELTALOG names</td>
<td>YYY.DLPLOG1</td>
</tr>
<tr>
<td></td>
<td>YYY.DLPLOG2</td>
</tr>
<tr>
<td>HISTORYFILE names</td>
<td>YYY.DLP.HISTORY1</td>
</tr>
<tr>
<td></td>
<td>YYY.DLP.HISTORY2</td>
</tr>
<tr>
<td>Log CMDs to History File</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Sample DISPLAY Command and Output of DELTA PLUS REMOTE PSBs Information

Issue the following command to display information about DELTA PLUS REMOTE PSBs:

```
/DIS DLP RPSB
```

The following sample output should display.

<table>
<thead>
<tr>
<th>RPSB</th>
<th>Remote</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL1</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>APPL2</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>APPL3</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Sample DISPLAY Command and Output of DELTA PLUS statistics

Issue the following command to display information about DELTA PLUS statistics:

```
/DIS DLP STATS
```

The following sample output should display.

**DELTA PLUS STATS INFORMATION**

<table>
<thead>
<tr>
<th>CURRENT SCD COUNTS:</th>
<th>SMB 117</th>
<th>PDIR 222</th>
<th>DDIR 175</th>
<th>RCTE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS RESTART LOG REAPPLY COUNTS</td>
<td>SMB : ADD 10 DELETE 5 REVISE 8</td>
<td>PDIR: ADD 3 DELETE 2 REVISE 2</td>
<td>DDIR: ADD 15 DELETE 8 REVISE 0</td>
<td>RCTE: ADD 1 DELETE 0 REVISE 0</td>
</tr>
<tr>
<td>DELTA PLUS TOTALS</td>
<td>SMB : ADD 10 DELETE 5 REVISE 8</td>
<td>PDIR: ADD 3 DELETE 2 REVISE 2</td>
<td>DDIR: ADD 15 DELETE 8 REVISE 0</td>
<td>RCTE: ADD 1 DELETE 0 REVISE 0</td>
</tr>
</tbody>
</table>
Displaying IMS Resource Manager RM Resources

The DELTA PLUS Display Resource Manager feature provides command display output of IMS Resource Manager (RM) resources. This output can be used to identify and diagnose RM-related issues.

Figure 57 on page 405 shows the /DISPLAY DLP RM command syntax.

Figure 57: /DISPLAY DLP RM Command

Note

For each parameter (CPIC, DB, LTERM, MSNAME, NODE, PGM, PLEX, RMGBL, SNU, TRAN, USER, and USERID) that can be used with the /DIS DLP RM command in Figure 57 on page 405, the following considerations apply when executing the command:

- You can replace name with ALL, ALLRSC, or * to display all resources.
  
  Exception: When executing /DIS DLP RM SNU, use the ALLRSC parameter instead of ALL to display all SNU resources; using ALL generates an error and might cause unpredictable results.

- You can add the optional FORMAT parameter after name to format the RM output buffer. For example:

  `/DIS DLP RM TRAN PART FORMAT`

You can use the DELTA PLUS Display Resource Manager feature to display the following IMS resources in RM:

- **CPIC name** - Displays the CPIC transaction that is defined in RM.
- **DB name** - Displays the database that is defined in RM.
- **LTERM name** - Displays the logical terminal that is defined in RM.
- **MSNAME name** - Displays the MSNAME that is defined in RM.
- **NODE name** - Displays the static node that is defined in RM.
- **TRAN name** - Displays the transaction that is defined in RM.
- **PGM name** - Displays the scheduled serial program that is defined in RM.
- **PLEX name** - Displays IMSplex information that is defined in RM.
- **RMGBL name** - Displays RM global plex information that is defined in RM.
- **SNU name** - Displays the static node user that is defined in RM.
- **USER name** - Displays the dynamic user that is defined in RM.
- **USERID name** - Displays the user ID that is defined in RM.

**Note**

When executing the `/DIS DLP RM` command, you can substitute ALL, ALLRSC, or * for the resource name to display all resource names. For example:

```
/DIS DLP RM MSNAME ALL
```

Exception: When executing `/DIS DLP RM SNU`, use the ALLRSC parameter instead of ALL to display all SNU resources; using ALL generates an error and might cause unpredictable results.

---

### Sample DISPLAY Command and Output of IMS RM

The following sample command will display the named IMS LTERM in RM:

```
/DIS DLP RM LTERM E4SLUP1
```

The following sample output should display:

```
DELTA PLUS Display RM - LTE E4SLUP1
E4SLUP1
*2013362/113334*
```

The following sample command will display the named IMS MSNAME in RM:

```
/DIS DLP RM MSNAME MSC16
```
The following sample output should display:

```
DELTA PLUS Display RM - MSN MSC16
MSC16
*2013352/114406*   D13Q
```

The following sample command will display the named IMS node in RM:

```
/DIS DLP RM NODE E4$0009
```

The following sample output should display:

```
DELTA PLUS Display RM - NOD E4$0009
E4$0009
*2013352/113555*
```

The following sample command will display the named IMS transaction in RM:

```
/DIS DLP RM TRAN PART
```

The following sample output should display:

```
DELTA PLUS Display RM - TRA PART
PART
*2013352/113326*   D13Q
```

The following sample command will display the named PLEX in RM:

```
/DIS DLP RM PLEX D13Q
```

The following sample output should display:

```
DELTA PLUS Display RM - PLEX D13Q
DFSSTMLD13Q
*2013352/153714*   D13Q
```

The following sample command will display the named IMS user in RM:

```
/DIS DLP RM USER XYZ131
```

The following sample output should display:

```
DELTA PLUS Display RM - USR XYZ131
XYZ131
*2013352/114802*   D13Q
```

The following sample command will display the named IMS user ID in RM:

```
/DIS DLP RM USERID XYZ573
```

The following sample output should display:
The following sample output should display:

DELTA PLUS Display RM - USERID XYZ573
XYZ573
*2013352/114726*

The following sample command will display the named IMS transaction, as formatted in the RM output buffer:

/DIS DLP RM TRA PART FORMAT

The following sample output should display:

DELTA PLUS Display RM - TRA PART
DATA1(DFSRMD1) at +2C; DATA2(DFSRMD2) at +60 if any
7F1D03B0  +0000  00000060  00000000  0107C1D9  E3404040  *.........PART...*
7F1D0390  +0010  40404040  01000000  00000000  00000001  *................*
7F1D03A0  +0020  00800000  40404040  40404040  00510000  *................*
7F1D03B0  +0030  00000000  00000000  00000000  00000000  *................*
7F1D03C0  +0040  00000000  00000000  00000000  00000000  *................*
7F1D03D0  +0050  00000000  00000000  00000000  00000000  *................*
*2013352/165436*   D13Q

The following sample command will display all IMS MSNAMES in RM:

/DIS DLP RM MSNAME ALL

The following sample output should display:

DELTA PLUS Display RM - MSN *
MSC11    MSC16    MSC15    MSC13
*2013352/181221*   D13Q

**DELTA PLUS XREF Feature Online**

The DELTA PLUS XREF feature provides information about the defined relationships between IMS system resources. Maintaining this information without DELTA PLUS is a time-consuming manual process. With the DELTA PLUS XREF online, this information is always current and is available through online displays. The DELTA PLUS XREF online reports include:

- a report for a program of all databases that are referenced, explicitly or implicitly, by that program
- a report sorted by database of all programs that reference each database
- a report sorted by database of all programs that logically (or as an index) reference each database, or any databases that are related to that database
- a report sorted by database of the AREAs that are referenced by each database (DEDBs only)
- a report for a randomizer of all databases that use the randomizer routine
- a report for a compression routine of all databases that use the compression routine
- a report for a transaction of all databases that are used by that transaction
- a report for a database of all transactions that use the database
- a report for a list of transactions associated with a class number or all classes

IMS system programmers and DBAs can use the DELTA PLUS XREF feature to facilitate the administration of IMS systems by keeping an inventory of the IMS environment. In the event of recovery situations, such as a broken database, it allows the user to determine everything that will be affected when the broken database is taken offline. The user can display the IMS components and verify the effect of the changes.

This feature can also be executed in batch. See “DELTA PLUS XREF Feature in Batch” on page 411 for more information on the batch version of this feature and the available batch reports. All ISPF browse commands are supported when browsing the resulting report.

**Sample DISPLAY Command and Output of IMS Resource Relationships**

Issue the following command to display information about the relationships between IMS resources, such as databases, programs, transactions, randomizers, and compression routines:

```
/DIS DLP XREF resource1 resource1_name RELresource2
```

*resource1* is PSB, DATABASE, RAND, TRAN, or COMP. *resource1_name* is name of the resource to be displayed. REL *resource2* is the related DMB, PSB, TRAN, or AREA. REL *resource2* is optional.

<table>
<thead>
<tr>
<th>resource1 value</th>
<th>Valid REL resource2 values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSB</td>
<td>DMB</td>
</tr>
<tr>
<td>DATABASE or DB</td>
<td>AREA, PSB, TRAN, DMB</td>
</tr>
<tr>
<td>RAND</td>
<td>DMB</td>
</tr>
<tr>
<td>TRAN</td>
<td>DMB</td>
</tr>
<tr>
<td>CLASS</td>
<td>ALL or class number</td>
</tr>
<tr>
<td>COMP</td>
<td>DMB</td>
</tr>
</tbody>
</table>
The following sample command will display the databases that reference the named randomizer:

```
/DIS DLP XREF RAND DFSHDC40
```

The following sample output should display:

```
RANDNAME - DMBS THAT USE THE RANDOMIZER
DFSHDC40 - DBFSAMD4    IVPDB2
*99084/125316*
```

The following sample command will display the PSBs that reference the named database:

```
/DIS DLP XREF DB DI21PART RELPSB
```

The following sample output should display:

```
DMB NAME - PSBS THAT REFERENCE THE DMB
DI21PART - BMPAOI2     BMP002     BMP004     DFHSAM04
  DFHSAM05     DFHSAM14     DFHSAM15     DFHSAM24
  DFHSAM25     DFSSAM01     DFSSAM02     DFSSAM03
  DFSSAM04     DFSSAM05     DFSSAM06     DFSSAM07
  DFSSAM08     DFSSAM09     QCONV2     TESTWTOR
*99084/130604*
```

The following sample command will display the referenced databases for the named PSB:

```
/DIS DLP XREF PSB DFSSAM02 RELDMB
```

The following sample output should display:

```
PSB NAME - REFERENCED DMBS
DFSSAM02 - DI21PART
*99084/131100*
```

The following sample command will display the databases used by the named TRAN:

```
/DIS DLP XREF TRAN PART RELDMB
```

The following sample output should display:

```
TRANNAME - DMBS USED BY TRANSACTION
PART - DI21PART
*99084/131100*
```

The following sample command will display the TRANs that use the named database:

```
/DIS DLP XREF DB DI21PART RELTRAN
```
The following sample output should display:

```
DMB NAME - TRANSACTIONS THAT USE THE DATABASE
DI21PART - PART DSPINV ADDINV
*99084/130604*
```

The following sample command will display transaction names associated with a class number:

```
/DIS DLP XREF CLASS 2
```

The following sample output should display:

```
CLASS 2 - TRANSACTIONS WITHIN CLASS
CLASS 2 - ADDSMB02 CAP32KOL CAP32KVL CAUL3000
CCEO3720 CCUC03031 NICO#C NICO#N
NICO#T NICO#Y STAT#N1 STAT#N2
STAT#N3 STAT#Y1 STAT#Y2 STAT#Y3
STAT#Z1 STAT#Z2 STAT#Z3 TESTTP2
V110#KOL V110#KVL V1103000 V1103031
V1103720 YICO#C YICO#N YICO#T
YICO#Y
*13087/091319*
```

The following sample command will display transaction names associated with all classes:

```
/DIS DLP XREF CLASS ALL
```

The following sample output should display:

```
CLASS 2 - TRANSACTIONS FOR ALL CLASSES
CLASS 2 - ADDSMB02 CAP32KOL CAP32KVL CAUL3000
CCEO3720 CCUC03031 NICO#C NICO#N
NICO#T NICO#Y STAT#N1 STAT#N2
STAT#N3 STAT#Y1 STAT#Y2 STAT#Y3
STAT#Z1 STAT#Z2 STAT#Z3 TESTTP2
V110#KOL V110#KVL V1103000 V1103031
V1103720 YICO#C YICO#N YICO#T
YICO#Y
CLASS 3 - TRN#055 TRN#056
CLASS 4 - IWXADMIN IWXNOQUE TRN#047 TRN#048
```

**DELTA PLUS XREF Feature in Batch**

The following figure shows sample JCL that executes the XREF feature in batch. Review the sample JCL in the member DLP#XREF in the DLPCNTL data set for more information about the necessary input and modifications to use the XREF feature in batch.

**Figure 58: Sample Batch XREF Feature JCL**

```
//DLP#XREF JOB (ACCT#),XREF REPORT,CLASS=A,MSGCLASS=X
//DLPUAACBO EXEC PGM=DLPUAACBO,REGION=4M
```
The DELTA PLUS XREF batch reports include

- a report for a program of all databases that are referenced, explicitly or implicitly, by that program
- a report sorted by database of all programs that reference each database
- a report sorted by database of all programs that logically (or as an index) reference each database, or any databases that are related to that database
- a report sorted by database of the AREAs that are referenced by each database (DEDBs only)
- a report for a randomizer of all databases that use the randomizer routine
- a report for a compression routine of all databases that use the compression routine
- a report for a transaction of all databases that are used by that transaction
- a report for a database of all transactions that use the database

**Specifying DELTA PLUS VIRTUAL TERMINAL Operator Commands**

This section describes those IMS commands that DELTA PLUS VIRTUAL TERMINAL has altered for the purpose of supporting virtual terminals and virtual LTERMs. Additional keywords have been added to these commands. Syntax diagrams are included to illustrate the format of these commands.

Table 61 on page 413 lists those operator commands for which you can designate virtual terminals and virtual LTERMs.
### Table 61: IMS Commands for Virtual Terminals and LTERMs

<table>
<thead>
<tr>
<th>Command</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ASSIGN</td>
<td>A virtual LTERM cannot be assigned to the primary or secondary master terminal. This command functions as documented by IBM; virtual LTERMs cannot be assigned to IMSGEN-defined nodes.</td>
</tr>
<tr>
<td>/CHAnge</td>
<td></td>
</tr>
<tr>
<td>/CLSDST</td>
<td></td>
</tr>
<tr>
<td>/DEQUEUE</td>
<td></td>
</tr>
<tr>
<td>/DISPLAY</td>
<td>Not all keywords are allowed. See “Using the /DISPLAY Command” on page 416.</td>
</tr>
<tr>
<td>/END</td>
<td></td>
</tr>
<tr>
<td>/EXCLUSIVE</td>
<td></td>
</tr>
<tr>
<td>/EXIT</td>
<td></td>
</tr>
<tr>
<td>/FORMAT</td>
<td></td>
</tr>
<tr>
<td>/IDLE</td>
<td></td>
</tr>
<tr>
<td>/LOCK</td>
<td>It works if NODE (name) and PTERM are specified.</td>
</tr>
<tr>
<td>/MODIFY</td>
<td></td>
</tr>
<tr>
<td>/OPNDST</td>
<td></td>
</tr>
<tr>
<td>/PSTOP</td>
<td></td>
</tr>
<tr>
<td>/PURGE</td>
<td></td>
</tr>
<tr>
<td>/QUIESCE</td>
<td></td>
</tr>
<tr>
<td>/RSTART</td>
<td>A /START LTERM xxxxx creates an LTERM if the LTERM name xxxxx is found in the VPRINTER table or the Unsolicited Output table.</td>
</tr>
<tr>
<td>/START</td>
<td></td>
</tr>
<tr>
<td>/STOP</td>
<td>A /STOP LTERM xxxxx creates an LTERM if the LTERM name xxxxx is found in the VPRINTER table or the Unsolicited Output table; the LTERM status will be STOP.</td>
</tr>
<tr>
<td>/TEST</td>
<td>The command syntax for virtual terminals depends on the version of IMS run on your system. See “Using the /TEST MFS Command” on page 427 for information.</td>
</tr>
<tr>
<td>/TRACE</td>
<td>If the node does not exist, VTE entries are required.</td>
</tr>
<tr>
<td>/UNLOCK</td>
<td>It works if NODE (name) and PTERM are specified.</td>
</tr>
</tbody>
</table>

### Using the /ASSIGN Command

The following restrictions apply to the /ASSIGN command:
- You cannot mix NODE and LINE/PTERM assignments in the same command. You can only have one LTERM assignment per command.

- When using the /ASSIGN command with virtual terminals, the following restrictions apply:
  
  — The control blocks for the virtual node must already exist. If the virtual node has timed out and its control blocks deleted, it cannot be used in this command.
  
  — The virtual LTERM must already exist or be defined in the VPRINTER table or the Unsolicited Output table.
  
  — The ASSIGN is only in effect until the next signon at the target node. During signon, DELTA PLUS assigns LTERMs to that node using the designated TSS signon table.
  
  — The /ASSIGN LTERM TO USER SAVE command does not work for virtual terminals.

DELTA PLUS VIRTUAL TERMINAL facilities are used only if an LTERM is assigned from one virtual printer to another virtual printer through a virtual printer override (VPO). Figure 59 on page 414 shows the format of the /ASSIGN command for performing a VPO. See VPO on page 414 for more information on VPOs.

In all other cases, DELTA PLUS uses IMS facilities to execute the /ASSIGN command. The /ASSIGN command, therefore, functions as documented in the IBM publication IMS Command Reference. See this IBM publication for full information on the /ASSIGN command.

**Figure 59: /ASSIGN Command Format for a VPO**

![ ASSIGN - LTERM - Iname - VPO - nname - MODEL - modelname - ACTIVATE ]

You can use the following keywords with the /ASSIGN command:

**LTERM**

In DELTA PLUS, this parameter indicates that you want to assign an LTERM to a new destination.

**Iname** - The name of the LTERM being assigned.

**VPO**

This parameter indicates that you want to perform or cancel a virtual printer override (VPO). VPO allows you to redirect the output from one virtual printer to another. VPO is useful when a production printer is inoperative and the printer’s output must be routed to a working printer. The way DELTA PLUS handles VPOs depends on the version of IMS.
**nname** - The name of the node to which you want to assign the LTERM. If you previously used this command to redirect output, you can assign the output to its original node name or use the `/ASSIGN LTERM iname VPO ORIGINAL` command to cancel the redirection.

**ORIGINAL**

If you previously used the `/ASSIGN LTERM iname VPO nname` command to redirect output, use the `ORIGINAL` parameter to cancel the redirection. This parameter is useful if you do not know the original node name.

**MODEL modelname**

Use the `MODEL` keyword with the `modelname` parameter to specify the model node to be used when creating the virtual printer node. The model node must be an IMS sysgen node name.

If the `MODEL` keyword is specified, it overrides any model specified in the VPRINTER TSS table.

If the `MODEL` keyword is not specified, then the model name associated with the node in the VPRINTER TSS table will be used.

**ACTIVATE**

If you specify the `ACTIVATE` keyword with the `/ASSIGN LTERM VPO` command, DELTA VIRTUAL TERMINAL attempts to immediately deliver output that is currently queued to the specified LTERM. Otherwise, output will be delivered to the device the next time output is queued to the specified LTERM.

---

**Using the /CHANGE Command**

With the DELTA PLUS VIRTUAL TERMINAL enhanced `/CHANGE` command, you can use the `/CHANGE TSS ALLOC` command to allocate a TSS data set and the `/CHANGE TSS UNALLOC` command to unallocate an existing TSS data set.

You can issue the `/CHANGE` command

- from the DELTA PLUS VIRTUAL TERMINAL Execute IMS Command panel
- from an IMS terminal with the necessary security authorization
- through an IMS AOI application program
from the IMS outstanding reply (WTOR)

**Figure 60: CHANGE Command Syntax**

![CHANGE Command Syntax Diagram]

You can use the following keywords with the /CHANGE command:

- Use the **TSS** and **ALLOC** keywords to allocate a new TSS data set.
- Use the **TSS** and **UNALLOC** keywords to unallocate an existing TSS data set.

### Using the /DISPLAY Command

Virtual terminals possess certain unique qualities not covered by standard IMS commands. Therefore, DELTA PLUS has expanded the IMS /DISPLAY command to include several new keywords that augment those listed in the IMS Command Reference.

The /DISPLAY command has the following additional DELTA PLUS VIRTUAL TERMINAL keywords:

- **ALLOWED**
- **OVERRIDE**
- **PRINTER**
- **SIGNON**
- **TRACE**
- **TSSTABLE**
- **VCN**
- **VLB**
- **VP**
- **VT**
- **VTE**
- **VTG**
- **VPO**
- **VIRTUAL**
Note
These keywords become reserved words for all command processing purposes, including non-display and non-virtual terminal command formats. If these keywords conflict with previously named resources at your site, consider renaming your resources since the alternative is to SUPERZAP the keyword in CSECT VTFXKWT0 of load module VTFXVCDn.

You can generate DSECTS for AOI programs that can enter these commands. Code the $VTFMAP macro instruction as follows to generate DSECTS for all DELTA PLUS /DISPLAY output formats.

$VTFMAP FID=0

Figure 61: /DISPLAY Command Syntax

You can use the following keywords with the /DISPLAY command:
SIGNON

Provides a report on signons and is used with either the STATUS or ALLOWED parameter.

- **STATUS**— Provides a one-line report that identifies whether user signons are enabled or disabled.

- **ALLOWED**— Provides a multi-line report listing all /SECURE ALLOWED userids. The report lists seven userids per line.

- **userid**— Specify one or more userids after the ALLOWED keyword to generate a multi-line report listing whether each specified userid is allowed to signon. If a userid is not /SECURE ALLOWED, the message **IS NOT ALLOWED** appears after the userid.

- **ALL**— Provides a listing of all /SECURE ALLOWED userids.

VPO

The Virtual Printer Override parameter provides a report on overridden virtual printer LTERM.

- **ltermname**— Specify one or more LTERM names after the VPO parameter to generate a multi-line report listing each specified LTERM, the override printer node name and the override model name. If the LTERM is not overridden, then N/O follows the LTERM name.

- **ALL**— Provides a listing of all overridden virtual printer LTERM names.

VT

The Virtual Terminal parameter provides a report on current virtual terminals.

- **nodename**— Specify one or more node names after the VT parameter to generate a multi-line report listing each specified virtual terminal name on a separate line. Each line contains the following information:
  - terminal’s VTAM node name
  - virtual device type: T (terminal) or P (printer)
  - model’s node name
  - IMS device type and model (if available)
  - period of inactivity for purposes of time-out and block delete listed in hours, minutes, and seconds.
  - status with respect to automatic logoff or block delete
- **ALL**— Provides a listing of all current virtual terminals. This command does not affect the virtual terminal Timer facility time stamp used for purposes of idle terminal logoff and/or control block deletion.

**VTE**

The Virtual Terminal Pending Elements parameter provides a report on virtual terminal pending elements.

- **NODE**— This keyword is optional. Specify one or more node names to generate a multi-line display that lists the node status and user/SPQB status on a separate line for each specified node name.

- **ALL**— Provides a listing of all current virtual terminal pending Trace elements.

**VT EXITS**

Provides an online display of which virtual terminal exits are link-edited into VTFEXIT n. It also provides the assembly date of the exit, and based on current IMSID options, indicates whether the exit is active.

**TSSTABLE LIST**

Provides an online display of all TSS tables that reside in the currently allocated TSS table data set. It also provides information about each table. The returned information includes argument length, function length, masking yes/no, and the name of the Table Translation Assist Exit, if present.

- **TSSTABLE TABLENAME INFO** — Provides the same information as the **TSSTABLE LIST** keywords, but only for a specified table.

- **TSSTABLE TABLENAME**— Provides an online display of a TSS table. All entries in the table are displayed. If you want to prevent an entire table from being inadvertently displayed, you may require users to enter the **ALLROWS** keyword with this command. Activate the requirement to use the **ALLROWS** keyword by selecting the **Require ALLROWS keyword on /DIS TSSTABLE command** field on the IMSID Options - VT TSS Options panel.

- **TSSTABLE TABLENAME ARGUMENT**— Provides an online display of one or more TSS table entries that match the provided argument.

- **TSSTABLE TABLENAME ALLROWS**— Provides an online display of all entries in a TSS table.
DISPLAY Command Examples

The following examples show the output that is generated by /DISPLAY commands that contain DELTA PLUS keywords:

If you enter

/DISPLAY SIGNON STATUS

the following data is displayed:

SIGNONS ARE ENABLED
*89163/171549*

If you enter

/DISPLAY SIGNON ALLOWED ALL

the following data is displayed:

RLS     BSM2     TCM     MTJ1     JRM     KJQ     WKK
TRR2    LDS      IIM
*89163/171549*

If you enter

/DISPLAY SIGNON ALLOWED U001

the following data is displayed:

U001     IS NOT ALLOWED
*89163/171549*

If you enter

/DISPLAY VIRTUAL PRINTER OVERRIDE ALL

the following data is displayed:

LTERM     NODE     MODEL
LC311G1   LC311G1  MD002
*89163/171549*

If you enter

/DISPLAY VPO LC311E2

the following data is displayed:

LTERM     NODE     MODEL
LC311E2   N/O
*89163/171549*
If you enter

```
/DISPLAY VIRTUAL TERMINAL LC312P1
```

the following data is displayed:

<table>
<thead>
<tr>
<th>NODE</th>
<th>T/P</th>
<th>MODEL</th>
<th>TYPE</th>
<th>INACTIVITY</th>
<th>T/O STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC312P1</td>
<td>T</td>
<td>$SLU2002</td>
<td>SLU2-2</td>
<td>:00</td>
<td>STANDARD</td>
</tr>
</tbody>
</table>

*89163/171549*

If you enter

```
/DISPlay VT ALl
```

the following data is displayed:

<table>
<thead>
<tr>
<th>NODE</th>
<th>T/P</th>
<th>MODEL</th>
<th>TYPE</th>
<th>INACTIVITY</th>
<th>T/O STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTHB0729</td>
<td>T</td>
<td>MODLSLU2</td>
<td>SLU2-2</td>
<td>:07</td>
<td>STANDARD</td>
</tr>
<tr>
<td>SIGN(RLS5 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C596</td>
<td>T</td>
<td>MODL3270</td>
<td>3277-2</td>
<td>:00</td>
<td>STANDARD</td>
</tr>
<tr>
<td>SIGN(RLS4 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C477</td>
<td>T</td>
<td>MODL3270</td>
<td>3277-2</td>
<td>1:03</td>
<td>STANDARD</td>
</tr>
<tr>
<td>SIGN(RLS3 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VTHB0478</td>
<td>T</td>
<td>MODLSLU2</td>
<td>SLU2-2</td>
<td>1:55</td>
<td>STANDARD</td>
</tr>
<tr>
<td>SIGN(RLS2 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C43F</td>
<td>T</td>
<td>MODL3270</td>
<td>3277-2</td>
<td>2:19</td>
<td>STANDARD</td>
</tr>
<tr>
<td>SIGN(RLS )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*05060/141801*

If you enter

```
/DIS VT STATUS
```

the following data is displayed:

<table>
<thead>
<tr>
<th>CURRENT CONNECTED DISCONNECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIRTUAL DEVICES</td>
</tr>
<tr>
<td>ACTIVITY</td>
</tr>
<tr>
<td>LOGONS</td>
</tr>
<tr>
<td>SIGNONS</td>
</tr>
<tr>
<td>VPRINTER OPNDS</td>
</tr>
<tr>
<td>VPRINTER CONN</td>
</tr>
<tr>
<td>AUTO-LOGOFFS</td>
</tr>
<tr>
<td>AUTO-EXITS</td>
</tr>
<tr>
<td>DELETES</td>
</tr>
<tr>
<td>TERMINAL T/O STATUS SUMMARY</td>
</tr>
<tr>
<td>STANDARD</td>
</tr>
<tr>
<td>ALTERNATE</td>
</tr>
<tr>
<td>CONVERSATIONAL</td>
</tr>
<tr>
<td>CONV-ALT</td>
</tr>
<tr>
<td>VPRINTER</td>
</tr>
<tr>
<td>POOL USAGE</td>
</tr>
<tr>
<td>USB</td>
</tr>
<tr>
<td>VPD</td>
</tr>
<tr>
<td>VTE</td>
</tr>
</tbody>
</table>

*2004245/141959*
If you enter `/DISPLAY VT TRACE`

the following data is displayed:

```
17:14:01 0000 E2C9C7D5 02BA6200 D3F3F1F2 D7F14040 *SIGN.LC312P1.*
  0010 02BA6284 0012C478 C2E2D440 40404040 *...DD.BSM....*
  0020 00000000 10010000 00000000 00000000 *.............*
  0030 00000000 809A5CA0 A0732979 15032C00 *.............*

17:13:46 0000 D3D6C7D5 02BA6200 D3F3F1F2 D7F14040 *LOGN..L312P1.*
  0010 02B16284 0012C430 C2C1D9C2 40404040 *...DD.BARB...*
  0020 00000000 00010000 00000000 00000000 *.............*
  0030 00000000 809A5B80 A073296B ABC65C10 *......$..F...*

17:13:45 0000 D3D6C7E7 02BA6200 D3F3F1F2 D7F14040 *LOGX..L312P1.*
  0010 02BA6284 0012C478 C2E2D440 40404040 *...DD.BSM....*
  0020 00000000 00010000 00000000 00000000 *.............*
  0030 00000000 809A5B80 A073296B ABC65C10 *......$..F...*
```

If you enter `/DIS VT VLB VTHB001B`

the following data is displayed:

```
VT - VIRTUAL CLB DISPLAY FOR NODE NAME VTHB001B
VLB PREFIX
  1957C060 +00 001B8400 BBC1C908 1A029A30 00000000 *.....AI.........*
  1957C070 +10 00000000 00000000                    *........        *

HDR DATA
  1957C078 +00 19FE6060 00000000 00000000 00000000  *................*

ECB DATA
  1957C088 +00 0FC4E2D7 00000000 00000000 00000000  *.DSP............*
  1957C098 +10 00000904 13555480 800987A8 936F5C40  *............... *

CLB DATA
  1957C0A8 +00 00000000 0A404170 00A65648 196E3F70  *..... ..........*
  1957C0B8 +10 13661048 08000002 00000000 00000000  *................*
  1957C0C8 +20 10000113 00000000 E5E3C8C2 F0F0F1F8  *........VTHB0018*
  1957C0D8 +30 00040900 1957C1AC 9957C294 137C626A  *........................*
  1957C0E8 +40 E4000001 19262646 000000C8 196E3D4E  *U..........H....*
  1957C0F8 +50 00010000 1957C2FC 1957C1AC 800987B8 936F5C40  *................*

CTB DATA
  1957C108 +60 00000000 00000000 00000000 00000001  *......B...A.....*
  1957C118 +70 00000000 00000000 000003E9 00000000  *................*
  1957C128 +80 00000000 00000000 00000000 00000000  *................*
  1957C138 +90 19262646 2283020D 00000000 00000000  *................*
  1957C148 +A0 00000400 00000000 00000000 00000000  *................*
  1957C158 +B0 00000000 00000000 00000000 00000000  *................*
  1957C168 +C0 00000000 00000000 00000000 00000000  *................*
  1957C178 +D0 C05F0F01 00000000 00000000 00000000  *CN01.............*
  1957C188 +E0 00000000 00000000 00000000 00000000  *................*
  1957C198 +F0 AC123DE5 04FF0000 00000000 00000000  *...V............*
```
If you enter

```
/DIS VT OPTIONS
```

the following data is displayed.

---

DELTA PLUS PRODUCT LEVEL V2.1.00 FOR IMSID ABC8

<table>
<thead>
<tr>
<th>IMS Version/Release</th>
<th>810</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Options timestamp</td>
<td>04229-15:35:17</td>
</tr>
<tr>
<td>IMS Options changed by</td>
<td>RIHABC3</td>
</tr>
<tr>
<td>IMS Options reloaded</td>
<td>0 times</td>
</tr>
<tr>
<td>Copy IMS Opt to RESLIB</td>
<td>No</td>
</tr>
<tr>
<td>XRF/FDR Alternate IMSID</td>
<td>FCB8</td>
</tr>
<tr>
<td>DELTA PLUS Group</td>
<td>GRPZ</td>
</tr>
<tr>
<td>Copy Grp Opt to RESLIB</td>
<td>No</td>
</tr>
<tr>
<td>DISPLAY / ZAP facility</td>
<td>Display storage: Yes / Zap storage: Yes</td>
</tr>
<tr>
<td>BMCLINK LUname</td>
<td>CB5I LINK</td>
</tr>
<tr>
<td>DELTALOG names</td>
<td>ABC.DLPLOG1</td>
</tr>
<tr>
<td>HISTORYFILE names</td>
<td>ABC.DLP.HISTORY1</td>
</tr>
<tr>
<td>Log CMDs to History File</td>
<td>No</td>
</tr>
<tr>
<td>Virtual Terminal Options</td>
<td>Signon required=NO Notify MTO=YES</td>
</tr>
</tbody>
</table>

---

Specifying DELTA PLUS VIRTUAL TERMINAL Operator Commands

Chapter 13 Administration 423
If you enter

/DISPLAY VTE ALL

the following data is displayed.

<table>
<thead>
<tr>
<th>NAME</th>
<th>&lt;- NODE STATUS -----&gt;</th>
<th>&lt;- USER STATUS -&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3A8L2</td>
<td>MFST STOPPED TRACE(4,ALL)</td>
<td>MFST EXCL STOPPED</td>
</tr>
<tr>
<td>L3A8U2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you enter

/DIS VT EXITS

the following data is displayed:

<table>
<thead>
<tr>
<th>EXIT TYPE</th>
<th>EXIT NAME</th>
<th>ASM/LINK INFORMATION</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGNON Bypass</td>
<td>NO EXIT PROVIDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGON</td>
<td>VTFEXLX4</td>
<td>03/01/90-14.10</td>
<td>NO</td>
</tr>
<tr>
<td>SIGNON</td>
<td>VTFEXS94</td>
<td>08/12/91-16.42</td>
<td>YES</td>
</tr>
</tbody>
</table>

If you enter

/DIS TSSTABLE LIST

the following data is displayed:

<table>
<thead>
<tr>
<th>TSS TABLE NAME LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTOSIGN ARG LEN= 8</td>
</tr>
<tr>
<td>DFS3649A ARG LEN= 8</td>
</tr>
<tr>
<td>DFS3650I ARG LEN= 8</td>
</tr>
<tr>
<td>LTERMOR ARG LEN= 8</td>
</tr>
</tbody>
</table>
If you enter

/DIS TSSTABLE ATABLE INFO

the following data is displayed:

TSS TABLE DISPLAY FOR ATABLE
ATABLE  ARG LEN= 10 FUNC LEN= 50 MASKING=NO TRANS ASSIST EXIT=NO EXIT
*91256/101620*

If you enter

/DIS TSSTABLE CTSUNSOL

the following data is displayed:

TSS TABLE DISPLAY FOR CTSUNSOL
CTSUNSOL  ARG LEN= 8 FUNC LEN= 1 MASKING=NO TRANS ASSIST EXIT=NO EXIT
TSS TABLE DISPLAY RETURNED 3 DATA ENTRIES
ARGUMENT FUNCTIONAL RESULT
----------------------------------
CTS*****  Y
UFRED    Y
********  Y
*9125/101652*

If you enter

/DIS TSSTABLE CTSVPRNT VPRNT001

the following data is displayed:

TSS TABLE DISPLAY FOR CTSVPRNT
CTSVPRNT  ARG LEN= 8 FUNC LEN= 16 MASKING=NO TRANS ASSIST EXIT=NO EXIT
ARGUMENT FUNCTIONAL RESULT
----------------------------------
VPRNT001 L3A1F2  L3A1F2
*91256/101750*

**Using the /SECURE Command**

After the /START DC command has been entered, any virtual terminal in the network can perform a logon.
Once logged on, the user can signon (if required) and enter IMS transactions. At certain times, such as during system checkouts and during special processing periods, this could be less than desirable. DELTA PLUS VIRTUAL TERMINAL has provided a new IMS-type command, `/SECURE`, which can be used to restrict signons to a designated group during these periods.

/SECURE can be used to disable signons, to designate a specific list of users allowed to signon during disabled periods, to enable signons, and to clear the list of designated userids. The ENABLE/DISABLE state after IMS cold and warm starts is ENABLE; after emergency restart it is the same as before the failure. The `/SECURE` command applies equally to virtual terminals and IMSGEN-defined terminals.

**WARNING**
The `/SECURE ALLOW` command requires the `nodename` parameter rather than the `userid` parameter for dynamic SLUP devices only.

**Note**
The `/SECURE` command options are valid for a single system only--they do not apply across the sysplex, even if Resource Manager (RM) is active.

![Figure 62: /SECURE Command Syntax](image)

You can use the following keywords with the `/SECURE` command:

**ALLOW**

- **ALLOW**—is followed by one or more userids which are to be allowed access to IMS after the `/SECURE DISABLE` command. Each issuing of the `/SECURE ALLOW` command will append the list of previously allowed userids.

- **userid**—Follow the ALLOW parameter with one or more of the userids that you want to process with the `/SECURE` command.

- **nodename**—Follow the ALLOW parameter with one or more of the nodenames that you want to process with the `/SECURE` command for dynamic SLUP devices only.

**DISABLE**

Specifies that all new userid signons are to be disabled, excepting those specified by the `/SECURE ALLOW` command.
ENABLE

Specifies that all users authorized by the security subsystem to access IMS should be permitted to signon.

CLEAR

Specifies that the entire list of users created with one or more /SECURE ALLOW commands is to be cleared.

Using the /TEST MFS Command

The virtual terminal /TEST MFS commands allows you to activate and deactivate MFS TEST mode for a virtual terminal or virtual printer, before the terminal control blocks have been created.

The format of the /TEST MFS command depends on the version of IMS run on your system.

Figure 63: /TEST MFS NODE Command Syntax

```
/TEST MFS NODE nodename
```

Figure 64: /TEST MFS USER Command Syntax

```
/TEST MFS USER username
```

You can use the following keywords with the /TEST MFS commands:

NODE

This parameter indicates that the MFS TEST mode should follow the node control block and should not be tied to the user.

nodename - The node name. The node must exist at the time the /TEST MFS command is issued, or you must have specified a non-zero value for the Maximum Virtual Terminal pending entries field on the Virtual Terminal Limits panel in the IMSID basic options.

Note

When Resource Manager (RM) is active, the node name restrictions do not apply. TEST status applies across the sysplex.

USER

This parameter indicates that the MFS TEST mode should follow the user control block and should not be tied to the node. If a user logs off one node
and logs back on to another node, the TEST MFS status of that user should still be in effect.

**username** - The name of the user/SPQB. The user/SPQB must exist at the time the /TEST MFS command is issued, or you must have specified a non-zero value for the Maximum Virtual Terminal pending entries field on the Virtual Terminal Limits panel in the IMSID basic options.

**Note**
When Resource Manager (RM) is active, the user name restrictions do not apply. TEST status applies across the sysplex.

### Using the /END Command

The /END command allows you to end MFS TEST mode.

**Figure 65: /END Command Syntax**

You can use the following keywords with the /END command:

**NODE**

This parameter ends MFS TEST mode for both virtual and IMSGEN-defined devices.

**nodename**— After the NODE parameter, specify the name of the node on which you want to deactivate the TEST MFS command.

**USER**

This parameter ends MFS TEST mode for the specified userid.

**username**—After the USER parameter, specify the user/SPQB from which you want to deactivate the TEST MFS command.

### Using the /TRACE Command

The virtual terminal /TRACE command allows the IMS DC trace facility to be activated for nodes before the terminal control blocks have been created and the user has signed on.
You can use the following keywords with the /TRACE command:

**NODE**

Indicates that you want to run the /TRACE command on a node. DELTA PLUS VIRTUAL TERMINAL will process the **NODE** parameter of the /TRACE command only if the specified nodename is a virtual terminal and only if the virtual terminal already exists.

**VT**

Indicates that you want to run the /TRACE command on a virtual terminal.

**nodename** - Specify one or more virtual terminal node names after the VT parameter to run a trace for those nodes. The virtual terminal control blocks do not have to exist at the time the /TRACE command is issued as long as you have specified a non-zero value for the **Maximum virtual terminal pending entries** field on the IMSID Options - VT Limits panel. The node name you specify must not be IMSGEN-defined.

*Note*

The VT parameter is not supported when you use Resource Manager (RM) for Sysplex Terminal Management (STM). Use the **NODE** parameter instead.

*Note*

DELTA PLUS VIRTUAL TERMINAL does not support ranges of node names. You must specify each node name individually.

**LEVEL**

Specify the control block trace information level. See the IMS /TRACE command for more information.
MODULE

Specify the module control blocks to trace. See the IMS /TRACE command for more information.

IMS Storage Display and ZAP

You can use DELTA PLUS to display main storage in the IMS control region address space. Portions of main storage in the IMS control region address space display on the TSO screen in a dump format. The dump format shows in 16-byte increments the virtual storage address of the data, its offset relative to the beginning of the area, its hexadecimal representation, and an EBCDIC character display. Zaps are recorded in the DELTA History File but are never reapplied by DELTA PLUS during restarts.

To display storage, select option 4 from the Utilities Menu. The IMS Storage Display panel, shown in Figure 67 on page 431, is displayed, prompting you for specification of dump parameters.

Once you have supplied storage display parameters, DELTA PLUS attempts to obtain the requested storage from the IMS address space. A message indicating that the request was transmitted to the IMS control region appears. After several seconds, the requested storage displays.

The entire block of storage is copied from the IMS address space to your address space, which may not necessarily be on the same CPU. The amount of storage obtained and displayed depends on whether DELTA PLUS can determine a length for the storage block. A length can be determined for known control blocks and modules if the address is not complex. If the address is explicit or complex, DELTA PLUS defaults the length to 256 bytes unless overridden by the Length field on the panel. If the length of a module exceeds 10,000 bytes, DELTA PLUS returns only the first 10,000 bytes unless you type 9999 in the Length field. When you type 9999, the entire module is returned regardless of its length, as shown in Figure 67 on page 431.

WARNING

Use this option with care because very large load modules (such as DFSVNUCx) can exceed the virtual storage available in the TSO user’s address space and cause an S80A abend of the DELTA PLUS session.

Once the storage is displayed, you can make modifications in either the hexadecimal or the EBCDIC character display fields. When the ZAP command is issued after these online modifications have been made, the IMS control region is updated.

Zapping storage can be dangerous on a production system. For this reason, the ability to zap storage is disabled by default; you can enable it for the authorized user.
when necessary. Refer to the installation guide for information on enabling the storage display and zap features and adding user access authorization for these features.

Figure 67: IMS Storage Display Panel

The following fields are available on this panel:

Command

The commands available with this panel are described below.

- **UP** and **DOWN** - Use the **UP** and **DOWN** commands to scroll through the storage displayed on the IMS Storage Display panel.

- **FIND** - Use the **FIND** command to locate character and hexadecimal strings in the block of storage. A character string is a string of characters, and a hexadecimal string is an even number of hexadecimal digits or a quoted hexadecimal string.

  Use the format **FIND ‘sss...ss’** for character strings, where sss...ss is the character string; use the format **FIND X’ddd...dd’** for hexadecimal strings, where ddd...dd is the hexadecimal string.

  The **FIND** command positions the line of storage that contains the string on the top line in the display area and positions the cursor to the beginning of the hexadecimal string. Press **F5 (RFND)** to find the next occurrence of the string.

- **PREVIOUS** - Use the **PREV** command to view previously displayed storage.

- **NEXT** - Use the **NEXT** command to view the storage you displayed after the currently displayed storage. This command is valid **only** after using the **PREV** command.
- **DUMP** - Use the DUMP command to refresh the display with storage from IMS.

- **RELOad** - Same as DUMP.

- **ZAP** - To alter IMS storage you display the storage to zap, make the desired change on the panel, provide a comment to document the change, and issue the ZAP command.

  When storage has been displayed, you can change it. The alterations are zapped into the IMS address space. A zap is defined as one or more characters of changed data in the area.

  The data in the display can be changed in either the hexadecimal or the character area. If both the hexadecimal and character areas are changed at the same time, the change in the hexadecimal area overrides the change in the character area. In the character area, the period is considered a null character and is never used to replace data. You can restore original contents of a word by pressing **Erase EOF** to clear a word of the hexadecimal display.

  **Note**

  Before applying a zap, DELTA PLUS checks the current contents of the storage to ensure that no change has occurred while you were viewing it. If the current contents match the contents at the time DELTA PLUS copied the storage, then the zap is applied. If there is a mismatch, DELTA PLUS issues an error message indicating that the verification failed and that the zap was not performed.

  The **ZAP** command causes the zap to be applied to the IMS address space. If the zap is successful, the changed data in the display is considered permanent and is used as a base for additional displays and zaps.

  All zaps made by DELTA PLUS to the IMS control region are recorded in the DELTA PLUS History File and remain there until the next restart. After the next restart, they remain as inactive log entries until removed by a History File purge. If you reformat the History File, all active and inactive entries are erased. DELTA PLUS never attempts to reapply the zaps during IMS restart; it records the zaps only for historical and reporting purposes.

- **RESet** - The **RESet** command restores the display to its original unaltered contents. Entering a new display address or length also cancels any pending changes.

**IMSID**

Type the IMSID of the IMS control region against which the Storage Display will execute. A Group name is not allowed.
Dump Address

Specify which portion of virtual storage you want to display. Use an explicit, symbolic, or complex address.

**Note**
You must rekey one character in the **Dump Address** field.

- Explicit Address - An explicit address is a hexadecimal number of one to eight digits that identifies the virtual storage address of the storage to be displayed.

- Symbolic Address - A symbolic address is the type and name of a particular control block or load module name, for example, CNT(MASTER). Only a limited subset of IMS control blocks may be referenced this way. Control blocks that can be referenced symbolically are:
  - SCD (for the system contents directory)
  - CDE (modulename)
  - CIB (terminalname) or CIB (line-ptermp)
  - CLB (terminalname) or CLB (line-ptermp)
  - CLBE (nodename)
  - CNT (ltermname)
  - CSS (sourcename)
  - CSU (userID)
  - CTB (terminalname) or CTB (line-ptermp)
  - DCD (for the DELTA PLUS system contents directory)
  - DESC (LU62descriptorname)
  - DDIR (databasename)
  - DNT (ltermname) or DNT (username)
  - ECD (for the ETA+ system contents directory)
  - FIND (modulename.csectname)
  - LGND (logondescriptorname)
  - LOAD (loadmodulename)
  - MOD (modulename)
  - PDIR (programname)
  - PST (nnn/jobname)
  - RCTE (rtcodename)
  - SMB (transactionname)
  - SPQB (username)
  - SPQBE (username)
  - SPQBX (username)
  - USER (username)
Complex Address - A complex address is an explicit or symbolic address followed by a positive or negative value or an indirect operator. An offset value is either added to or subtracted from (as indicated by the sign) the current address calculation. The indirect operators % and ? indicate that the contents of the word starting at the address calculated thus far are to be used as the address for any subsequent calculation operations. A % indicates that the low-order 24 bits of the word are to be used as the address. A ? indicates that the low-order 31 bits of the word are to be used as the address. The complex address is delimited by the first blank.

Indirect Address - Once a block of storage has been displayed and one of the words displayed contains an address, the block of storage at that address may be displayed by typing over the first character of the word with an indirect operator ( % or ?). The content of the Dump Address field is updated to the new address. You can display the previous block again by entering PREVious in the Command field. You can update the Length field at the same time the indirect operator is entered to control the length of the new block; updating the Length field later causes the block indicated in the Dump Address field to be displayed again.

Length

Specifies the amount of storage, in bytes, to display. If the dump address is a symbolic address, enter a numeric value from 1 to 65535, or blank out this field to allow DELTA PLUS to determine the default length. For symbolic addresses, the default length is the length of the IMS control block or load module. For other addresses, the default length is 256.

Comment

When a zap is made to storage, DELTA PLUS requires the specification of a comment. The most recently-used comment is the default value for the Comment field. The comment appears in History File reports to document the zap.

Labeled columns

The following columns display the main storage in dump format:

- **Address** - The virtual storage address from the IMS address space.
- **Offset** - The offset relative to the beginning of the area.
+0, +4, +8, +C - Each line contains four words (16 bytes) of data displayed in hexadecimal format. These fields are modifiable in case a zap is to be made. Input from this field overrides input from the corresponding character field.

The 16 bytes of data are also displayed in character format. In this field, a period represents a character that cannot be displayed. This field is modifiable. You can use upper and lowercase characters to alter original field contents.

You can also use DELTA PLUS to display main storage in the IMS DLI/SAS region address space. When displaying main storage, you can complete the following tasks under the DLI TCB:

- dump all CDEs
- display storage
- zap storage
- display an individual CDE

Figure 68 on page 435 provides an example of dumping all CDEs under the DLI TCB.

Figure 68: Dumping All CDEs

<table>
<thead>
<tr>
<th>File</th>
<th>Dump</th>
<th>Zap</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>IMS Storage Display</td>
<td>Row 1 to 11 of 111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMSID . . . . . .</td>
<td>D10P</td>
<td>2011.265 14:16:57.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dump Address . . CDE(ALLCDE):DLI</td>
<td>(:DLI must be specified after the dump address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length . . . . .</td>
<td>1726</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment . . . . .</td>
<td>DUMP/ZAP function to be switched to DLI TCB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>Offset</th>
<th>+0</th>
<th>+4</th>
<th>+8</th>
<th>+C</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000000 0000</td>
<td>C0D4E360</td>
<td>64A0C3C4</td>
<td>65C104C5</td>
<td>61C3C4C5</td>
<td>+FMT-&gt; CONAME/CDE*</td>
<td></td>
</tr>
<tr>
<td>00000100 0010</td>
<td>D5E3D7E3</td>
<td>61C3C4E4</td>
<td>E2C561C3</td>
<td>C4E2D740</td>
<td>*NTPT/CDUSE/CDSP</td>
<td></td>
</tr>
<tr>
<td>00000200 0020</td>
<td>C3E2E2D0</td>
<td>F2C5C3C2</td>
<td>35C10000</td>
<td>0001E700</td>
<td><em>CSSQ2ECB.A)...X.</em></td>
<td></td>
</tr>
</tbody>
</table>
| 00000300 0030 | C4C6E2C1 | C2D545F0 | BF111000 | 0001FA00 | +DFSABND0.......
| 00000400 0040 | C4C6E2C1 | C3C2C9D6 | 00078000 | 0001FB00 | +DFSACB10.......
| 00000500 0050 | C4C6E2C1 | E6C5C5F1 | 39081A0D | 0001E700 | +DFSABND0.......
| 00000600 0060 | C4C6E2C2 | C6E2D7D7 | F3E2A000 | 0001FB00 | +DFSABND0.......
| 00000700 0070 | C4C6E2C3 | D7E8F0F0 | B0A91E00 | 0001E700 | +DFSACB10.......
| 00000800 0080 | C4C6E2C3 | E2E2E6D2 | 003939C0 | 0001FA00 | +DFSACB10.......
| 00000900 0090 | C4C6E2C3 | E2E2F0F0 | BF171F00 | 0001FB00 | +DFSACB10.......
| 00000A00 00A0 | C4C6E2C4 | C2C1E4F0 | 00067000 | 0001FA00 | +DFSACB10.......

******************************* Bottom of data ****************************

Figure 69 on page 435 provides an example of displaying storage under the DLI TCB.

Figure 69: Displaying Storage

<table>
<thead>
<tr>
<th>File</th>
<th>Dump</th>
<th>Zap</th>
<th>Options</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>IMS Storage Display</td>
<td>Row 1 to 11 of 111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMSID . . . . . .</td>
<td>D10P</td>
<td>2011.265 14:16:57.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dump Address . . CDE(ALLCDE):DLI</td>
<td>(:DLI must be specified after the dump address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length . . . . .</td>
<td>1726</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment . . . . .</td>
<td>DUMP/ZAP function to be switched to DLI TCB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>Offset</th>
<th>+0</th>
<th>+4</th>
<th>+8</th>
<th>+C</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000000 0000</td>
<td>C4D4E360</td>
<td>6A40C3C4</td>
<td>65C104C5</td>
<td>61C3C4C5</td>
<td>+FMT-&gt; CONAME/CDE*</td>
<td></td>
</tr>
<tr>
<td>00000100 0010</td>
<td>D5E3D7E3</td>
<td>61C3C4E4</td>
<td>E2C561C3</td>
<td>C4E2D740</td>
<td>*NTPT/CDUSE/CDSP</td>
<td></td>
</tr>
<tr>
<td>00000200 0020</td>
<td>C3E2E2D0</td>
<td>F2C5C3C2</td>
<td>35C10000</td>
<td>0001E700</td>
<td><em>CSSQ2ECB.A)...X.</em></td>
<td></td>
</tr>
</tbody>
</table>
| 00000300 0030 | C4C6E2C1 | C2D545F0 | BF111000 | 0001FA00 | +DFSABND0.......
| 00000400 0040 | C4C6E2C1 | C3C2C9D6 | 00078000 | 0001FB00 | +DFSACB10.......
| 00000500 0050 | C4C6E2C1 | E6C5C5F1 | 39081A0D | 0001E700 | +DFSABND0.......
| 00000600 0060 | C4C6E2C2 | C6E2D7D7 | F3E2A000 | 0001FB00 | +DFSABND0.......
| 00000700 0070 | C4C6E2C3 | D7E8F0F0 | B0A91E00 | 0001E700 | +DFSACB10.......
| 00000800 0080 | C4C6E2C3 | E2E2E6D2 | 003939C0 | 0001FA00 | +DFSACB10.......
| 00000900 0090 | C4C6E2C3 | E2E2F0F0 | BF171F00 | 0001FB00 | +DFSACB10.......
| 00000A00 00A0 | C4C6E2C4 | C2C1E4F0 | 00067000 | 0001FA00 | +DFSACB10.......

******************************* Bottom of data ****************************
### IMS Storage Display and ZAP

**Figure 70 on page 436** provides an example of zapping storage under the DLI TCB.

*Figure 70: Zapping Storage*

<table>
<thead>
<tr>
<th>File</th>
<th>Dump</th>
<th>Zap</th>
<th>Options</th>
<th>Help</th>
<th>Storage altered</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>IMS Storage Display</td>
<td>storage altered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMSID . . . . . D10P</td>
<td>2011.265 15:02:10.64</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dump Address : 3F405000:DLI</td>
<td>:DLI</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length . . . . . 1776</td>
<td>Comment :DLI (DLI must be specified under Comment if zapping storage)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address Offset</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 0000</td>
<td>00001788 C7D3D140 C4C6E2D7 E2C5D3F0 <em>.&gt;......DFSPSEL0</em></td>
</tr>
<tr>
<td>0010 0060</td>
<td>3F40502C C905C4C5 E7D7C3C2 00000000 <em>&amp;.INDEXPCB...</em></td>
</tr>
<tr>
<td>0020 0070</td>
<td>3F40502C 40040404 40040404 <em>...... &amp;.</em></td>
</tr>
<tr>
<td>0030 0080</td>
<td>00000000 00000000 00000000 00000000 <em>.</em></td>
</tr>
<tr>
<td>0040 0090</td>
<td>00000000 00000000 00000000 00000000 <em>.</em></td>
</tr>
<tr>
<td>0050 00A0</td>
<td>00000000 00000000 00000000 00000000 <em>.</em></td>
</tr>
</tbody>
</table>

---

**Figure 71 on page 436** provides an example of displaying an individual CDE under the DLI TCB. This example uses a CDE for DFSPSEL0.

*Figure 71: Displaying an Individual CDE*

| File | Dump | Zap | Options | Help | Row 1 to 2 of 2 |
|------|------|-----|---------|------|----------------|---|
| DELTA PLUS | IMS Storage Display | --- |
| IMSID . . . . . D10P | 2011.265 15:08:08.64 | 32 |
| Dump Address : CDE(DFSPSEL0):DLI | :DLI | + |
| Length . . . . . 32 | Comment CDE(DFSPSEL0):DLI (DLI must be specified after dump address) |

<table>
<thead>
<tr>
<th>Address Offset</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 0000</td>
<td>00002970 00000000 C4C6E2D0 E2C5D3F0 <em>.&gt;......DFSPSEL0</em></td>
</tr>
<tr>
<td>0010 0010</td>
<td>BF3F2F0 006B4000 00000000 00000000 00000000 00000000 00000000 00000000 <em>.&gt;20. ________</em></td>
</tr>
</tbody>
</table>
Identifying ZAPS Supplied by BMC Software

Each zap that is supplied by BMC Software includes an IDRDATA control card. When keying in a BMC Software-supplied zap using the IBM AMASPZAP utility, always include the IDRDATA card.

The DLPCNTL library contains member DLP#LIDR. If you have applied the IDRDATA control card along with each zap supplied by BMC Software, you can generate a list of the zaps that have been applied to DELTA PLUS at your site by running job DLP#LIDR in DLPCNTL.

Diagnostic Tools

The following tools and documentation techniques will assist you in problem determination and resolution:

- DELTA PLUS Journal
- IMS control region diagnostics
- TSO/ISPF diagnostics

DELTA PLUS Journal

The DELTA PLUS Journal is a diagnostic facility that you can use to analyze DELTA PLUS problems. When activated, it produces a detailed trace of DELTA PLUS events and activities. However, overhead is involved with the use of the Journal because it involves writing information to a data set. You should only activate the Journal at the request of BMC Software Customer Support.

Activate the Journal

The Journal facility is disabled by default because it creates considerable overhead for the IMS control region.

To activate the Journal

1. Manually copy load module DLPXJNLx into your IMS STEPLIB.
2. Add a DLTRACE DD statement to your control region JCL, defining a Journal output data set with the data set characteristics of DSORG=PS, RECFM=FBA, LRECL=133.
3 Restart IMS.

If the load module and DD statement are present, the Journal task is attached under the IMS control task TCB for writing the output data set. The Journal task is halted during IMS shutdown. It cannot be started and stopped at will by operator action.

Output From the DELTA PLUS Journal

Once the DELTA PLUS Journal is activated, data is written to the Journal for each DELTA PLUS request, as well as at other key points in IMS processing. You should send this data to BMC Software Customer Support to be analyzed.

IMS Control Region Diagnostics

When an IMS control region abends or is operating incorrectly, BMC Software Customer Support may require several documents to diagnose the problem. Once obtained, keep this documentation until the problem has been resolved to your satisfaction. BMC Software may not need any or all of this material; however, if this documentation is needed, it is important that it is readily available. The following describes creating documentation to send to BMC Software, when required.

Storage Dumps

IMS produces only one unformatted dump for each failure (SYSMDUMP or SYS1.DUMP). When submitting these dumps to BMC Software for analysis, write the unformatted dump to tape using IEBGENER. BMC Software will perform the necessary formatting.

Operator Dumps

For all releases of IMS, an operator dump produced using the O/S DUMP command is acceptable if generated according to the following specifications:

```
DUMP COMM=(problem description)
```

The system returns the following message:

```
*nn IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
```

You respond with the following command:

```
nn JOBNAME=imsname,SDATA=(RGN,TRT,CSA), END
```
Operator dumps are especially useful for dumping IMS when you are experiencing a loop or wait state or when it is undesirable to MODIFY DUMP the system.

**DELTA PLUS Log Data Sets**

The DELTA PLUS Log holds the cumulative changes DELTA PLUS made to the IMS control region. When you suspect a DELTA PLUS failure, make a copy of the current DELTA PLUS Log data set in case it is required for problem analysis. Since the primary and secondary DELTA PLUS Log data sets are duplicates of each other, copy only one. For problem documentation, the actual DELTA PLUS Log contents rather than a listing are required.

**DELTA PLUS History File Data Sets**

The DELTA PLUS History File contains information associated with DELTA PLUS requests sent to the IMS control regions. When you suspect a DELTA PLUS failure, make a copy of the current DELTA PLUS History File data set in case it is required for problem analysis. Since the primary and secondary DELTA PLUS History File data sets are duplicates of each other, copy only one. For problem documentation, the actual DELTA PLUS History File contents rather than a listing are required.

**MVS System Log**

Important IMS and DELTA PLUS messages are written to the MVS System Log using the WTO and/or WTOR macro instructions. These messages should be noted and understood. Retain the complete text of any new or unusual message issued at or near the time of the problem.

**IMS Master Terminal Log**

Important IMS and DELTA PLUS messages are also written to the IMS Master Terminal. These messages should be noted and understood. Retain the complete text of any new or unusual message issued at or near the time of the problem.

**BMCXLINK Diagnostics**

BMCXLINK communicates requests from a TSO-based DELTA PLUS user to an IMS control region. Problems seldom occur in BMCXLINK alone; usually the problem affects a TSO user and BMCXLINK at the same time. Documentation of BMCXLINK failures can involve storage dumps, operator dumps, and traces.
Storage Dumps

When BMCXLINK abends, the SYSMDUMP or SVC dump is usually sufficient for problem analysis.

Operator Dumps

When BMCXLINK hangs or fails to respond to a TSO user, the problem is more complex. Documentation of this type of failure usually requires concurrent dumps of the IMS control region, the BMCXLINK region, and the TSO user address space. The operator DUMP command can satisfy this requirement if generated with the following specifications:

```
DUMP COMM=(problem description)
```

The system returns the following message:

```
*nn IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
```

You respond with the following command:

```
nn, JOBNAME=(imsname, BMCXLINK, tsoname), SDATA=(RGN, TRT, CSA), END
```

Submit unformatted operator dumps to BMC Software on 6250 BPI standard label (SL) tapes or 3480 cartridges or transmit them to the BMC FTP site.

Traces

BMCXLINK also traces all inputs and outputs. In this case, inputs and outputs refer to communications between BMCXLINK and TSO users and the IMS control regions. This trace is implemented using the SNAP macro instruction with the trace output directed to the SNAPOUT DD. Occasionally, BMC Software Customer Support personnel will ask you to add a SNAPOUT DD SYSOUT=A statement to the BMCXLINK and TSO user JCL. The entries printed in this trace output will assist in problem analysis. When it is not needed, you can avoid trace output by omitting the SNAPOUT DD statement.

TSO/ISPF Diagnostics

Because of the recovery mechanisms within TSO/ISPF, most dumps automatically generated by TSO/ISPF do not contain any useful information. You must take certain specific steps to prevent normal TSO/ISPF abend recovery. Without these steps, the resulting dump information is insufficient and unusable.
Typical examples of TSO/ISPF dumps that are insufficient and unusable are as follows:

- **S0C4 in LMOD(ISPMAIN) CSECT(ISPMRO)**
  ISPMRO invokes SVC13 to generate an additional abend after ISPF has already terminated and recovered from an ISPF dialog error. This is normal processing when ISPF is not in test mode.

- **S0C4 in ISPSUBS, ISRSUBS, or ISPTASK**
  These are the names of ISPF load modules containing common service subroutines. You need to research the dump further or redocument the problem to identify the original abend and the abending CSECT.

When an ISPF-related problem can be duplicated, BMC Software Customer Support personnel may ask you to perform the following steps:

**To generate a diagnostic dump**

1. In member DLPZUSER in the DLPPLIB data set, un-comment the following lines:
   
   ```
   &ZENBLDMP = 'ON'
   VPUT (ZENBLDMP) PROFILE
   ```

2. If you are currently in the DELTA PLUS ISPF interface, you must exit and re-enter the interface for the changes from the first step to apply.

3. Duplicate the problem. A TSO/ISPF dump will be generated.

4. Change member DLPZUSER back to its original lines (comment the lines you un-commented in the first step).

**Problem Determination Documentation**

Please do not submit documentation unless BMC Software Customer Support specifically requests it. BMC Software makes every effort to request the minimum documentation required to analyze a given problem.

**Overnight Mail and FTP Instructions**

When documentation is requested, make sure you address the package to the BMC Software Customer Support representative’s attention. Send the package to BMC Software via an overnight carrier. The BMC Software Customer Support representative will provide a carrier name and charge account number.
For instructions on sending problem documentation via FTP, access http://www.bmc.com/support_home to view the support page on the BMC Software web site.

**Where to Get the Latest Product Information**

To view the latest BMC Software documents, visit the Customer Support.

BMC Software distributes printed copies of flashes, technical bulletins, and release notes with most product shipments, as indicated on your shipping list. In addition, all notices are available on the Customer Support page, including any notices that BMC Software issues after you receive your product shipment. You will not receive new notices by mail. However, by subscribing to proactive notification, you can receive e-mail messages that direct you to those notices. For more information about proactive notification, refer to the Customer Support page.
Virtual Terminals

This chapter describes how DELTA IMS VIRTUAL TERMINAL creates, deletes, and uses virtual terminals. The following related topics are also covered: Statistics and log records related to virtual terminals, processing after an IMS restart, dequeuing and requeuing virtual LTERMs, and the virtual terminal Timer facility.

Introduction

DELTA PLUS allows you to eliminate IMMSGENs for VTAM terminals and LTERMs for VTAM terminals.

Virtual Terminal

A virtual terminal is any IMS terminal that is not defined in the IMS gen. These nodes are created when a logon attempt is made on a terminal after it is determined that it is not in the GEN and has not already been created. These nodes exist only while they are actively being used. After a site-defined period of inactivity, the nodes (except SLUPs) are logged off and subsequently deleted.

Virtual LTERM

A virtual LTERM is created during the signon bypass process, if signon is not required, or during the IMS signon process. A virtual LTERM can also be created by sending a message to it.

DELTA PLUS code will go through a destination search sequence before an LTERM is created. This destination search sequence is very important. Once a message is sent to a destination, DELTA PLUS code will attempt to find it in the following search sequence:

1. IMS GENed LTERMs, transactions, and remote LTERMs
2. LTERMs and transactions added by DELTA IMS DB/DC
3. Previously defined virtual LTERMs that are still in existence
4. Virtual remote LTERM TSS table (if system is MSC capable)
5. Virtual printer TSS table
6. Unsolicited output TSS table

If the above searches fail to find the name, the message will be rejected and an appropriate IMS error message will be displayed.

**WARNING**

Use of wildcard masking in a virtual printer or unsolicited output TSS table could have unexpected consequences. Masking could allow destinations to be deemed valid and created when the opposite result is intended. Use masking with discretion.

---

**Virtual Terminals and IMSGEN-Defined Terminals**

Under all versions of IMS, DELTA PLUS does not affect the operation of IMSGEN-defined terminals, with the following exceptions:

- The automatic exit of held conversations applies to conversations initiated at virtual terminals, IMSGEN-defined VTAM terminals, and IMSGEN-defined BTAM lines and PTERMS.
- The /SECURE command applies to both IMSGEN-defined terminals and virtual terminals.

---

**Virtual Terminal Models**

When DELTA PLUS defines a virtual terminal to IMS, it copies and modifies model control blocks. Models are standard IMS terminal definitions which are included in the IMSGEN. Models define the characteristics and such features as screen size that the product uses to define a virtual terminal to IMS. These models are used during virtual terminal logon and signon processing.

You should review the Virtual Terminal Logon panel number 6 to determine what the current settings are and revise these settings if needed.
Logon Models

Logon model terminal definitions provide DELTA PLUS with example IMS definitions for the 3270-type, SLUTYPE1, SLUTYPE2, and SLUTYPEP devices in use in your IMS network. DELTA PLUS uses the logon models two ways:

- You can specify four default logon models. These models are used to provide default characteristics for all SLUTYPE1, SLUTYPE2, SLUTYPEP, and 3270-type devices. While you can specify these default models for any of the device types, they specifically apply only if you select the defaults.

- You can provide a complete set of models for each SLUTYPE1, SLUTYPE2, SLUTYPEP, and 3270-type physical terminal/screen size combination in use at your site. These models can be selected for use by the Logon Translate option or the Logon exit routine. These additional logon models take the place of the default logon models described above. The Logon Translate option and the Logon Exit sample routine provided use the DELTA IMS Translate Subsystem to build the name of a logon model from the physical terminal type and the screen size. For more information, see Logon Exit Sample Routine on page 521.

When a virtual terminal is logged on to IMS, DELTA PLUS uses specifications from the model to format the virtual terminal control block. Names and address pointers in the new control blocks are adjusted accordingly.

Defining Logon Models

Before using Virtual terminals, you must define terminals in the IMSGEN that can be used as 'MODELS' for virtual terminals. The following steps describe how to define virtual terminal logon models in the IMSGEN:

1. Review your current static terminal definitions and determine a terminal definition that has the unique combination of options that you will need in your virtual terminal environment.

   Any option that differs from previous models will require a different model be defined. For example, if virtual terminals require different options, such as OUTBUF, then separate models must be IMSGEN-defined.

   You should have one or more terminal definitions that adequately represent all of the static terminal definitions in your network.

2. Rename these terminals in the GEN source so that they do not match any other terminal in your network.

   When defining virtual terminal logon models, the following restrictions apply:
- These nodes should never be logged on or used in the DELTA IMS DB/DC tier as spare elements.

- The node name of a logon model should never match the node name of a terminal in your network. Doing so may cause unpredictable results.

**Note**

If you use a session manager to access IMS terminals and wish to use the real VTAM node name instead of the session manager pool name, refer to Extended Options on page 585.

---

**Signon Models**

You can use signon model terminal definitions to override the terminal characteristics provided by the logon models. Signon models can provide a greater variety of screen sizes and options than available with the default logon models.

For example, if the default screen size specified in the logon model was 24 by 80, but some applications require 27 by 132 screens, then you can specify an alternate screen size through a signon model.

Like logon models, signon models are defined in the Stage-1 IMSGEN macros used for your IMS system. There is no limit set to the number of 3270-type or SLUTYPE2 signon models which can be used by DELTA PLUS. Signon models can be used as logon models.

You can customize the Signon Exit sample routines to return the name of a signon model. It is your responsibility to ensure that signon models exist for each model that the Virtual Terminal Signon Exit sample routine can specify.

The actual logon model name is not changed; only its characteristics are modified to match the new model.

---

**Supporting SLUTYPEP Devices**

DELTA PLUS supports SLUTYPEP devices when you complete the following procedures:

1. You must have the correct VTAM definitions for SLUTYPEP devices. The VTAM TSPROFILE must be X'04', or you must use a customized logon exit to identify SLUTYPEP devices by name.
2 Place the SLUPxx entries in your LMODEL TSS table or SLUTYPEP default model. SLUP VTAM definitions often use SLUP00 for the model types.

If you have SLUTYPEP devices that require different macro parameters, set up a different logon model for each set of needed options. This may require a TSS table lookup by node name to determine which model is required.

You can use the same method you are using now to determine the virtual terminal logon model for SLUTYPE2 or 3270-type devices as long as the correct logon model is passed to DELTA PLUS prior to creation.

3 SLUTYPEP devices are generally not signed on to IMS. If you currently require signon for all virtual terminals, but do not want SLUTYPEP devices to be signed on, change to signon not required and build an NLTERM TSS table for all SLUTYPEP devices.

Place the table name NLTERM in the IMSID basic options module on the Virtual Terminal Signon Bypass panel. Use the VTAM node name as the table argument in the NLTERM table and use the associated LTERM as the function. Devices other than SLUTYPEP will fail this translation and force the user to signon, thus reinstating your requirement that signon is required for all other virtual terminals.

If you do not require signon for any of your virtual terminals SLUTYPEP LTERMS can be derived the same as SLUTYPE2 SLUTYPE or 3270 devices. If you require signon for all terminals including SLUTYPEP devices, then SLUTYPEP LTERMS can be derived the same as SLUTYPE2 or 3270-type devices. However, you must determine whether SLUTYPEP devices support MFS and you must take appropriate action as to whether you want DELTA PLUS to display the signon format.

**Signon Bypass**

The Signon Bypass option provides the LTERM name and override values for virtual terminals when signon is not required. The Signon Bypass option may, after examination of the node name, determine that signon is required by the terminal. The Signon Bypass option applies only when all of the following conditions are met:

- The IMSID basic option **Require signon for ALL Virtual Terminals** is not selected. See Signon Exit Sample Routine 5 and TSS on page 535.
- IMS is run without signon.
- The translate process is successful or the Signon Bypass Exit routine, if present, issues a return code of 0. If the translate fails or the Signon Bypass Exit routine
issues a return code of 4, then the Signon Bypass option is negated. See Signon Exit Sample Routine 5 and TSS on page 535.

**Tip**

If some of your users need to perform an IMS signon and others do not, you can identify the nodes that should bypass signon in the following manner:

- Specify that signon is not required on the IMSID Basic Options panel (Page 4 of 8).
- Enter the nodes for which signon is not required on the Signon Bypass TSS table.

The nodes that require signon will fail the signon bypass search and will be forced to sign on via a virtual terminal.

---

**Supporting Multiple LTERMs for Virtual Terminals**

Up to eight concurrent LTERM names can be supported at a virtual terminal. The LTERMs can be only virtual LTERMs.

An interface defined for the Signon and Signon Bypass exits permits a list of up to eight LTERM names to be returned for a virtual terminal. The exit can use any means to generate the names for the list.

To supply the LTERM names for the list, use:

- Virtual Terminal Signon Bypass panel option *Translate the Node name into an LTERM name*
- Virtual Terminal Signon panel option *Translate the Node name (or userid) into an LTERM name*
- Sample exit routines using the Translate Subsystem (TSS)

Activate multiple LTERM support by selecting the Virtual Terminal Options panel option *Support multiple concurrent LTERMs for Virtual Terminals*. When activated, the node name/userid to LTERM translation is a one-to-many relationship rather than a one-to-one relationship. This relationship is internally implemented using the TSS LIST command, which permits an argument range, instead of a TSS TRANSLATE command, which requires a specific argument. For multiple LTERMs to be associated with a single node, you must add one entry to the table for each LTERM.
Using a multiple LTERM per node TSS table for signon or signon bypass requires a special TSS translation which precludes the use of pattern masking in these tables.

Since TSS requires a unique node name table argument, you must append a suffix to each argument to ensure uniqueness. The suffix can be any length, but three characters or less is suggested. An example TSS table definition containing three LTERMs for node name TERMINAL is shown in the following example.

```
DEF MLTERM LEN(9,16) TITLE('MULTIPLE LTERM TABLE')
SET QUOTES
ADD MLTERM 'TERMINAL1' 'LTERM1  PROFILE1'
ADD MLTERM 'TERMINAL2' 'LTERM2'
ADD MLTERM 'TERMINAL3' 'LTERM3  PROFILE2'
```

Since you implement multiple LTERM support using the TSS LIST command, the Translate Assist Exit routine is not invoked. During the setup of a virtual terminal requiring multiple LTERMs, all LTERMs must be valid and available for use. If they are not, the setup fails which prevents successful completion of the logon or signon. Also, you must define all LTERMs using a valid name.

---

**Virtual Terminal and LTERM Statistics**

DELTA PLUS presents virtual terminal statistics in two ways: through the Virtual Terminal Statistics panel, and through messages issued at shutdown.

**Virtual Terminal Statistics Panel**

When you use the Virtual Terminal Statistics panel, DELTA IMS takes a "snapshot" of virtual terminal control block usage and provides this information as two panels of online statistics.

The Virtual Terminal Statistics panel displays statistics on USB, VPO, and VTE control block usage.

**Note**

When Resource Manager (RM) is active, virtual terminal status is no longer kept in VTE control blocks.
To view the first Virtual Terminal Statistics panel, type 7 on the Primary Menu panel and press Enter.

**Figure 72: Virtual Terminal Statistics Panel (Page 1)**

<table>
<thead>
<tr>
<th>VT</th>
<th>DELTA IMS VT - Virtual Terminal St</th>
<th>Press Enter to refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ====&gt;</td>
<td>Scroll ===&gt; PAGE</td>
<td></td>
</tr>
<tr>
<td>Press Enter to refresh VIRTUAL TERMINAL statistics from the control region.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IMSID... ABC4

LOGONS-to-date...: 3
AUTO-LOGOFFS-to-date: 2

USB Pool
Current -> 0%
Highest -> 0%

VPO Pool
Current -> 0%
Highest -> 0%

VTE Pool
Current -> 0%
Highest -> 0%

To refresh the display, press Enter. To view the second Virtual Terminal Statistics panel, use the DOWN command.

**Figure 73: Virtual Terminal Statistics Panel (Page 2)**

<table>
<thead>
<tr>
<th>VT</th>
<th>DELTA IMS VT - Virtual Terminal St</th>
<th>Press Enter to refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ====&gt;</td>
<td>Scroll ===&gt; PAGE</td>
<td></td>
</tr>
<tr>
<td>Press Enter to refresh VIRTUAL TERMINAL statistics from the control region.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IMSID... ABC4

Number of blocks in pool: 25
Current number of blocks in use: 0
Maximum number of blocks ever in use: 0
Number of times blocks were added: 0
Number of times blocks were deleted: 0

To refresh the display, press Enter. To view the first Virtual Terminal Statistics panel, use the UP command.

**Shutdown Statistics**

When DELTA PLUS is shut down, checkpoint records are automatically written to the IMS system log, and virtual terminal statistics, virtual LTERM statistics, and
event records are written to the MVS system log. Sample messages are shown in the following figure.

**Figure 74: Virtual Terminal Shutdown Statistics Sample**

```
BMC6695 VIRTUAL TERMINAL STATUS
BMC6696 LOGONS(100) SIGNONS(110) AUTO-LOGOFFS(25)
   AUTO-EXITS(15)
BMC6697 USERIDS ALLOWED(10) MAX USAGE(0)
   PERCENT(0) CHKPT(0)
BMC6697 OVERRIDES ALLOWED(50) MAX USAGE(30)
   PERCENT(60) CHKPT(30)
BMC6697 DC TRACES ALLOWED(10) MAX USAGE(2)
   PERCENT(20) CHKPT(20)
BMC6672 PRINTER LTERMS-IDENTIFIED(100)
   OPNDST-ISSUED(200) CONNECTS(175)
BMC6698 CONVERSATIONS DEFINED(200) BUSY(5)
   HELD(5)
BMC6699 END VIRTUAL TERMINAL STATUS
```

The statistics written include virtual terminal activity, control block usage, and conversation usage. The following table shows the statistics that are written to the IMS system log and the MVS system log when DELTA PLUS shuts down.

**Table 62: DELTA PLUS Shutdown Statistics**

<table>
<thead>
<tr>
<th>Statistic Category</th>
<th>Statistics Written</th>
<th>Message Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Number of logons</td>
<td>BMC6696</td>
</tr>
<tr>
<td></td>
<td>Number of signons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of logoffs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of internal /EXITS</td>
<td></td>
</tr>
<tr>
<td>Usage</td>
<td>Number in use at shutdown check point time</td>
<td>BMC6697</td>
</tr>
<tr>
<td>Conversation Usage</td>
<td>Number in use</td>
<td>BMC6698</td>
</tr>
<tr>
<td></td>
<td>Number held</td>
<td></td>
</tr>
</tbody>
</table>

**Log Records**

DELTA PLUS uses log code X'DE' for all event and checkpoint records that are written to the IMS system log.

An IMSID customization option permits you to modify this code within the range of X'A0' to X'FF'. Whenever the DELTA PLUS log code is changed, the first subsequent IMS restart must be a cold start. Log records are used for checkpoints and significant events. The product adds one log code and several subcodes to the X'DE', or user specified, log code. During an IMS restart, these records are used to reconstruct the virtual terminal environment.
Note

After warm and emergency restarts, virtual LTERMs are restored only if they have some status, such as MFSTEST or TRACE, or if they have queued messages. You can change the DELTA PLUS log code X'DE'. For clarity, all examples in this document use X'DE' for the DELTA IMS log code.

Table 63 on page 452 shows DELTA PLUS event records.

Table 63: Virtual Terminal Event Records

<table>
<thead>
<tr>
<th>Log Code</th>
<th>Event</th>
<th>DSECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'DE00'</td>
<td>Logon</td>
<td>$VTFMAP LGR</td>
</tr>
<tr>
<td>X'DE04'</td>
<td>Signon</td>
<td>$VTFMAP URM</td>
</tr>
<tr>
<td>X'DE08'</td>
<td>Forced Signoff</td>
<td>$VTFMAP LGR</td>
</tr>
<tr>
<td>X'DE10'</td>
<td>Delete</td>
<td>$VTFMAP LGR</td>
</tr>
<tr>
<td>X'DE14'</td>
<td>Conversation Hold</td>
<td>$VTFMAP HCV</td>
</tr>
<tr>
<td>X'DE18'</td>
<td>Define LTERM</td>
<td>$VTFMAP VPD</td>
</tr>
<tr>
<td>X'DE1C'</td>
<td>Assign</td>
<td>$VTFMAP LGR</td>
</tr>
<tr>
<td>X'DE20'</td>
<td>Successful MODBLKS online change</td>
<td>$VTFMAP OLC</td>
</tr>
<tr>
<td>X'DE24'</td>
<td>Existing LTERM added to or deleted from existing user/SPQB</td>
<td>$VTFMAP VAS</td>
</tr>
</tbody>
</table>

Table 64 on page 452 shows DELTA PLUS checkpoint records.

Table 64: Virtual Terminal Checkpoint Records

<table>
<thead>
<tr>
<th>Log Code</th>
<th>Checkpoint Type</th>
<th>DSECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'DE40'</td>
<td>Begin Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE44'</td>
<td>End Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE48'</td>
<td>VLB Checkpoint</td>
<td>$VTFMAP CVC</td>
</tr>
<tr>
<td>X'DE4C'</td>
<td>VCN Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE50'</td>
<td>USB Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE54'</td>
<td>VPO Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE58'</td>
<td>Deleted VCN Checkpoint</td>
<td>$VTFMAP CKP</td>
</tr>
<tr>
<td>X'DE5C'</td>
<td>VTE Checkpoint</td>
<td>$VTFMAP VTE</td>
</tr>
</tbody>
</table>
Virtual LTERM Dequeue

Use one of the following procedures to dequeue IMS responses from a virtual LTERM:

- For those sites using signon userid-to-LTERM name translation, have the affected user sign on to IMS and dequeue the LTERM using PA1 and PA2.
  - Or -
  
- Have the MTO stop the virtual terminal which the messages are queued to and then dequeue that node or user/SPQB.

**Note**

The DEQ extended option can be used to dequeue all messages that are not delivered to a virtual terminal during signon bypass or signon.

This action may help in a session manager environment where there is a danger of secured messages being displayed to the wrong terminal user.

See Extended Options on page 585 for additional information on using the DEQ extended option.

Timer Facility for Virtual Terminals

DELTA PLUS provides a time monitoring facility to track activity on virtual terminals and printers. The Timer facility enables you to establish standard, alternate, or zero values only for automatically logging off idle virtual printers and terminals. Under all supported versions of IMS, a zero value disables the Timer facility.

Unattended Virtual Terminal

A signed on and unattended terminal can compromise data security or confidentiality. To minimize such occurrences, DELTA IMS VIRTUAL TERMINAL uses the Timer facility to keep track of all idle terminals. The Time facility can log off the idle terminals after a period of time that you define.

Optionally, DELTA IMS VIRTUAL TERMINAL can notify the IMS Master Terminal Operator each time a virtual terminal has been automatically logged off or a conversation has been exited.
Idle Terminal Logoff

The Idle Terminal Logoff Interval determines when DELTA PLUS will log off idle terminals. This interval applies only to virtual terminals that are not in conversational mode unless the value of the Idle Conversation Logoff/Exit Interval is zero.

If a virtual terminal is not in conversational mode and options for the standard interval and the alternate interval are specified on the Virtual Terminal Limits panel, an internal /CLSDST (close destination) command is issued when a virtual terminal is inactive for the amount of time specified in the standard or alternate interval. If the standard interval is specified as zero, the Idle Terminal Logoff option is disabled. See Setting Limits for Virtual Terminals on page 98 for more information on setting virtual terminal limits.

When DELTA PLUS logs off an idle virtual terminal, all LTERMs remain assigned to the user/SPQB that was created when the terminal logged on only when there is a status or message queued. If no status or message exists, the LTERMS are deleted. Conversations are assigned to the user/SPQB and maintain the status they held when the virtual terminal was logged off.

Standard Idle Terminal Logoff Interval

Under all versions of IMS, the standard idle terminal logoff interval is used only under one of the following sets of conditions:

- The terminal is not in conversational mode.
- The alternate interval option is not specified for the user that is currently signed on to the terminal.
- The idle terminal logoff standard interval option is specified, but not as zero.

-Or-

- The terminal is in conversational mode.
- The alternate interval option is not specified for the user that is currently signed on to the terminal.
- The idle conversation interval option is not specified.
- The idle terminal logoff standard interval option is specified, but not as zero.
Alternate Idle Terminal Logoff Interval

Under all versions of IMS, the alternate interval is used only under one of the following sets of conditions:

- The terminal is in non-conversational mode.
- The alternate interval option is specified for the user that is currently signed on to the terminal.
- The idle terminal logoff alternate interval option is specified, but not as zero.

-Or-

- The terminal is in conversational mode.
- The alternate interval option is specified for the terminal.
- The idle conversation interval option is not specified for the user that is currently signed on to the terminal.
- The idle terminal logoff alternate interval option is specified, but not as zero.

See “Translate Subsystem Services Tables” on page 469 for information on setting alternate intervals and the TSS table LTERMOR.

Idle Conversation Logoff and Exit

When a virtual terminal is in conversational mode, the Idle Conversation Logoff/Exit Interval overrides the Idle Terminal Logoff interval, even if the value of the Idle Terminal Logoff interval is zero.

Idle conversation logoff occurs after a virtual terminal in conversational mode has remained inactive for the period of time specified for the Idle Conversation Logoff/Exit Interval. When idle terminal logoff occurs, all LTERMs for that terminal remain assigned to the user/SPQB that was created when the terminal logged on. Conversations are assigned from the terminal to the user/SPQB and maintain the status they held at the time the virtual terminal was logged off; the conversations are not exited.

If the Idle Conversation Logoff/Exit Interval is specified as zero, the feature is disabled, in which case the Idle Terminal Logoff Interval applies. In this situation, when the idle terminal logoff interval has expired, the terminal is logged off and conversations directed to the terminal are assigned from the terminal to the user/SPQB and maintain the status they held at the time the virtual terminal was logged off; the conversations are not exited.
See Extended Options on page 585 for additional information on exiting conversational transactions.

**Standard Idle Conversation Logoff/Exit Interval**

Under all versions of IMS, this interval is used when all of the following conditions exist:

- The terminal is in conversational mode.
- No alternate interval options are specified for the user currently signed on to the terminal.
- The idle conversation logoff and exit standard interval option is specified, but not as zero.

**Alternate Idle Conversation Logoff/Exit Interval**

Under all versions of IMS, this interval and is used when all of the following conditions exist:

- The terminal is in conversational mode.
- The alternate interval option is specified for the user currently signed on to the terminal.
- The idle conversation logoff and exit alternate interval option is specified, but not as zero.

**Held Conversation Exit Interval**

Under all versions of IMS, this interval specifies how long held conversations are kept before being exited after one of the following has occurred:

- A disconnect
- An operator /HOLD
- A terminal in conversational mode with an Idle Conversation Logoff/Exit Interval of zero is logged off after the expiration of the Idle Terminal Logoff Interval, as explained in “Idle Conversation Logoff and Exit” on page 455.

Held conversations are exited with an internal /EXIT command when the amount of time since the last conversational input exceeds the held conversation exit interval. If the held conversational exit interval is specified as zero, conversations will always be
held and will never be exited. This feature only applies to conversations associated with disconnected virtual and non-virtual terminals (those not logged on). See Setting Limits for Virtual Terminals on page 98 for more information on setting virtual terminal limits.

**Note**

A disconnect in this case can mean a virtual terminal automatic logoff, a lost terminal, an IMS shutdown, system crash, etc. In the event of a system shutdown or abend, the hold takes place after IMS has been restarted.
Virtual Printers

This chapter describes the use of virtual printers and output destinations and how IMS BMP and MPP programs send output to them.

Introduction

Virtual printer sessions are LTERMs and corresponding nodes that do not have to be present in the IMSGEN for IMS BMP and MPP programs to send output to them. DELTA PLUS uses models defined in the IMSGEN to create the control blocks required for virtual printers to function. You do not have to change IMS application programs to send output to virtual printers.

A virtual printer is any SLUTYPE1 or 328x-type printer that is not defined in an IMSGEN, and whose node name and LTERM name are contained in a table in the DELTA IMS Translate Subsystem Services (TSS). A possible virtual printer LTERM name can be validated and, when needed, translated into the virtual printer node name. Virtual printer LTERMs are created when needed, and additional elements are created shortly after output is ready to be sent to the printer.

This chapter explains how to set up virtual printers and virtual remote LTERMs, how to handle unsolicited output to undefined virtual LTERMs, and how to use the Timer facility.

Virtual Printer Setup

To activate virtual printers, create a Translate Subsystem Services (TSS) virtual printer table and specify its name in the IMSID basic options.

See “Translate Subsystem Services Tables” on page 469 for more information.
TSS Virtual Printer Table

To create a virtual printer, you must first define a TSS table.

A suggested name for this table is VPRINTER. The table consists of an 8-byte argument column and a 16- to 32-byte function column. The argument specifies an LTERM which can be used as a virtual printer while the function comprises a split node/model/modetable entry.

Specify each portion of the function column on the VPRINTER table as follows:

- For the node portion of the VPRINTER table, specify the appropriate VTAM node name to be used to create the virtual printer session.

- For the model portion of the VPRINTER table, specify any appropriate IMSGEN-defined printer definition to serve as the model to build a virtual printer session.

- For the optional modetable portion of the VPRINTER table, you may specify a modetable definition to be used for the virtual printer session. This modetable will override the one already defined for this node.

The Stage-1 Conversion Aid DLA#BILD can be useful when you initially load the TSS table. See “Stage-1 Conversion Aid” on page 507 for more information.

You can specify a table name other than VPRINTER on the Virtual Terminal Options panel, but you must have created a TSS table with that name. “Translate Subsystem Services Tables” on page 469 for more information.

Several virtual printer LTERMs may designate the same node name, functioning in a manner similar to multiple LTERM names for a printer created with an IMSGEN. When the same printer node name is specified in several function fields, it is important that each specify the same model name; otherwise, results may not be consistent. Virtual printer LTERMs cannot designate a IMSGEN-defined node.

The LTERM name must conform to IMS naming conventions. It may not duplicate an LTERM, transaction code, or remote LTERM defined in the IMSGEN or by DELTA IMS, which includes LTERMs added by the DELTA List Execute function or DELTA IMS VIRTUAL TERMINAL. The node name must be the name of a VTAM terminal of the type defined for the given model in the IMSGEN.

Table 65 on page 461 shows a sample VPRINTER table.
### Table 65: Sample Virtual Printer TSS Table

<table>
<thead>
<tr>
<th>Argument &lt;LTERM-►</th>
<th>Function</th>
<th>&lt;node-►</th>
<th>&lt;model-►</th>
<th>&lt;keyword=value-►</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTERM001</td>
<td>VPNODE01</td>
<td>VPMOD#01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTERM002</td>
<td>VPNODE01</td>
<td>VPMOD#01</td>
<td></td>
<td>MODETBL=modetable a</td>
</tr>
<tr>
<td>LTERM003</td>
<td>VPNODE02</td>
<td>VPMOD#01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTERM004</td>
<td>VPNODE03</td>
<td>VPMOD#02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a If the optional modetable name is entered on the VPRINTER table, it will override the mode table already defined for that node. No other entries for that table will be affected.

As printers are removed from the IMSGEN, corresponding entries must be added to the VPRINTER table.

If the LTERM is specified in the TSS table VPRINTER, DELTA PLUS supports insertion of messages to a virtual printer LTERM via an alternate IO PCB.

### Virtual Printer Models

DELTA PLUS uses models to create the control blocks for virtual printers. All virtual printer models must be defined as SLUTYPE1 devices, even those for 3284, 3286, and 3287 devices. If different IMSGEN-defined terminal features and options are required at different virtual printers, more than one model printer will be required. Use the VPRINTER table to define candidate virtual printers.

Virtual printers that use models defined to IMS with OPTIONS=DISCON are automatically logged off whenever the queue count is zero. The OPTIONS=DISCON parameter takes precedence over any virtual printer logoff interval you specify on the Virtual Terminal Limits panel. The parameter also takes precedence over the No Automatic Timeout option in a Virtual Printer Timer Override table.

Include a virtual printer model in the IMSGEN by specifying a TYPE macro with UNITYPE=SLUTYPE1. Do not specify the COMPT2, COMPT3, or COMPT4 keywords on the TYPE or TERMINAL macros. The first operand for the COMPT1 keyword must specify PRINTER1; the second and third operands are up to you to specify. DELTA PLUS ignores the logical terminal name specified for the model definitions.
A sample virtual printer model is shown in Figure 75 on page 462. A question mark (?) indicates that you can specify a site-dependent value. When specifying virtual printer models, use only the keywords shown in the figure.

**Figure 75: Sample Virtual Printer Model Definition**

```
TYPE UNITYPE=SLUTYPE1
TERMINAL NAME=VPMOD#01,EDIT=?,MSGDEL=?,MODETBL=?,
     COMPT1=(PRINTER1,?,?),SEGSIZE=?,OUTBUF=?,
     OPTIONS=?
NAME VPMOD#01
```

**Virtual Printers**

A virtual printer is created when IMS attempts to locate a destination unknown to the system. This occurs when an MPP or BMP does an insert to an alternate TP PCB for an unknown LTERM. Using TSS, DELTA PLUS attempts to translate the LTERM into the VPRINTER node name and model.

If translation fails, an appropriate status code for an unknown LTERM is returned to the application program. If the translation is successful, DELTA PLUS creates a virtual printer LTERM and performs the following actions.

DELTA PLUS uses IMS facilities to create the virtual printer LTERM and assign it to a virtual printer. DELTA PLUS then writes an X'DE18' log record to the IMS system log. DELTA PLUS then searches the TSS Virtual Printer Timer Override table for an override value. This value is passed to the virtual terminal Timer facility.

For information on the related topic of virtual terminal exits, see Virtual Terminal Sample Exit Routines on page 520.

**Virtual Printer Autologon**

DELTA PLUS supports the autologon of virtual printers.

**To enable the autologon capability**

1. The VTAM CINIT LUTYPE field in the VTAM PSERVIC parameter of the VTAM MODEENT macro must be X'01'. Example:

```
MODEENT LOGMODE=SCS,
     FMPROF=X'03',
     TSPROF=X'03',
     PRIPROT=X'B1',
     SECPROT=X'90',
     COMPROT=X'3080',
     SRCVPAC=X'01',
     RUSIZES=X'87C6',
     PSNDPAC=X'01',
     PSERVIC=X'01000000E100000000000000'
```
Note

Byte 1 of the PSERVIC is the LUTYPE and must be X'01' for a SLUTYPE1 printer.

2 If you chose to use default model node names for the various device types on the Virtual Terminal Logon panel, specify a SLU1 model node name. If you chose to translate the VTAM terminal type and screen size to a model name, specify the name of a TSS translate table (usually LMODEL) and populate it with SLU1.xx entries. SLU1 VTAM definitions often use a SLU100 table entry.

If you have SLU1 devices that require different macro parameters, set up a different logon model for each set of needed options. This may require a TSS table lookup by node name and a customer-supplied VIRTUAL TERMINAL logon exit to determine which model is required.

You can use the same method you are now using to determine the VIRTUAL TERMINAL logon model for SLU2, 3270, or SLUP devices as long as the correct logon model is passed to DELTA PLUS prior to creation.

Inoperative or Nonexistent Virtual Printer Devices

DELTA PLUS uses IMS facilities to create the virtual printer and assign the virtual LTERM to a user/SPQB of the same name. If the LTERM cannot be assigned, IMS will issue the appropriate error messages. You can then use standard IMS diagnostics to find and resolve the problem.

Virtual Remote LTERMs Setup

When an application program in an IMS system using the Multiple Systems Coupling (MSC) feature has to direct output to an LTERM on another IMS system, IMS requires that the target LTERM be IMGEN-defined to each system; one as remote, the other as local. DELTA PLUS removes this requirement by creating virtual remote LTERMs.

TSS Virtual Remote LTERM Table

Specify a TSS table name to enable virtual remote LTERMs. The TSS table contains an eight-byte argument and an eight-byte function representing the virtual remote LTERMs and their corresponding MSNAMEs.
Virtual Remote LTERMs

A virtual remote LTERM is created when an MPP or BMP inserts output to an unknown LTERM destination. The virtual remote LTERM TSS table is searched for the required LTERM name; if it is found and if the associated MSNAME is valid, a temporary remote LTERM (RCNT) control block is created. The control block is created in the lowest level save area of the ITASKs save set, so it is only available to that ITASK.

There is no verification made that the LTERM actually exists in the target system; if it does not, the output is discarded when received by the target system. However, if the LTERM is also listed in the unsolicited output LTERM table on the target system, DELTA PLUS creates the required LTERM.

Since the remote LTERM definition is temporary, it never shows on a display of LTERMs and cannot be the target of any IMS operator commands. To display, change, or delete it, update and refresh the TSS table.

Virtual Printer Override

Using the /ASSIGN command to redirect the output from one virtual printer to another is called virtual printer override (VPO). VPO is useful when a production printer is inoperative and the printer’s output must be routed to a working printer.

You can redirect the virtual printer output to another virtual printer using the VPO parameter. See Using the /ASSIGN Command on page 413 for an explanation of /ASSIGN command syntax.

While it is not necessary for the LTERM or the node to exist for a virtual printer override to take place, both must exist in the TSS VPRINTER table. The assignment is effective until another assignment is made or IMS is cold started.

When a VPO is performed, the /ASSIGN command creates an entry in an area called VTFVOPOPL. This area is named during initialization through IMODULE GETMAIN, according to the amount of user-specified VPOs. The entry in VTFVOPOPL links the LTERM name from the TSS VPRINTER table with the node name and model name from the VPRINTER table. If the node name does not exist in the VPRINTER table but was created through the VTAM automatic logon feature and exists when the /ASSIGN command is issued, the LTERM will be assigned to this virtual node.

Virtual printer overrides are retained across warm and emergency restarts. VPOs are searched before the virtual printer table, thus making the table entry for the LTERM
irrelevant when that LTERM is overridden. You do not need to update the table to correspond with the override.

VPOs are cancelled only by reissuing the /ASSIGN command that created the virtual printer override or cold starting the IMS system.

If a virtual printer LTERM is assigned to a IMSGEN-defined node or BTAM line and PTERM, a VPO control block is not created. If a virtual printer override control block already exists for the LTERM, it is deleted.

**Tip**
To use VPOs, you must have allowed a sufficient number of VPO entries in the IMSID options.

---

# Timer Facility for Virtual Printers

The DELTA PLUS Timer facility provides a time monitoring facility to track activity on virtual terminals and printers. The Timer facility enables you to establish standard, alternate, or zero values for automatically logging off idle virtual printers and terminals. Under all versions of IMS, a zero value disables the Timer facility.

## Unattended Virtual Printer

The DELTA PLUS Timer facility tracks all idle printers and logs them off IMS after a period of time that you specify.

Optionally, DELTA PLUS can notify the IMS Master Terminal Operator each time a virtual printer has been automatically logged off or a conversation has been exited. See Timer Facility for Virtual Terminals on page 453 for more information on setting virtual terminal limits.

## Idle Printer Logoff

The idle printer logoff occurs if the virtual printer options for idle virtual printer logoff intervals are specified. The standard and alternate intervals specify the amount of time a virtual printer is inactive before an internal /CLDST command is issued. You can set the intervals at virtual printer creation time.

For more information on setting virtual terminal limits, see Setting Limits for Virtual Terminals on page 98.
When DELTA PLUS logs off an idle virtual printer, LTERMs that have no status and no queued messages are deleted; LTERMs that have queued messages or some status remain assigned to the user/SPQB that was created when the virtual printer was logged on.

Note
LTERMs with no status and no messages queued may be retained when DELTA PLUS logs off a virtual printer by assembling the $DLAXOPT macro in the DLASAMP library using the DLA#XOPT member in the DLACNTL library. Specify DCNT=NO to implement this option.

Unsolicited Output to Undefined Virtual LTERMs

Application programs can send non-conversational messages to virtual LTERMs before the LTERM is initially defined.

In this way, an MPP or BMP program can create output for a terminal user before the user ever logs on or signs on to a virtual terminal. After completion of the logon/signon, the output messages are made available to the user.

The Unsolicited Output feature is invoked when IMS attempts to locate a destination (LTERM) that is unknown to the system. Before this feature is invoked, DELTA PLUS will first attempt to find the destination by searching the following types of LTERMs in the order presented below:

1. IMS GENed LTERMs, transactions, and remote LTERMs
2. LTERMs and transactions added by DELTA IMS DB/DC
3. Previously defined virtual LTERMs that are still in existence
4. Virtual remote LTERM TSS table (if system is MSC capable)
5. Virtual printer TSS table
6. Unsolicited output TSS table

At this point, DELTA PLUS attempts translation using the Unsolicited Output Support TSS table.

The LTERM is temporarily assigned to user/SPQB VTFBMCUS only for static ISC subpool destinations used as dynamic LTERMS. For all other destinations, the
LTERM is assigned to a user/SPQB with the same name as the LTERM. Subsequently, application program insert, change, and purge calls for this LTERM proceed normally. No application program changes are required.

**Note**
Virtual printer LTERMs cannot be created using the Unsolicited Output TSS table; they must be entered in the VPRINTER TSS table.

To take advantage of the ability to send non-conversational messages to a terminal before the user signs on, specify a TSS table name on the **Unsolicited Output** field on the IMSID Options panel for virtual terminal TSS tables. Using TSS online panels or batch commands, define and load the table. The table argument is 8-bytes long and equals the LTERM name. The function is irrelevant, but TSS requires it to be specified; use a 1-byte function set equal to **Y**.

See “Translate Subsystem Services Tables” on page 469 for more information on TSS tables.

**WARNING**
Use of wildcard characters in the Unsolicited Output table LTERM name can result in invalid LTERM names.

If invalid LTERMs have been created via the Unsolicited Output table, delete them in the following manner:

1. Dequeue/purge any queued messages.
2. Log on to your node and sign on if necessary.
3. Issue a /STOP command for your user.
4. Issue an /ASSign command for the invalid LTERM to your user.
5. Issue a /START command for your user.
6. Log off from your node or issue a /CLOSE command for your node.
7. Issue the /CHE command.
Translate Subsystem Services Tables

This chapter describes the Translate Subsystem Services (TSS) tables and how DELTA PLUS can use TSS during the logon and/or signon of a virtual terminal.

Overview of TSS

TSS provides a flexible means for DELTA PLUS VIRTUAL TERMINAL sites to specify LTERM names, logon models, and other functions for virtual terminals. During the logon and/or signon of a virtual terminal or printer, DELTA PLUS VIRTUAL TERMINAL can use TSS to perform the following tasks:

- Determine the name of a virtual terminal logon model
- Specify an LTERM name, based either on the virtual terminal node or the userid
- Specify use of the alternate virtual terminal Timer facility value
- Specify custom virtual terminal, printer, or LTERM features that you define

Using TSS, DELTA PLUS VIRTUAL TERMINAL can dynamically define and configure IMS elements required for specific applications and user needs, eliminating the need for more IMSGENs.

TSS is a generalized table-lookup facility which is external to the application that invokes it. TSS searches TSS tables for user-specified information that DELTA PLUS VIRTUAL TERMINAL uses to create and configure IMS nodes and LTERMs. When a user or application requires a virtual LTERM, terminal, or printer, the product reads the appropriate TSS table. If TSS finds the requested value in a TSS table, DELTA PLUS VIRTUAL TERMINAL creates and configures the element according to the definition in the table. If TSS does not find a definition of the requested element, the product issues a return code of 4 to indicate that the IMS element is not among those your site has defined.
Structure of TSS Tables

TSS tables are contained in a TSS data set, and have a two-column format: the first column contains an argument value, and the second column contains a function or result value. When DELTA PLUS VIRTUAL TERMINAL queries the TSS tables, it searches for the argument; if the argument is found, DELTA PLUS VIRTUAL TERMINAL returns the corresponding result.

You can set the length of the argument and function/result columns between 1 and 256 bytes. While the number and length of the columns is fixed, you can have as many rows as necessary.

Although each TSS table row contains only one argument and one function, you can create multiple logical functions by including subfields in the function/result. The design of a TSS table depends on the requirements of the application.

Updating TSS Tables

Using TSS commands, you define and maintain TSS tables through the ISPF interface provided with DELTA IMS, through batch routines, or through TSS commands that are issued at the TSO READY prompt and interpreted by the DLATSS TSO command processor.

For batch operation, the TSO command processor runs in a batch region. All of these methods are described in this chapter. See “TSS ISPF Interface” on page 474 for more information on updating TSS tables.

TSS Search Methods

DELTA PLUS VIRTUAL TERMINAL can search TSS tables in two ways: through a binary search, or through a sequential search. When you create a TSS table, you can specify which of these methods will be used during TSS processing.

The default method performs a binary search of the TSS data set to find the appropriate TSS table and the requested argument. This search method does not allow pattern masking. Optionally, DELTA IMS can perform a sequential search that allows pattern masking.

---

**WARNING**

If you have selected multiple LTERM support, a sequential search will be performed on an NLTERM (node to lterm) table only. It will have no effect on any other table. Wildcard masking cannot be performed when doing a sequential search.

---
This search method is less efficient than a binary search and should not be used unless absolutely needed.

**Structure of the TSS Data Set**

The TSS data set is a fixed-length BDAM data set, with an LRECL and BLKSIZE which are equal. There is no required LRECL or BLKSIZE; however, a minimum of 4096 is suggested. TSS uses the relative block number to chain its blocks together.

*Note*

The LRECL and BLKSIZE of the TSS data set are forced to a value of 4096 by the TSS ISPF interface. If this is not acceptable at your site, you may allocate the TSS data set with a different LRECL and BLKSIZE.

The TSS data set is accessed by TSS subroutines which are resident in the IMS address space. Because the subroutine is present in the IMS address space, no inter-region communication is required. Only one TSS data set can be used within any IMS control region at a time.

DELTA PLUS VIRTUAL TERMINAL provides no security or automatic backup for the TSS data set, although the Translate Tables panel in the DELTA PLUS VIRTUAL TERMINAL ISPF interface provides a utility you can use to back up the TSS data set. You should ensure that the TSS data set is protected from unauthorized updating and is regularly backed up.

**TSS Data Set Records**

There are three types of records in a TSS data set:

- **Control records** describe the TSS tables present in the data set. All table definitions must fit in a single control record. Each table definition is 96 bytes.

- **Index records** are used to locate table records with as little I/O as possible. Each index record is itself a mini-table with an argument value representing the highest argument in each individual table block. The corresponding function is the relative block number of the table record. There can be more than one index record per table.

- **Table records** contain the argument-function pairs. Entries are added to a table record until the record becomes full. When a record is full, the next time an entry is added to the table, the table is split in half before the ADD is performed. When a table record is split, a new entry is added to the index record representing the highest entry in the new table record.
Do not perform data compression on any of the TSS data set records.

Updating TSS Data Sets

Consider the following when creating and updating TSS data sets.

Using Wildcard Characters for Searches and Updates

If you specify the wildcard masking option when you create a TSS table, you can use asterisks (*) as wildcard characters when searching for TSS table names, arguments, and functions. When one of these values contains a wildcard, it is considered to be a pattern. The wildcard character can be in the leading, middle, or trailing positions. When in the trailing position, the character will pad to the maximum length of the value, but leading and middle positions must have an * for each character considered to be wild.

When a wildcard character is specified in a pattern type operand of a TSS command, all character values found in the TSS data set are considered to match the wildcard character’s position in the pattern. You can use pattern type operands only in certain situations. See the individual descriptions of the TSS commands for more details.

Establishing Shared Access to TSS Data Sets

You can establish shared access to a TSS data set as follows:

- Using the Disposition field on panels in the ISPF interface
- Using the MVS macros ENQ and DEQ
- Using the OLD or SHR parameters of the DLATSS TSO command
- Using the OLD or SHR parameters of the DLATSS JCL command statement
Keep in mind the following considerations when updating TSS data sets using the ISPF interface, the DLATSS command from a TSO READY prompt, and the DLATSS command statement in JCL.

When attempting to access an existing data set, the disposition of a TSS data set depends entirely on the disposition that was assigned to the data set when it was allocated. When you allocate a TSS data set, the default disposition is SHR.

**Note**
If you attempt to update an existing TSS data set, the OLD and SHR keywords on the DLATSS command or command statement and the Disposition field on the ISPF panels are ignored, since the data set has already been allocated and a disposition has already been specified.

If you allocate a TSS data set with a disposition of OLD, MVS assigns the data set exclusively to one user. In this case, updates from this one user are always allowed and TSS does not perform special enqueues. The update mode keywords EXCL, SHR, and NONE are ignored.

If you use a disposition of SHR, TSS responds to the update mode keywords EXCL, SHR, and NONE. To protect the data set from simultaneous updates from other users, TSS issues a systems-level enqueue on the data set.

### TSS Enqueues

TSS uses a *long-term* and a *short-term* enqueue, as necessary.

- The **long-term** enqueue allows several users to update the TSS data set in shared mode, or one user to update the data set exclusively.

- The **short-term** enqueue is issued by TSS to prevent possible concurrent updating during logical operations such as TSS ADD, DEFINE, LOAD, or UNLOAD. The short-term enqueue is released when the logical operation is completed, and should only be held for a fraction of a second each time.

The update mode keywords EXCL, SHR, and NONE on the DLATSS command or command statement determine how the enqueues are used. SHR is the default.

- EXCL permits one user to update the data set exclusively. Other users may use update mode NONE, but they may not use SHR or EXCL. TSS obtains an exclusive long-term enqueue when EXCL is used. No short-term enqueues are obtained.

- SHR allows multiple users to update the data set concurrently. TSS obtains a shared long-term enqueue when SHR is used, and exclusive short-term enqueues are obtained as needed.
NONE does not permit updates. TSS tables can be examined but not changed. No enqueues are obtained.

Preventing TSS Table Damage

TSS uses the qname SPFEDIT, which is the same qname used by ISPF. Normally, this name will already be defined to Global Resource Serialization (GRS) or its equivalent for propagation to multiple CPUs. If updates from multiple CPUs are expected, ensure that SPFEDIT is defined.

Repairing TSS Table Damage

In the absence of GRS or its equivalent, concurrent updates from multiple CPUs can occur and will cause unpredictable results. When a TSS table is damaged by concurrent updates or another malfunction, you can attempt to repair the damage in two ways: using the LOAD function, or using GRS or its equivalent.

For instructions on using the LOAD function, see “Load a TSS Table” on page 490.

To repair the damage, unload the table, allocate a data set named TSSERROR with LRECL=80, RECFM=FB, then load the table. Any duplicate or out-of-sequence table entries are written to the TSSERROR file for examination. You can then use this data set with the batch READ command to reload the table with any valid entries.

TSS ISPF Interface

The TSS ISPF interface allows you to use TSS commands online to create and maintain TSS tables. This section describes the TSS translate tables option.

For convenience, you can access this option in either of the following ways:

- Type 8 on the DELTA IMS Primary Menu:

  Figure 76: DELTA IMS Primary Menu

  PM  DELTA IMS VT - Primary Menu  Product Level: V6.0.01

  Welcome to DELTA IMS. Select one of the following. Then press Enter.

  _  1. Edit a DELTA List (ES/ED)
  2. Check a DELTA List (CS/CH)
  3. Execute a DELTA List (XS/EX)
  4. IMS commands operator interface (CM)
  5. Customize globals, options, profiles, etc. (CU)
  6. Utility functions (UT)
  7. Statistics for Virtual Terminal (VT)
  8. TSS translation tables (TR)
  I. Interface preferences (VI)

  For options 1, 2, or 3:

  DELTA IMS PDS . . . . DLA.V5.DELTAPDS
- Type 5 on the DELTA IMSS Primary Menu and then 6 on the Customization panel:

**Figure 77: DELTA IMS Customization Panel**

```
CU                         DELTA IMS VT - Customization
Command ===> _________________________________________________________________
Select one of the following. Then press Enter.
_  1. Global options                              (GL)
  2. IMSID options        for IMSID . . KJS1     (IM)
  3. Add user access profiles                    (UA)
  4. Update user access profiles                 (UR)
  5. Keywords for DELTA List edit                (KY)
  6. TSS translation tables                      (TR)
DELTA IMS options library BMC.DLA.LOAD________________________________
Save confirmation . . . . 2  1. Save/update changes without prompting.
                           2. Prompt for confirmation before saving/updating.
```

**TSS Tables Online**

The DELTA IMS ISPF interface enables you to allocate and maintain TSS data sets, including backup data sets.

It enables you to define, edit, test, and reorganize TSS tables online. The Translate Tables panel, shown in the following figure, is displayed after selecting option 8 on the DELTA IMS Primary Menu or after selecting option 6 on the Customization panel.

**Figure 78: Translate Tables Panel**

```
TR                       DELTA IMS VT - Translate Tables
Select one of the following. Then press Enter.
_  1. Edit a table            (TE)     8. Load a table             (LD)
  2. Browse a table          (TB)     9. Refresh tables          (NT)
  3. Test a table            (TT)    10. Format TSS library      (FL)
  4. Search and modify       (TM)    11. Backup TSS library       (UL)
  5. Define a table          (DT)    12. Reorganize TSS library   (RL)
  6. Remove a table          (RT)    13. Status of TSS library    (SL)
  7. Unload a table          (UN)
TSS table library  . . RIHMJD.DELTA.TSS____________________________
Disposition . . . . . SHR       (SHR or OLD)
Table name . . . . . ________  (blank for table selection list)
```

The following fields are available on this panel:
Select one of the following. Then press Enter.

- **1. Edit a table** – Enables you to edit an existing TSS table. This includes adding new entries and deleting or changing entries.

- **2. Browse a table** – Enables you to browse an existing TSS table.

- **3. Test a table** – Enables you to test a TSS table by specifying an argument and checking the function returned.

- **4. Search and modify** – Enables you to exclude or include records in a TSS table, making editing easier. This option also allows you to add new table entries and change or delete table entries.

- **5. Define a table** – Enables you to define a new TSS table.

- **6. Remove a table** – Enables you to remove a table from a TSS library.

- **7. Unload a table** – Enables you to unload existing TSS tables.

- **8. Load a table** – Enables you to load existing TSS tables.

- **9. Refresh tables** – Enables you to refresh existing TSS tables.

- **10. Format TSS library** – Enables you to define TSS tables in a library.

- **11. Backup TSS library** – Enables you to backup a TSS library by unloading all the tables in the TSS library.

- **12. Reorganize TSS library** – Enables you to reclaim unused space in a TSS library.

- **13. Status of TSS library** – Enables you to determine the status on the amount of space remaining in a TSS library.

**TSS table library**

Specifies the data set name of the TSS data set you want to modify or test.

**Disposition**

Tells the DELTA IMS ISPF interface how the table library is allocated to your DELTA IMS session. The default is **SHR**, which allows other users to access the table library. To exclude all other access while performing updates, specify **OLD**.

**Table name**

Enables you to specify a table to be edited, tested, modified, or acted on by one of the table utilities. If this field is left blank, the Table Select panel is
presented for options 1 (Table Edit), 2 (Table Test), and 3 (Table Modify). Option 4 (Table Utilities) does not allow selection from the Table Select panel, and option 5 (Library Utilities) does not require a table specification.

Select a TSS Table

The Table Select panel, shown in the following figure, is displayed whenever Translate Tables panel options Edit, Test, or Search/Modify are specified without naming a TSS table.

Figure 79: Table Select Panel

The following fields are available on this panel:

Command

To add a new table with this panel, type ADD newname, where newname is the name of the new table.

Act

Type one of the following action codes next to the appropriate table name(s), then press Enter. You can make multiple table selections at one time from this panel.

- **S** – Edit the table
- **E** – Edit the table
- **B** – Browse the table
- **T** – Test the table
- **M** – Modify the table

**Table**

The one- to eight-character TSS table name.

**Arg lth**

The length of the argument in the TSS table.

**Fcn lth**

The length of the function in the TSS table.

**Free pct**

The percentage of space (0-99) that should be left in each table block for future expansion during LOAD operations. The default is 0. You can change this value by overtyping it with another value.

**Mask-match**

A table defined with this option causes DELTA PLUS VIRTUAL TERMINAL to treat asterisks (*) in the TSS table as wildcard characters when the **NOSPEED** option is in effect. A table defined with no masking causes a speed search, but an * is not treated as a wildcard in the table. You can change this value by overtyping it with another value.

**No. of Index blocks**

The number of index records currently used by the corresponding table. Index records are discussed in “Structure of the TSS Data Set” on page 471.

**No. of Table blocks**

The number of table records currently used by the corresponding table. Table records are discussed in “Structure of the TSS Data Set” on page 471.

**Title/Description**

An optional description of the TSS table. You can change this value by overtyping it with another value.

With ISPF Version 2.3 or higher, double-byte character set (DBCS) capable terminals (such as the IBM 5550) may edit the **Title/description** field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.
**Edit a TSS Table**

The Table Edit panel, shown in the following figure, is displayed after a TSS table name is typed in the **Table name** field and option 1 is selected on the Translate Tables panel.

With ISPF Version 2.3 or higher, double-byte character set (DBCS) capable terminals (such as the IBM 5550) may edit the **Title** field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.

The TSS table LMODEL, a logon model table used by the Logon Exit sample routine, is used in all the example panels which reference tables so you can see the different ways you can display a table with the DELTA IMS ISPF interface. The complete LMODEL table is shown in Figure 80 on page 479. See this figure to compare the result of the INCLUDE, EXCLUDE, REVISE, REVISEX, and RESET commands, which are discussed in the following sections.

**Figure 80: Table Edit Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Table Edit</th>
<th>Scroll</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title LOGON MODEL TABLE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use the ADD, INCLUDE, EXCLUDE, REVISE, or RESET commands; or type over the functional result field to modify/update a result; or type one or more action codes. Then press Enter.

D=Delete

Row 000001 of 000010

<table>
<thead>
<tr>
<th>Act</th>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>_</td>
<td>SLU221</td>
<td>$SLU2001</td>
</tr>
<tr>
<td>_</td>
<td>SLU222</td>
<td>$SLU2002</td>
</tr>
<tr>
<td>_</td>
<td>SLU223</td>
<td>$SLU2003</td>
</tr>
<tr>
<td>_</td>
<td>SLU224</td>
<td>$SLU2004</td>
</tr>
<tr>
<td>_</td>
<td>SLU225</td>
<td>$SLU2005</td>
</tr>
<tr>
<td>_</td>
<td>327021</td>
<td>$3270001</td>
</tr>
<tr>
<td>_</td>
<td>327022</td>
<td>$3270002</td>
</tr>
<tr>
<td>_</td>
<td>327023</td>
<td>$3270003</td>
</tr>
<tr>
<td>_</td>
<td>327024</td>
<td>$3270004</td>
</tr>
<tr>
<td>_</td>
<td>327025</td>
<td>$3270005</td>
</tr>
</tbody>
</table>

******************************* BOTTOM OF DATA ********************************

**New TSS Table Entry**

To add a new entry to an existing table, type **ADD** on the **Command** line of the Table Edit panel and press **Enter**. The New Table Entry panel, shown in the following figure, is displayed. Type the desired argument and result values; press **Enter** after each entry. Each time you change the argument and press **Enter**, a new entry is added to the table.

**Figure 81: New Table Entry Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - New Table Entry</th>
</tr>
</thead>
</table>

Chapter 16 Translate Subsystem Services Tables 479
Table name: LMODEL

Use the "COPY argument" command to copy an existing entry as a model; or type the desired argument and result values. Press Enter to add each new table entry. Use the END command return to the Table Edit display.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------</td>
<td>--------</td>
</tr>
</tbody>
</table>

## Confirm Deletions

The Confirm Delete panel, shown in the following figure, is displayed when you type **D** in the **Act** field on the Table Edit panel. The Confirm Delete panel lets you select an option to delete or not delete the row from the selected table. The name and title of the selected table are shown at the top of the panel.

**Figure 82: Confirm Delete Panel**

<table>
<thead>
<tr>
<th>TD</th>
<th>DELTA IMS VT - Confirm Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>____________________________</td>
</tr>
<tr>
<td>Table name: LMODEL</td>
<td>Title: LOGON MODEL TABLE</td>
</tr>
<tr>
<td>Select one of the following. Then press Enter.</td>
<td></td>
</tr>
<tr>
<td>– 1. Delete the row from the table</td>
<td></td>
</tr>
<tr>
<td>2. Do not delete the row (CANCEL)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>NODE****</td>
<td>LTER****</td>
</tr>
</tbody>
</table>

## Exclude Table Values

The Table Edit panel initially displays all the entries in a TSS table; however, you can use the EXCLUDE command to specify that certain table entries be excluded from the display. The Exclude Scan Values panel, shown in the following figure, is displayed by typing **EXCLUDE** on the **Command** line of the Table Edit panel and pressing **Enter**. From this panel, you can specify an argument pattern, a function pattern, and/or an argument range to exclude from the table display. You can use the wildcard character (*) when specifying argument and function patterns to exclude.

**Figure 83: Exclude Scan Values Panel**

<table>
<thead>
<tr>
<th>TX</th>
<th>DELTA IMS VT - Exclude Scan Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>____________________________</td>
</tr>
<tr>
<td>Table name: LMODEL</td>
<td>Title: LOGON MODEL TABLE</td>
</tr>
<tr>
<td>Type the search criteria as needed to exclude previously included rows in the next display of the current translation table. Use an asterisk (*) in either of the patterns as a DON'T-CARE character.</td>
<td></td>
</tr>
</tbody>
</table>

| Patterns |
| Argument . . . . |
| Functional result |
In the LMODEL example, typing the argument pattern `SLU2*` and pressing **Enter** will produce the panel shown in Figure 84 on page 481.

Notice that all arguments beginning with `SLU2` have been excluded from the initial table display that was shown in “Edit a TSS Table” on page 479.

**Figure 84: Table Edit Panel after Excluding Arguments**

<table>
<thead>
<tr>
<th>Command ===</th>
<th>DELTA IMS VT - Table Edit</th>
<th>Scroll ===</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title LOGON MODEL TABLE</td>
<td>Row 000001 of 000010</td>
<td></td>
</tr>
<tr>
<td>Act</td>
<td>Argument</td>
<td>Result</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>327021</td>
<td>$3270001</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>327022</td>
<td>$3270002</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>327023</td>
<td>$3270003</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>327024</td>
<td>$3270004</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>327025</td>
<td>$3270005</td>
<td></td>
</tr>
</tbody>
</table>

To redisplay the entire table, type **RESET** on the **Command line** and press **Enter**.

**Include Previously Excluded Table Values**

The Table Edit panel initially displays all the entries in a TSS table; however, after an exclude you can use the INCLUDE command to specify that certain excluded table entries be displayed again. The INCLUDE command causes the Include Scan Values panel to display, from which you can specify an argument pattern, function pattern, and/or argument range to limit the table display. You can use the wildcard character (*) when specifying argument and function patterns to include.

Assuming that all rows of the example TSS table were previously excluded, typing an argument range of `SLU222 - SLU224` (Figure 86 on page 482), and pressing **Enter** will display arguments beginning with SLU2, as shown in Figure 85 on page 481.

**Figure 85: Include Scan Values Panel**

<table>
<thead>
<tr>
<th>TI</th>
<th>DELTA IMS VT - Include Scan Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===</td>
<td>Table name: LMODEL</td>
</tr>
<tr>
<td>Use the search criteria as needed to include previously excluded rows in the next display of the current translation table. Use an asterisk (*) in either of the patterns as a DON'T-CARE character.</td>
<td>Patterns</td>
</tr>
</tbody>
</table>
The INCLUDE command includes only previously excluded argument/function pairs. If you attempt an include from a TSS table which has no excluded entries, nothing happens.

Figure 86 on page 482 shows that the previously excluded argument/result pairs beginning with SLU2.

Figure 86: Table Edit Panel Showing Included Table Values

To redisplay the entire table, type **RESET** on the **Command** line and press **Enter**.

**EXCLUDE and INCLUDE Together**

You can use the Exclude Scan Values panel and the Include Scan Values panel together for maximum flexibility in displaying the entries in a TSS table. You may exclude part of a table, and then include some of the previously-excluded table entries. The following additional example shows how to use the EXCLUDE and INCLUDE commands together:

Beginning with a complete display of the example table LMODEL, you can exclude all entries beginning with 3270 using an argument pattern **3270*** typed on the Exclude Scan Values panel.

The following output is the result:
To include some of the previously-excluded values, request that all arguments ending in 3 be displayed using an argument pattern of *****3 on the Include Scan Values panel.

The following output is the result:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLU221</td>
<td>$SLU2000</td>
</tr>
<tr>
<td>SLU221</td>
<td>$SLU2001</td>
</tr>
<tr>
<td>SLU222</td>
<td>$SLU2002</td>
</tr>
<tr>
<td>SLU223</td>
<td>$SLU2003</td>
</tr>
<tr>
<td>SLU224</td>
<td>$SLU2004</td>
</tr>
<tr>
<td>SLU225</td>
<td>$SLU2005</td>
</tr>
<tr>
<td>327023</td>
<td>$3270003</td>
</tr>
</tbody>
</table>

You can perform EXCLUDE and INCLUDE operations as many times as necessary to arrive at the table you want. Once you have successfully limited your table according to your requirements, you can then modify all included or excluded functions, using the REVISE and REVISEX commands, as described in the following pages.

### Revise Included Rows

If you need to revise several functional result values in a TSS table, type **REVISE** on the **Command** line of the Table Edit panel. This displays the Revise Included Rows panel, shown in the following figure. From this panel you can specify a new function pattern to overlay the displayed (included) functions in your table. You can use wildcard characters (*) to specify which parts of the functions pass through REVISE unchanged.

#### Figure 87: Revise Included Rows Panel

<table>
<thead>
<tr>
<th>Command ===</th>
<th>DELTA IMS VT - Revise Included Rows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title: LOGON MODEL TABLE</td>
</tr>
<tr>
<td>Type (and verify) the functional result pattern to be used to GLOBALLY replace ALL currently displayed rows of the table:</td>
<td>Functional result __________</td>
</tr>
<tr>
<td>Use an asterisk (*) in the pattern to indicate the column positions in the new result value which are to be filled-in from the same column positions in the old result value. As an example:</td>
<td>old-value</td>
</tr>
<tr>
<td>NODE0123</td>
<td>---&gt; LTRM****</td>
</tr>
</tbody>
</table>

Press Enter to GLOBALLY REVISE the table. Use the END command to cancel the revise.
If the display of the example table LMODEL has been limited to include those arguments beginning with SLU2, and then REVISE is performed with the function pattern incl****, all included functions in table LMODEL are prefaced with INCL.

If you use the RESET command after returning to the Table Edit panel, the example table appears as shown in Figure 88 on page 484. All previously excluded rows are again displayed, as are the rows that you have changed.

Figure 88: Table Edit Panel Showing Updated Table Values

<table>
<thead>
<tr>
<th>TE</th>
<th>DELTA IMS VT - Table Edit</th>
<th>Scroll ===》 PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title LOGON MODEL TABLE</td>
<td></td>
</tr>
<tr>
<td>Use the ADD, INCLUDE, EXCLUDE, REVISE, or RESET commands; or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type over the functional result field to modify/update a result; or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type one or more action codes. Then press Enter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D=Delete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Row 000002 of 000010</td>
<td>More: -</td>
<td></td>
</tr>
<tr>
<td>Act</td>
<td>Argument</td>
<td>Result</td>
</tr>
<tr>
<td>---</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>_</td>
<td>SLU222</td>
<td>INCL2002</td>
</tr>
<tr>
<td>_</td>
<td>SLU223</td>
<td>INCL2003</td>
</tr>
<tr>
<td>_</td>
<td>SLU224</td>
<td>INCL2004</td>
</tr>
<tr>
<td>_</td>
<td>SLU225</td>
<td>INCL2005</td>
</tr>
<tr>
<td>_</td>
<td>327021</td>
<td>$3270001</td>
</tr>
<tr>
<td>_</td>
<td>327022</td>
<td>$3270002</td>
</tr>
<tr>
<td>_</td>
<td>327023</td>
<td>$3270003</td>
</tr>
<tr>
<td>_</td>
<td>327024</td>
<td>$3270004</td>
</tr>
<tr>
<td>_</td>
<td>327025</td>
<td>$3270005</td>
</tr>
<tr>
<td>**************************** BOTTOM OF DATA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Revise Excluded Rows

If you need to revise several functional result values in a TSS table, type REVISEX on the command line of Table Edit panel and press Enter. This displays the Revise Excluded Rows panel, shown in the following figure. From this panel you can specify a new function pattern to overlay the non-displayed (excluded) functions in your table. You can use wildcard characters (*) to specify which parts of the functions pass through REVISEX unchanged.

Figure 89: Revise Excluded Rows Panel

<table>
<thead>
<tr>
<th>TV</th>
<th>DELTA IMS VT - Revise Excluded Rows</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===》</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table name: LMODEL</td>
<td>Title: LOGON MODEL TABLE</td>
<td></td>
</tr>
<tr>
<td>Type (and verify) the functional result pattern to be used to GLOBALLY replace ALL currently excluded rows of the table:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use an asterisk (*) in the pattern to indicate the column positions in the new result value which are to be filled-in from the same column positions in the old result value. As an example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>old-value pattern new-value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NODE0123 ---&gt; LTRM**** ---&gt; LTRM0123</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If the display of the example table LMODEL has been limited to exclude those arguments beginning with 3270 and then a REVISEX is performed with the function pattern excl****, all excluded functions in table LMODEL are prefaced with EXCL as shown in Figure 90 on page 485. If a RESET is performed after returning to the Table Edit panel, the example table appears as shown below.

**Figure 90: Table Edit Panel Showing Reset Values**

![Figure 90: Table Edit Panel Showing Reset Values](image)

You can perform further table ADD, INCLUDE, EXCLUDE, REVISE, REVISEX, or RESET commands by typing the desired command on the **Command** line.

### Browse a TSS Table

The Table Browse panel is displayed after a TSS table name is typed in the **Table name** field and option 2 is selected on the Translate Tables panel.

With ISPF Version 2.3 or higher, double-byte character set (DBCS) capable terminals (such as the IBM 5550) may edit the **Title** field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.

The TSS table LMODEL, a logon model table used by the Logon Exit sample routine, is used in all the example panels which reference tables so you can see the different
ways you can display a table with the DELTA IMS ISPF interface. The complete LMODEL table is shown in the following figure:

**Figure 91: Table Browse Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Table Browse</th>
<th>Scroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title LOGON MODEL TABLE</td>
<td>Row 000001 of 000010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Act</th>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLU221</td>
<td>$SLU2001</td>
<td></td>
</tr>
<tr>
<td>SLU222</td>
<td>$SLU2002</td>
<td></td>
</tr>
<tr>
<td>SLU223</td>
<td>$SLU2003</td>
<td></td>
</tr>
<tr>
<td>SLU224</td>
<td>$SLU2004</td>
<td></td>
</tr>
<tr>
<td>SLU225</td>
<td>$SLU2005</td>
<td></td>
</tr>
<tr>
<td>327021</td>
<td>$3270001</td>
<td></td>
</tr>
<tr>
<td>327022</td>
<td>$3270002</td>
<td></td>
</tr>
<tr>
<td>327024</td>
<td>$3270004</td>
<td></td>
</tr>
<tr>
<td>327025</td>
<td>$3270005</td>
<td></td>
</tr>
</tbody>
</table>

TSS Table Test

You can test your TSS tables by specifying a table and typing 3 on the Translate Tables panel. This displays the Table Test panel, shown in the following figure. A test translate has been performed with the example LMODEL table, for argument 327024, and has returned the result shown.

**Figure 92: Table Test Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Table Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table name: LMODEL</td>
<td>Title: LOGON MODEL TABLE</td>
</tr>
<tr>
<td>Type an input argument value and press Enter to display the translated functional result value (using the above table).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Argument</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>327024</td>
<td>EXCL0004</td>
</tr>
</tbody>
</table>

TSS Table Search and Modify

DELTA PLUS VIRTUAL TERMINAL offers an alternate table editing method, Table Modify, which initially limits a TSS table display to a specified argument/function pattern and/or argument range. Type 4 on the Translate Tables panel. The Table Search panel, shown in the following figure, is displayed. In this example, the display of the LMODEL table is limited to only those functions ending in 2.
The wildcard character (*) does not automatically pad the leading positions.

**Figure 93: Table Search Panel**

```
Command ===> _________________________________________________________________
Table name  . . . . LMODEL__

Type the search criteria as needed to find rows which match.
All values must match for the row to be considered a match.
Use an asterisk (*) in either of the patterns as a DON'T-CARE character.

Patterns
Argument . . . . *******2___________________________________________________
Functional result *__________________________________________________________

Argument range
Begin value . . . *__________________________________________________________
End value . . . . *__________________________________________________________
```

**Modify a TSS Table**

The Table Modify panel is displayed after specifications have been made on the Table Search panel. The example Table Modify panel shown below resulted from a Table Search panel specification for the example LMODEL table limited to those functions ending in 2, with the function pattern *******2.

With ISPF Version 2.3 or higher, double-byte character set (DBCS) capable terminals (such as the IBM 5550) can edit the **Title** field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.

**Figure 94: Table Modify Panel**

```
Command ===> _________________________________________________ Scroll ===> PAGE
Table name:  LMODEL                     Title LOGON MODEL TABLE
Use the ADD, INCLUDE, EXCLUDE, REVISE, or RESET commands; or
Type over the functional result field to modify/update a result; or
Type one or more action codes. Then press Enter.
D=Delete
Row 000001 of 000002

Act Argument  Result
_ -  SLU222    INCL2002
_ -  327022    EXCL0002

******************************************************************************
```

After the Table Modify panel is displayed, you can perform further table ADD, INCLUDE, EXCLUDE, REVISE, REVISEX, or RESET commands by typing the desired command on the **Command** line. These commands function the same as they would if they were issued from the Table Edit panel.
Define a TSS Table

The Define Table panel, shown in the following figure, is displayed by typing 5 on the Translate Tables panel and pressing Enter. This panel enables you to define a new TSS table. The Define Table panel can also be accessed by typing ADD on the Command line of the Table Select panel.

With ISPF Version 2.3 or higher, double-byte character set (DBCS) capable terminals (such as the IBM 5550) can edit the Table title field in mixed DBCS/SBCS mode. DBCS-capable terminals can display titles that contain both IBM Kanji double-byte characters and standard characters.

**Figure 95: Define Table Panel**

```
DT                         DELTA IMS VT - Define Table
Command ===> _________________________________________________________________

Type table definition parameters. Then press Enter to define the table.

  Table name . . . . . . . . LMODEL__
  Table title . . . . . . . . ________________________________
  Input argument length . . 8__  (1 to 256)
  Functional result length . 8__  (1 to 256)
  Default free-space . . . 0_ %  (1 to 99 percent)
  Table translation exit . . ________ (load module name)

  Search/masking option . . 1
     1. Hi-speed binary search (no masking allowed)
     2. Sequential search with pattern masking

Use the *COPY table* command to use an existing table definition as a model.
```

Specify the argument and function lengths of a new TSS table, a free-space percent value (that amount of the table which will be added to the initial table allocation for future table expansion), and whether patterned searches are allowed in the table. After you complete specifications for a new table, press Enter to create the table.

Patterned table searches require a longer time to execute because the high-speed TSS binary search algorithm cannot be used.

A table defined with the **Sequential search with pattern masking** option causes DELTA PLUS VIRTUAL TERMINAL to treat asterisks (*) in the TSS table as wildcard characters during searches. A table defined with the **Hi-speed binary search** option causes a DELTA PLUS VIRTUAL TERMINAL to perform a speed search using the high-speed search algorithm. When a speed search is performed, asterisks are not treated as a wildcard character in the table.

**Note**

Using a multiple LTERM per node TSS table for signon or signon bypass requires a special TSS translation which precludes the use of pattern masking in these tables.
Remove a TSS Table

The Remove Table panel, shown in the following figure, is displayed by typing 6 on the Translate Tables panel and pressing Enter. The Remove Table panel displays a list of all the tables in your TSS library. Select a table for removal by typing D in the Act field to the left of the table name. The example Remove Table panel below shows the table LMODEL selected for deletion.

Figure 96: Remove Table Panel

Confirm a Removed TSS Table

The Confirm Remove panel, shown in the following figure, is displayed when you specify a table to delete on the Remove Table panel. This panel lets you select an option to delete or not delete the table.

Figure 97: Confirm Remove Panel
Unload a TSS Table

The Unload Tables panel, shown in the following figure, is displayed by typing 7 on the Translate Tables panel and pressing Enter. This panel is useful for copying and moving TSS tables, and for reallocating TSS libraries.

To copy a TSS table or tables from one TSS library to another, unload the table or tables from the old library, load the table or tables to the new library, then reload the table or tables to the original library.

To reallocate a TSS library, unload all TSS tables from the library, reallocate the library with more storage space, and then load all TSS tables back into the TSS library. You can unload up to 9999 blocks at one time.

**Figure 98: Unload Tables Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Unload Tables</th>
</tr>
</thead>
</table>

- Type the input and output information. Then press Enter to unload.
- **Tables to be unloaded**
  - Table name or mask . . . . *_______
- **Sequential output file**
  - Data set name . . . . . .
  - Disposition status . . . . NEW (DISP=OLD, MOD, or NEW)
  - Volume serial . . . . . . (optional if DISP=NEW)
  - Unit name . . . . . . . . ________ (required if DISP=NEW)
  - New Space quantity . . . . ____ blocks (required if DISP=NEW)

Average block length will be 4096 (table library block-size).

In either case, the Unload Tables panel performs the unload. In addition to performing the unload, you can allocate an unload data set from the Unload Table panel. Follow the prompts provided by the panel.

To unload all tables, enter a wildcard character (*) in the **Table name or mask** field. You can unload a specific table or a table pattern. For example, if the Unload Tables panel has a specification of *LTERM, then all tables with six-character names whose last five characters are LTERM are unloaded.

Load a TSS Table

The Load Tables panel, shown in the following figure, is displayed by typing 8 on the Translate Tables panel and pressing Enter. To load a TSS table into a TSS library, type the name and volume serial of the unload data set that contains the TSS table in the appropriate fields, and type the TSS table name or pattern in the **Tables to be loaded** field.
You can request a specific table to be loaded, or you can use a table pattern with wildcard characters (*). For example, if the Load Tables panel has a specification of *, then all tables in the unload data set are loaded.

**Figure 99: Load Tables Panel**

<table>
<thead>
<tr>
<th>LD</th>
<th>DELTA IMS VT - Load Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt; _________________________________________________________________</td>
<td></td>
</tr>
<tr>
<td>Type the input and output information. Then press Enter to load.</td>
<td></td>
</tr>
<tr>
<td>Tables to be loaded</td>
<td></td>
</tr>
<tr>
<td>Table name or mask . . . . ________ (if loading/renaming a single table)</td>
<td></td>
</tr>
<tr>
<td>New name . . . . . . . . . ________</td>
<td></td>
</tr>
<tr>
<td>Sequential input file</td>
<td></td>
</tr>
<tr>
<td>Data set name . . . . . . __________________________________________________</td>
<td></td>
</tr>
<tr>
<td>Volume serial . . . . : ________________</td>
<td></td>
</tr>
</tbody>
</table>

If you select a specific table (no wildcard characters), you can rename the table by entering a new name.

---

**WARNING**

If you do not use GRS or its equivalent for TSS enqueues and concurrent updates occur from multiple CPUs, unpredictable results will occur, including damage to the TSS table. If this happens, see “Repairing TSS Table Damage” on page 474 for instructions on using the LOAD command to attempt to repair the TSS table.

---

**Refresh a TSS Table**

To refresh all Translate Subsystem Services tables in the IMS control region, type 9 on the Translate Tables panel. The Refresh Tables panel, shown in the following figure, is displayed. Confirm the refresh by pressing **Enter**.

**Figure 100: Refresh Tables Panel**

<table>
<thead>
<tr>
<th>NT</th>
<th>DELTA IMS VT - Refresh Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt; _________________________________________________________________ Scroll ===&gt; PAGE</td>
<td></td>
</tr>
<tr>
<td>IMSID . . . DLA5</td>
<td></td>
</tr>
<tr>
<td>Row 00 of 00</td>
<td></td>
</tr>
<tr>
<td>PRESS THE &quot;ENTER&quot; KEY TO REFRESH ALL TSS TABLES.</td>
<td></td>
</tr>
</tbody>
</table>

This option allows you to flush all TSS look-aside buffers in a specified IMS control region. Press **Enter** to initiate the refresh. Upon completion, the panel will display a list of those tables which were refreshed, errors, or a blank panel if no look-aside buffers existed.

Refreshing the TSS look-aside buffers requires either IMS Update Parms or Execute IMS commands authority. See the installation guide for information on updating user access authorization.
Format a TSS Library

The Format Library panel, shown in the following figure, is displayed by typing **10** on the Translate Tables panel and pressing **Enter**. The prompts provided by this panel will help you format and/or allocate a new TSS library. The space allocation for a TSS library must be at least 2 tracks and can be as large as 9999 tracks or cylinders.

**WARNING**

Use the format with care, as it will *destroy* any existing tables in a TSS library.

**Figure 101: Format Library Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Format Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL</td>
<td></td>
</tr>
<tr>
<td>Data set information</td>
<td></td>
</tr>
<tr>
<td>Data set name . . . . . : DGW.DLA.TSS</td>
<td></td>
</tr>
<tr>
<td>Disposition status . . . : OLD (DISP=OLD or NEW)</td>
<td></td>
</tr>
<tr>
<td>Volume serial . . . . . : DEV085 (optional if DISP=NEW)</td>
<td></td>
</tr>
<tr>
<td>Unit name . . . . . . . . : ________ (required if DISP=NEW)</td>
<td></td>
</tr>
<tr>
<td>DCB information</td>
<td></td>
</tr>
<tr>
<td>Record format . . . . . : FS</td>
<td></td>
</tr>
<tr>
<td>Logical record length : 4096</td>
<td></td>
</tr>
<tr>
<td>Block size . . . . . : 4096</td>
<td></td>
</tr>
<tr>
<td>Data set organization : PS</td>
<td></td>
</tr>
<tr>
<td>Space information (required if DISP=NEW)</td>
<td></td>
</tr>
<tr>
<td>Units . . . . . . . . . . : ____ (TRKS or CYLS)</td>
<td></td>
</tr>
<tr>
<td>Quantity . . . . . . . . : ___</td>
<td></td>
</tr>
</tbody>
</table>

**Note**

The LRECL and BLKSIZE of the TSS data set are forced to a value of 4096 by the Translate Subsystem Services ISPF interface. If this is not acceptable at your site, use JCL to allocate the TSS data set with a different LRECL and BLKSIZE.

Back Up a TSS Library

The Unload Library panel, shown in the following figure, is displayed by typing **11** on the Translate Tables panel and pressing **Enter**. Use this option to back up a TSS library by unloading all the tables in the TSS library. This unload does not allow a specific table or table pattern to be indicated for unloading. You can specify up to 9999 blocks.

**Figure 102: Unload Library Panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DELTA IMS VT - Unload Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>Type the output information. Then press Enter to unload.</td>
<td></td>
</tr>
<tr>
<td>Sequential output file</td>
<td></td>
</tr>
<tr>
<td>Data set name . . . . . :</td>
<td></td>
</tr>
<tr>
<td>Disposition status . . . : NEW (DISP=OLD or NEW)</td>
<td></td>
</tr>
</tbody>
</table>
Reorganize a TSS Library

The Reorganize Library panel, shown in the following figure, is displayed by typing **12** on the Translate Tables panel and pressing **Enter**. This panel allows you to reclaim lost space in a TSS library whenever a large number of TSS tables or their entries have been deleted from the TSS library.

The Reorganize utility requires the use of a temporary output data set, indicated by the initial &UNLOAD entry. You can type a permanent data set name on that line to retain a backup copy of the TSS library before reorganizing. Follow the prompts on the panel to allocate the data set and begin the reorganization. You can specify up to 9999 blocks.

![Figure 103: Reorganize Library Panel](image)

Create a Library Status Report

The TSS Library Status panel, shown in the following figure, is displayed by typing **13** on the Translate Tables panel and pressing **Enter**. This panel allows you to create a summary or detailed report on the TSS Library either online or in batch mode.

To generate a report, the library you specify is examined for any logical errors, including out-of-sequence or duplicate records, broken pointers, and invalid index records. You can specify up to 9999 tracks.
The Library Status utility requires the use of an output data set. The default data set name is &REPORT. You can specify a permanent data set name if you want to create a permanent copy of the report.

Figure 104: TSS Library Status Panel

```plaintext
SL                      DELTA IMS VT - TSS Library Status
Command ====> ________________________________________________________________
Type the output dataset information. Then press Enter to get statistics.
Sequential output file (may be a temporary data set)
Data set name . . . . . . &REPORT (DISP=OLD or NEW)
Disposition status . . . . NEW (optional if DISP=NEW)
Volume serial . . . . . . ______ (required if DISP=NEW)
Unit name . . . . . . . . SYSDA___ (required if DISP=NEW)
New Space quantity . . . . ____ tracks (required if DISP=NEW)
Type of report . . . . . . 1  1. Summary report.
                         2. Detail report (for error analysis).
```

Note
See “TSS Table Batch Reports” on page 510 for information on creating a batch version of this report.

Generating Library Status Reports

If you select a summary report on the TSS Library Status panel, the TSS Status Browse panel, shown in the following figure, is displayed. The summary report begins with messages for any errors that are detected. In the report example below, no errors were found and no error messages are displayed.

Figure 105: TSS Status Browse Panel

```plaintext
SL                      DELTA IMS VT - TSS Status Browse
Command ====> ________________________________________________ Scroll ====> PAGE
Line 000001 of 000043  Cols 001 080
More:     + >
TSS TABLE LIBRARY SUMMARY
DATA SET NAME . . . . : DGW.DLA.TSS
LAST FORMATTED ON . . : 09/27/90 17:51:33   BY . . : DGW2TSS
LIBRARY BLOCKSIZE . . . . . . . . : 4096
MAXIMUM NUMBER OF TABLES THAT CAN BE DEFINED. : 42  100%
NUMBER OF TSS TABLES NOW DEFINED . . . . : 19  45%
NUMBER OF BLOCKS ALLOCATED . . . . : 150  100%
NUMBER OF BLOCKS FORMATTED FOR USE . . : 150  100%
NUMBER OF BLOCKS IN USE . . . . . . : 51  34%
NUMBER OF BLOCKS UNAVAILABLE (DEAD SPACE) . . : 58  39%
NUMBER OF BLOCKS FREE . . . . . . : 41  27%
RECOMMENDATIONS:
REORGANIZING THE TABLE LIBRARY WOULD PROVIDE SOME BENEFIT AND IS SUGGESTED.
```

For most purposes, the summary report is sufficient. To generate this report, the library is examined for logical errors, including out-of-sequence or duplicate entries,
broken pointers, and invalid index records. The summary report begins with messages for any errors that are detected. These conditions are unusual, and it is unlikely you will ever see any such messages.

The detail report contains information about the contents of each block in the data set and may be useful if error conditions are detected.

Following the detail and error reports (if any), a one-page library summary is produced, listing the date and time that the library was last formatted, along with the userid or job name that did the formatting.

The library summary also lists the amounts of allocated, formatted, used, free, and dead space in the library. The allocated space should match the formatted space unless the library was moved to a different type of device or a larger data set since it was last formatted. If so, you must reorganize the library to make use of the extra space. TSS will only use space that is formatted (secondary extents will never be obtained during TSS processing). Dead space is space that was occupied by tables that have since been deleted. You can recover dead space by reorganizing the library.

**Recommendations**

One of the following five recommendations will be made concerning table reorganization:

- **ERRORS DETECTED. REORGANIZE THE TABLE LIBRARY AS SOON AS POSSIBLE.**
  
  If any errors are detected in the library, such as out-of-sequence records or broken pointers, this recommendation will be made, regardless of free-space or other criteria.

- **THE TABLE LIBRARY SHOULD BE REORGANIZED AS SOON AS POSSIBLE.**
  
  This recommendation is made if:

  — More than two-thirds of the library is unusable dead space

  — Any one table contains more than two-thirds free space

  — The library contains more than five empty table blocks

  The last two criteria identify tables that have had a large number of rows deleted.

- **REORGANIZING THE TABLE LIBRARY WOULD PROVIDE SOME BENEFIT AND IS SUGGESTED.**
  
  This recommendation is made if:

  — More than one-third of the table library is dead space

  — Any one large table is more than half free space
— Any empty table blocks exist

- **REORGANIZING THE TABLE LIBRARY WOULD PROVIDE ONLY MINOR BENEFITS AND IS THEREFORE NOT REQUIRED.**

  This recommendation is made if the table library is between 10% and 33% dead space, or if any one table has significantly more free space than was requested (but less than 50%).

- **THERE IS NO NEED TO REORGANIZE THE TABLE LIBRARY.**

  This recommendation is made if none of the criteria listed above is met.

The last page of the report lists all tables in the library with summary information for each table. The detail report also lists all tables which previously existed in the library but which have been deleted.

## Batch TSS Commands

There are three types of TSS commands:

- **TSS data set commands** apply to the TSS data set and affect all tables in the data set.

- **TSS table commands** apply to a specific TSS table or, in some instances, to a group of tables.

- **TSS table entry commands** affect only a specific argument/function pair or, in some instances, a group of argument/function pairs.

The following table lists the TSS commands and provides a brief description of their actions. You can issue all TSS commands from the DELTA IMS ISPF interface panels, the TSO READY prompt, or in a batch job stream. These TSS commands execute as subcommands of the single TSO command processor load module named DLATSS.

### Table 66: TSS Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD</td>
<td>Create new TSS table entries</td>
</tr>
<tr>
<td>CALL</td>
<td>Call a user written TSS program</td>
</tr>
<tr>
<td>DEFINE</td>
<td>Define a TSS table and its characteristics</td>
</tr>
<tr>
<td>DELETE</td>
<td>Delete TSS table argument/function pairs</td>
</tr>
<tr>
<td>END</td>
<td>Terminate a TSS session</td>
</tr>
<tr>
<td>FORMAT</td>
<td>Format a TSS data set</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LIST</td>
<td>Display a TSS table and its contents</td>
</tr>
<tr>
<td>LOAD</td>
<td>Load a TSS table from a physical sequential data set</td>
</tr>
<tr>
<td>READ</td>
<td>Read a data set containing TSS commands</td>
</tr>
<tr>
<td>REMOVE</td>
<td>Delete a TSS table</td>
</tr>
<tr>
<td>RENAME</td>
<td>Change table argument values without changing (or rekeying) the function values</td>
</tr>
<tr>
<td>REPLACE</td>
<td>Update a TSS table, changing Title, Free Space Percent and/or SPEED/NOSPEED option</td>
</tr>
<tr>
<td>REVISE</td>
<td>Change existing TSS table entries</td>
</tr>
<tr>
<td>SET</td>
<td>Establish a QUOTES or NOQUOTES mode</td>
</tr>
<tr>
<td>TR</td>
<td>Translate an argument</td>
</tr>
<tr>
<td>UNLOAD</td>
<td>Unload a TSS table to a physical sequential data set</td>
</tr>
</tbody>
</table>

The following sections describe the TSS commands in greater detail and explain the syntax notation conventions used in the command descriptions.

**DLATSS TSO Command Processor**

Use the DLATSS TSO command processor to begin a TSS session and process TSS commands.

Once the DLATSS TSO command processor has been activated, the TSS command processor responds with the TSS prompt. All commands issued at this prompt are treated as TSS commands until an END command is issued. You can activate the DLATSS TSO command processor from the TSO READY prompt or in a batch job stream.

**Figure 106: DLATSS TSO Command Processor Syntax**

You can use the following keywords with the DLATSS TSO command processor:
dsname

The name of the TSS data set.

VOLUME

Required if data set is not cataloged.

DD

Data definition name.

OLD

Exclusive data set.

SHR

Shared data set (default). When access to a TSS data set is shared, the following parameters can be used to limit access. See “TSS Enqueues” on page 473 for information on the use of these parameters.

- SHR – Shared update (default)
- EXCL – Exclusive update
- NONE – No shared data set

TSS Data Set Commands

There are three TSS data set level commands:

- FORMAT
- READ
- END

FORMAT

The FORMAT command initializes a TSS data set so that table definitions and table entries can be made. The command requires a TSS data set disposition of OLD. Formatting a TSS data set erases all TSS tables present in the data set.

Figure 107: TSS Data Set FORMAT Command Syntax
**READ**

The READ command specifies the ddname of a data set, either physical sequential or a PDS library member, that contains TSS commands. When READ and the ddname are specified to TSS, all the commands in the READ data set are presented to TSS, just as if they were entered from a TSO READY prompt. The format for the READ command is shown below.

Use the ALLOCATE command from the TSO READY prompt to assign the ddname, or include a DD card for the DSN to be read for a batch job.

*Figure 108: TSS Data Set READ Command Syntax*

```
READ ddname
```

**END**

The END command terminates a TSS session.

*Figure 109: TSS Data Set END Command Syntax*

```
END
```

**TSS Table Commands**

There are six TSS table level commands:
- DEFINE
- REPLACE
- REMOVE
- LIST
- UNLOAD
- LOAD

**DEFINE**

The DEFINE command defines a table and its characteristics to TSS.
DEFINE writes a table definition record to the TSS table control record and initializes the first index and table records for the table. You must specify an argument and function length.

**Figure 110: TSS Table DEFINE Command Syntax**

![DEFINE Command Syntax Diagram](image)

You can use the following keywords with the DEFINE command:

- **tablename**
  
  Name of the table being defined.

- **LENGTH**
  
  Specifies the length of the argument and function pairs.

- **TITLE**
  
  A title or description of the table being defined; the title/description is displayed on the Select TSS Table panel and similar panels (see “Select a TSS Table” on page 477 for an example). The format for this parameter is a character string enclosed in quotes with a maximum length of 32 characters.

- **FRSPC**
  
  Specifies the percentage of free space (0-99) to be left in each table block for future additions to the table during a LOAD operation.

- **EXIT**
  
  Specifies the load module name of the translation assist exit used by this table.

- **SPEED**
  
  Instructs TSS that pattern masking will not be allowed during searches of the TSS table. This parameter causes TSS to use the high-speed search algorithm, which results in faster searches of the TSS table. SPEED is the default parameter for the DEFINE command.
NOSPEED

Instructs TSS that pattern masking will be allowed during searches of the TSS table. This parameter causes TSS to treat asterisks (*) as wildcard characters, which result is more flexible but slower table searches.

REPLACE

The REPLACE command changes the table definition parameters.

Use this command to update table title, free space percentage, translation assist exit load module name, or SPEED/NOSPEED options. You cannot reset the argument length and function length.

Figure 111: TSS Table REPLACE Command Syntax

You can use the following keywords with the REPLACE command:

**tablename**

Name of the table you want to change.

**TITLE**

A title or description of the table being defined; the title/description is displayed on the Select TSS Table panel and similar panels (see “Select a TSS Table” on page 477). The format for this parameter is a character string enclosed in quotation marks with a maximum length of 32 characters.

**FRSPC**

Specifies the percentage of free space (0-99) to be left in each table block for future additions to the table during a LOAD operation.

**EXIT**

Specifies the load module name of the translation assist exit used by this table.

**SPEED**

Instructs TSS that pattern masking will not be allowed during searches of the TSS table. This parameter causes TSS to use the high-speed search algorithm,
which results in faster searches of the TSS table. SPEED is the default parameter for the DEFINE command.

**NOSPEED**

Instructs TSS that pattern masking will be allowed during searches of the TSS table. This parameter causes TSS to treat asterisks (*) as wildcard characters, which result is more flexible but slower table searches.

**REMOVE**

The REMOVE command deletes a TSS table and all of its entries. Once a TSS table is removed, its space is not freed, but remains as dead space until the TSS data set is reorganized. See the LOAD and UNLOAD commands later in this section for information on TSS data set reorganization.

**LIST**

The LIST command displays information about the tables in a TSS data set and their contents.

Each table matching the table-name pattern is listed. The argument length, function length, title, and SPEED/NOSPEED options are displayed along with the table name.

To list basic table information, specify:

```
LIST tablenamepattern
```

For more information, specify:

```
LIST tablenamepattern ALL
```
or any other combination of table-name-pattern and ARGUMENT, RANGE, and/or FUNCTION.

Figure 113: TSS Table LIST Command Syntax

---

**UNLOAD**

The UNLOAD command creates a transportable copy of a TSS table or group of TSS tables. You can specify a group of TSS tables using a wildcard character to create a table name pattern, which unloads all tables matching the pattern. Specify an argument pattern, using the wildcard character, or an argument range to limit UNLOAD.

If you omit the table name, then all tables are unloaded.

When specifying UNLOAD, the output data set must be pre-allocated; if it is not, the following message is issued.

BMC1864 ALLOCATION FAILED

Figure 114: TSS Table UNLOAD Command Syntax

---

**LOAD**

The LOAD command loads a copy, created with the UNLOAD command, of a TSS table or a group of TSS tables.

You specify a group of TSS tables using a wildcard character to create a table name pattern, which loads all tables matching the pattern. Specify an argument pattern, using the wildcard character, or an argument range to limit LOAD.
If you specify RENAME, the table loaded is renamed. RENAME requires that the TABLE parameter refer to a specific input table.

Figure 115: TSS Table LOAD Command Syntax

TSS Table Entry Commands

There are six TSS table entry level commands:
- ADD
- DELETE
- RENAME
- REVISE
- SET
- TRANSLATE

ADD

The ADD command creates a new argument/function entry for a specific TSS table. You can specify wildcard characters only if the table was defined with the NOSPEED option.

See “DEFINE” on page 499 for more information about the SPEED/NOSPEED option.

New entries are added to a table in alphabetic sequence, according to the argument. If a record split occurs because of an ADD, a new entry will be added to the table index record.

Figure 116: TSS Table Entry ADD Command Syntax

DELETE

The DELETE command removes an existing row from a TSS table. It can be specified for an individual row by a specific argument or for several rows matching an
argument or function pattern. If more than one entry is to be deleted, the ALL parameter is required. The table name and argument pattern are required parameters for this command.

Figure 117: TSS Table Entry DELETE Command Syntax

```
DELETE  tablename  argumentpattern  Function(functionpattern)  ALL
```

**RENAME**

The RENAME command allows a specific old argument pattern in one or more TSS table entries to be changed to a new argument pattern without changing the function value. If you want to retain parts of the old argument, use asterisks (*) to indicate which positions in the old argument are to be retained in the new argument. The old argument pattern and new argument pattern are required parameters. ALL is an optional parameter that indicates that all arguments matching the old argument pattern are to be changed. The default is to only change the first match.

Figure 118: TSS Table Entry RENAME Command Syntax

```
RENAME  tablename
oldargumentpattern  newargumentpattern  ALL
```

**REVISE**

The REVISE command assigns a new function value to a specific argument or to a group of arguments. ALL is an optional parameter that indicates that all functions that match the argument pattern are to be changed. When ALL is specified, asterisks (*) are interpreted as wildcard characters.

If ALL is not specified, however, asterisks will not be interpreted as wildcard characters. It is assumed that the desired argument actually contains asterisks. Only the first match found in the table is revised.

Figure 119: TSS Table Entry REVISE Command Syntax

```
REVISE  tablename
argumentpattern  newfunction  ALL
```

**SET**

The SET command establishes QUOTES or NOQUOTES mode for TSS. When in QUOTES mode, you must enter all TSS argument and function specifications,
regardless of the command, within quotation marks to allow embedded blanks to be included within argument and function values. When in NOQUOTES mode, quotes are never used, and embedded blanks are not recognized for argument or function values in TSS commands.

**Figure 120: TSS Table Entry SET Command Syntax**

TRANSLATE

The TRANSLATE (TR) command queries a TSS table. When an argument or argument pattern is presented with the TR command, the TSS displays either the corresponding function or an error message.

If the table has the SPEED option, asterisks (*) in the argument-pattern are not wild and must be found in the table. If the table has the NOSPEED option, asterisks in the argument-pattern are wild. In this case only the first match in the table is returned.

Since the matching algorithm is not defined, a variation in algorithm or additions or deletions to the table can cause different functions for the same argument on subsequent translate calls when wildcard characters are used.

**Figure 121: TSS Table Entry TRANSLATE Command Syntax**

CALL

The CALL command allows you to call a user written program which can then make calls to the Translation Subsystem in a batch environment. Parameters may also be passed to the program on the CALL command. The format of these parameters is defined by the user program.

A sample user program which performs a simple TSS table lookup is provided in VTFsamp member DLATSAM2. JCL to assemble and link-edit the program is provided in VTFcntl member DLA#SAM2.

**Figure 122: TSS Table Entry CALL Command Syntax**
Stage-1 Conversion Aid

Use job stream DLA#BILD to create input for loading the TSS tables NLTERM and VPRINTER. This job stream reads the current IMS Stage-1 input and creates TSS ADD commands for potential virtual devices. Review and edit the file of ADD commands produced prior to loading the TSS tables.

Implementation

First, edit job stream DLA#BILD in the DLACNTL data set. Make sure that the job card, data set names, and table names are correct. The last line in the job stream is a FIRST command that sets the table names you will use; the first name is for the NLTERM table, the second is for the VPRINTER table name.

When the JCL is correct, submit the job. LIST, which produces many error messages, has been turned off as these messages do not impact production of the desired result.

After the job has executed, the SYSPUNCH data set will contain the TSS ADD commands that can be used to load the tables. Before you actually run the load, remove any names you do not want to be virtual devices.

Virtual Printers

Supply the model names for virtual printer devices. This task may become somewhat tedious depending on how many different printer configurations you use. DELTA PLUS VIRTUAL TERMINAL supplies a default model name:

- PTRMODLA for all 3270 printers
- PTRMODLB for all SLUTYPE1 printers

A CHANGE ALL command will suffice in setting the correct model name. Remember the model name must be defined in the IMSGEN, but must never actually be logged on. The model’s characteristics and attributes must correctly match the respective virtual printer; otherwise, the results are unpredictable.

NLTERMs

The NLTERM table adds a numerical suffix that is appended to the node name for the second and subsequent LTERMs found for any given terminal. This is compatible with TSS tables used with the multiple LTERM support. It requires a
table definition where the argument (node name) length is greater than eight bytes to allow for the suffix. An argument length of ten bytes, for example, allows a two-digit suffix. If you do not want to use multiple LTERM support, define the NLTERM table argument length as eight bytes. Then the multiples are all rejected because the argument is too long.

**Execution**

When the SYSPUNCH data set content has been refined, it can be used as input to the DLATSS command processor; either in batch or online.

Figure 123 on page 508 shows sample JCL for the batch job. In the batch job stream, supply the dsname of the SYSPUNCH data set via a DD card and issue the TSS READ subcommand.

**Figure 123: Sample JCL for Stage-1 Conversion Aid**

```plaintext
//TSSBATCH JOB (account) /* UPDATE JOB CARD */
//TSOBATCH EXEC PGM=IKJEFT01,DYNAMNBR=99
//STEPLIB DD DSN=BMC.pppLIB,DISP=SHR /*VERIFY STEPLIB */
//SYSTSPRT DD SYSOUT=* //SYSPRINT DD SYSOUT=* //SYSDUMP DD SYSOUT=* //SYSPUNCH DD DSN=syspunch.dsname,DISP=SHR /*VERIFY DATA SET NAME */
//SYSTSIN DD * DLTSS table-data-set-name READ SYSPUNCH
```

In an online TSO environment, supply the following information:

```plaintext
ALLOC DA(syspunch.dsname) SHR FI(SYSPUNCH) DLTSS table-data-set-name EXCL READ SYSPUNCH END
```

**Execute TSS Batch Commands**

If the DLATSS TSO command processor is run in a batch region, you can execute the TSS commands from a batch job stream. The following figure shows a sample job stream that defines the table LMODEL, adds 10 entries to the table, and then lists all tables and entries in the data set.

**Figure 124: Sample JCL for DLATSS Batch Job**

```plaintext
//TSSBATCH JOB (account) /* UPDATE JOB CARD */
```
EXEC PGM=IKJEFT01, DYNAMNBR=99
* VERIFY STEPLIB
* INITIATE TSS
DLATSS 'ABC.V4.TABLES' OLD
* TABLE DEFINITION
DEFINE LMODEL
TITLE('LOGON MODEL TABLE') LENGTH(6,8)
* ADD TABLE ENTRIES
ADD LMODEL 327021 $3270001
ADD LMODEL 327022 $3270002
ADD LMODEL 327023 $3270003
ADD LMODEL 327024 $3270004
ADD LMODEL 327025 $3270005
ADD LMODEL SLU221 $SLU2001
ADD LMODEL SLU222 $SLU2002
ADD LMODEL SLU223 $SLU2003
ADD LMODEL SLU224 $SLU2004
ADD LMODEL SLU225 $SLU2005
LIST * ALL
* LIST ALL TABLES/ENTRIES
END

If you need to refresh TSS in batch, use job DLA#TSSR in the DLACNTL data set. The following figure shows the messages written to SYSOUT by this job stream.

Figure 125: Translate Subsystem Services Batch Messages
TSS Table Batch Reports

Invoke the DLATSTAT utility to generate a status report for a TSS table library. Error messages are generated for any logical errors found in the table. The free space, last date formatted, number of tables, and recommendations for reorganizing the library are included on the first page. Subsequent pages include one line for each table in the library, giving the number of rows, free space, and other information about the table. This information is also provided for tables which have been deleted since the library was last reorganized.

Use the following JCL step to invoke the utility in batch:

```jcl
//TSTAT EXEC PGM=DLATSTAT,PARM='TSS.LIBRARY.NAME'
//STEPLIB DD DISP=SHR,DSN=BMC.pppLIB
```

If desired, you can provide the TSS library name by DD statement instead of parameter. Eliminate the parameter and add a TSSTABLE DD statement. You can direct the output to a data set or to other than the default (SYSOUT=*) by adding a TSSPRINT DD statement.

You can also invoke the utility as a TSO command:

```tsocmd
DLATSTAT 'TSS.LIBRARY.NAME'
```
Virtual Terminal Control Blocks

This chapter describes the use of control blocks provided with DELTA PLUS.

Introduction

DELTA PLUS uses seven control block types to define and access virtual terminals and printers. This chapter describes these control blocks. It also describes a special node, a special user/SPQB, and a macro interface which provides easy access to IMS and the virtual terminal control blocks. Finally, it discusses the use of the Timer facility with respect to virtual terminal control blocks.

Control Blocks

The following table shows the control block types used by DELTA PLUS.

Table 67: Virtual Terminal and Printer Control Blocks

<table>
<thead>
<tr>
<th>Control Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCD</td>
<td>Virtual terminal global area</td>
</tr>
<tr>
<td>VLB</td>
<td>Prefix for a virtual terminal control block concatentation</td>
</tr>
<tr>
<td>VCN</td>
<td>Prefix for a virtual LTERM or virtual user/SPQB</td>
</tr>
<tr>
<td>VPO</td>
<td>Virtual printer override</td>
</tr>
<tr>
<td>USB</td>
<td>Userid created by /SECURE ALLOW command</td>
</tr>
<tr>
<td>VTE</td>
<td>Virtual terminal pending element</td>
</tr>
</tbody>
</table>
### Virtual Terminal Global Area

The virtual terminal global area (VCD) is normally the first CSECT in module VTFXVCD\(n\). It stores constants, variables, and addresses used by all virtual terminal routines resident in the IMS control region. The load module containing the VCD is loaded by VTFXINT\(n\) during control region initialization and remains there until IMS shutdown.

### Virtual Terminal Control Block

The virtual terminal control block (VLB) is created at logon exit time, and consists of a prefix and copies of the appropriate model CLB, CTB, CIB, CRB, and CTT control blocks. See Figure 126 on page 513. A suffix of one word is added to each virtual CLB. This suffix contains a code that identifies the control block as virtual.
Figure 126: DELTA PLUS VIRTUAL TERMINAL VLB Element

While the VLB contains the IMS control blocks, the VLB DSECT only lists the virtual terminal prefix; the IMS control blocks are assumed to follow immediately and must be mapped by the appropriate IMS DSECTs. DELTA PLUS uses IMS facilities to create virtual terminal control blocks.

**Virtual Communications Name**

The virtual communications name (VCN) control block (also known as the LTERM) serves the same function as the IMS CNT. It consists of a virtual LTERM prefix, followed by the IMS CNT. DELTA PLUS uses IMS facilities to create virtual LTERM control blocks. A suffix of one word is added to each virtual CNT. This suffix contains a code that identifies the control block as virtual.
Virtual Printer Override

The virtual printer override (VPO) consists of the virtual printer LTERM name and its override node and model name.

User Signon Block

The user signon block (USB) consists of a userid that has been specified by the /SECURE ALLOW command. It is created by the command processor from storage in the USB pool (VTFUSBPL). USBs are chained in LIFO order and are deleted by the /SECURE CLEAR command.

Virtual Terminal Pending Element

The virtual terminal pending element (VTE) consists of the virtual terminal node name and its specified trace level, module specification, and MFS TEST status.

**Note**

When Resource Manager (RM) is active, virtual terminal status is no longer kept in VTE control blocks, and VTE entries are no longer created for the /EXCL, /STOP, /TEST, and /TRACE commands.

When an IMSID specifies a non-zero value for the maximum virtual terminal pending entries, a VTE is created when any of the following situations occurs:

- A /STO NODE *nodename* command is issued against a nonexistent node.
- A /STO USER *username* command is issued against a nonexistent user/SPQB.
- A /EXC USER *username* command is issued against a nonexistent user/SPQB.
- A /TEST MFS NODE *nodename* command is issued against a nonexistent node.
- A /TEST MFS USER *username* command is issued against a nonexistent user/SPQB.
- A /TRACE SET ON VT *nodename* command is issued against a nonexistent node.
- A user logs on to IMS, issues /TEST MFS command, then logs off without issuing /END command.

VTE entries are used to ensure that the status set with any of the above commands is set when the node or user becomes active. Once the node becomes active, the specific status is transferred to the associated user/SPQB. If the user logs off without
resetting the status, the user/SPQB is not deleted. In this case, the VTE entry continues to exist, but it is not used as long as the user/SPQB exists.

## Special Element Created by DELTA PLUS

DELTA PLUS creates a special IMS element.

The user/SPQB, VTFBMCUS, is always present when DELTA PLUS is active in the IMS system. VTFBMCUS is a general-purpose control block. Virtual LTERMs are assigned to VTFBMCUS only for static ISC subpool destinations used as dynamic LTERMS when DELTA PLUS creates an LTERM specified in the unsolicited output Translate Subsystem Services (TSS) table.

When DELTA PLUS logs off an idle virtual terminal that has messages queued or conversations assigned to it, all LTERMS that have messages queued to them remain assigned to the user/SPQB that was created for the virtual terminal at logon. Conversations are assigned from the virtual terminal to the user/SPQB and maintain the conversational status they held at the time the terminal was deleted.

DELTA PLUS observes IMS rules for connecting conversation control blocks (CCBs) and LTERM control blocks (CNTs) to user/SPQB control blocks (SPQBs).

### Macro $VTFCBS

A macro interface is provided with DELTA PLUS to simplify accessing IMS and virtual terminal control blocks. The macro interface, $VTFCBS, can be used in user-written exits and in modifications made to IMS code that execute in the IMS control region. While the interface is supplied with DELTA PLUS, the interface is not dependent upon the product being installed in the IMS system. It will support virtual terminal control blocks if installed. Macro $VTFCBS options are shown in the following table.

#### Table 68: Macro $VTFCBS Format

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[label] $VTFCBS</td>
<td>FIND {CLB=address},AM=VTAM,SCD=R11 [ROUTINE=] {TEST {CTB=address,AM=BTAM} SCAN{CNT=address},AM=BOTH}</td>
</tr>
</tbody>
</table>

For CTB: Locate by line number, PTERM number, or node name. The CTB address is returned in R1.

For CNT: Locate by LTERM name. The CNT address is returned in R1.

TEST

For CLB, CTB, or CNT: Determines if the address given is valid.
For CLB, CTB, or CNT. To obtain the address of the first control block, the address specified should be 0. To obtain the address of the next control block in sequence, specify the address of the prior control block. IMSGEN-defined control blocks are returned first, followed by virtual control blocks. No attempt is made to ensure that these lists are obtained in or merged into alphanumeric sequence.

The address may be specified as a register, for example, Cxx=(R4); as storage, for example, Cxx=LABEL; or as 0. In these examples, Cxx is CLB, CTB or CNT. One of these keywords can be specified to the exclusion of the other two.

Used to limit CLB and CTB scanning to either BTAM or VTAM control blocks (with BOTH as default). AM= is ignored for non-SCAN functions and for scanning CNT blocks.

The address of the IMS SCD. The default is R11.

The address of the VTFXCBSn routine. The default is =V(VTFXCBSn).

Note

If you specify a storage address rather than a register, the storage address is assumed to contain the address of the control block, not the control block itself.

Macro $VTFCBS is used in conjunction with CSECT VTFXCBSD and is supplied in source and load form with DELTA PLUS. The macro can be used as required in your routines. Make sure the CSECT is link-edited with your routines.

You can use the macro instruction $VTFMAP to produce DSECTs that map each virtual terminal control block. $VTFMAP is coded as follows:

$VTFMAP xxx=0

where xxx is the three-letter name of the control block desired.

Standard linkage conventions are observed by VTFXCBSn. Ensure that the calling program’s registers are saved before invoking the $VTFCBS macro to call VTFXCBSn. General register R13 should reference a standard IMS save area in which there are at least six remaining save areas in the save set, which is usually the case without any special action.

$VTFCBS outputs a return code in general register R15, with general register R1 containing the address of the block returned, as described in the following table.

Table 69 on page 517 shows the output of the $VTFCBS macro.
Table 69: Macro $VTFCBS Output

<table>
<thead>
<tr>
<th>Register</th>
<th>Return Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>---</td>
<td>Contains the address of the control block in question for the FIND and SCAN functions.</td>
</tr>
<tr>
<td>R15</td>
<td>0</td>
<td>The address of the control block in question has been returned to R1 or is valid.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>No more blocks remain (for the SCAN function).</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Invalid name, line, PTERM, or address.</td>
</tr>
</tbody>
</table>

BTAM Line and PTERM Number Formats

To retrieve a BTAM CLB, the line number must be presented as a full word line number.

To retrieve a BTAM CTB, the line and PTERM numbers must be presented as a full word line number followed by a full word PTERM number. DELTA PLUS VIRTUAL TERMINAL tests the first two bits of the line number to determine whether a line number or node name has been supplied. If the bits are zero, the product assumes line number.

For example, if you wish to retrieve LINE 5 PTERM 14 (/DIS LINE 5 PTERM 14), your program must include the following:

```
$VTFCBS FIND,CTB=LINEPTRM,AM=BTAM
- -
LINEPTRM DS OD
LINE DC A(5)
PTRM DC A(14)
```
Using DELTA PLUS VIRTUAL TERMINAL Exits

DELTA PLUS provides eight virtual terminal sample exit routines. This chapter describes the sample exit routines and the macro, $VTFTEST, which can be used to test whether a terminal or LTERM is virtual.

Macro $VTFTEST

DELTA PLUS provides a standard macro instruction that allows site-written programs to test whether a terminal or LTERM is virtual or not. The macro, $VTFTEST, performs a simple test to determine whether the control block is virtual and then branches accordingly to one of two addresses you supply.

Table 70 on page 519 shows the macro $VTFTEST format. It is the responsibility of your application program to establish addressability to the terminal (CLB) or LTERM (CNT) control block.

Table 70: Macro $VTFTEST Format

<table>
<thead>
<tr>
<th>&lt;label&gt; $VTFTEST</th>
<th>(TEST=CLB) (V=addr) (TEST=CNT) (NV=addr) (TEXT=SPQB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>TEST=</td>
<td>Specifies whether a CLB or CNT is to be tested.</td>
</tr>
<tr>
<td>V=</td>
<td>The branch address if the block is virtual.</td>
</tr>
<tr>
<td>NV=</td>
<td>The branch address if the block is non-virtual.</td>
</tr>
</tbody>
</table>
Virtual Terminal Sample Exit Routines

The following table lists and describes the sample exit routines.

Table 71: Virtual Terminal Sample Exit Routines

<table>
<thead>
<tr>
<th>Sample Exit Routine Name</th>
<th>Exit Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logon Exit Sample Routine</td>
<td>Specifies the name of a virtual terminal logon model. The Translate Subsystem is invoked to translate the device type and screen size into a model name using the standard logon model table.</td>
</tr>
<tr>
<td>Logon Exit Sample Routine 1</td>
<td>Specifies the name of a virtual terminal logon model. The Translate Subsystem is invoked to find the VTAM node name associated with the terminal logging on in the table and to return the model name. If this translate fails, the default logon models are used.</td>
</tr>
<tr>
<td>Logon Exit Sample Routine 2</td>
<td>Performs translates on two TSS tables. The first translate looks for the node logging on in a node-to-logon model table to determine the logon model to use for the node. If this translate fails, then the next translate looks for the bind parameters in the standard logon model table.</td>
</tr>
<tr>
<td>Signon Bypass Exit Sample Routine</td>
<td>Provides an alternative LTERM assignment method for sites which do not require IMS signon. The Translate Subsystem translates the node name into an LTERM name. The LTERM name is checked to see if the virtual terminal Timer facility applies.</td>
</tr>
<tr>
<td>Signon Exit Sample Routine 1</td>
<td>Sets the LTERM name as the VTAM node name. This is the default Signon Exit routine, and it is provided with DELTA PLUS in load module form.</td>
</tr>
<tr>
<td>Signon Exit Sample Routine 5</td>
<td>Converts userid into LTERM. The LTERM name is checked to see if the virtual terminal Timer facility applies.</td>
</tr>
<tr>
<td>Signon Exit Sample Routine 7</td>
<td>Allows you to limit the number of times a specific userid can sign on if the LTERM name assigned is not derived from the userid. This sample signon exit may only be used if you are running DELTA PLUS VIRTUAL TERMINAL Version 5.3.05 or above.</td>
</tr>
<tr>
<td>Signon Exit Sample Routine 9</td>
<td>Allows up to 255 virtual LTERMs to be created for sites that use the userid as the virtual LTERM name.</td>
</tr>
</tbody>
</table>

Using the Virtual Terminal Exit Assembly Guide

You must assemble and link-edit a virtual terminal exit into the APF-authorized library as member name VTFEXITn. After the assembly, recycle IMS.
When modifying any of the sample exit routines, note that the assembler code for the exit is not present in the member which is assembled by the assembly JCL. The exit is embedded by a member whose last character is D, signifying the IMS version.

A zero completion code for the link-edit of VTFEXITn is required. Any IEW0461 messages issued during the link-edit should be researched.

Table 72 on page 521 lists the names of members in VTFSAMP and VTCNTL that contain the various virtual terminal sample exit routines; the members which embed them during assembly and link-edit; and the JCL job streams used for the assembly.

Table 72: Virtual Terminal Sample Exit Routines Assembly Guide

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DLA#SIGN</td>
<td>VTFEXS14</td>
<td>VTFEXS15</td>
<td>VTFEXS16</td>
<td></td>
<td>Signon Exit Sample Routine 1</td>
</tr>
<tr>
<td>DLA#SIGN</td>
<td>VTFEXS34</td>
<td>VTFEXS35</td>
<td>VTFEXS36</td>
<td></td>
<td>Signon Exit Sample Routine 3</td>
</tr>
<tr>
<td>DLA#SIGN</td>
<td>VTFEXS54</td>
<td>VTFEXS55</td>
<td>VTFEXS56</td>
<td></td>
<td>Signon Exit Sample Routine 5</td>
</tr>
<tr>
<td>DLA#SIGN</td>
<td>VTFEXS74</td>
<td>VTFEXS75</td>
<td>VTFEXS76</td>
<td></td>
<td>Signon Exit Sample Routine 7</td>
</tr>
<tr>
<td>DLA#SIGN</td>
<td>VTFEXS94</td>
<td>VTFEXS95</td>
<td>VTFEXS96</td>
<td></td>
<td>Signon Exit Sample Routine 9</td>
</tr>
<tr>
<td>DLA#SGNB</td>
<td>VTFEXBX4</td>
<td>VTFEXBX5</td>
<td>VTFEXBX6</td>
<td></td>
<td>Signon Bypass Exit Sample Routine</td>
</tr>
<tr>
<td>DLA#LGNX</td>
<td>VTFEXLX4</td>
<td>VTFEXLX5</td>
<td>VTFEXLX6</td>
<td></td>
<td>Logon Exit Sample Routine</td>
</tr>
<tr>
<td>DLA#LGN1</td>
<td>VTFEXL14</td>
<td>VTFEXL15</td>
<td>VTFEXL16</td>
<td></td>
<td>Logon Exit Sample Routine 1</td>
</tr>
<tr>
<td>DLA#LGN2</td>
<td>VTFEXL24</td>
<td>VTFEXL25</td>
<td>VTFEXL26</td>
<td></td>
<td>Logon Exit Sample Routine 2</td>
</tr>
</tbody>
</table>

Logon Exit Sample Routine

Use the Logon Exit sample routine to provide a logon model name for a virtual terminal logging on to IMS. The logon model is used to provide default terminal characteristics for the new virtual terminal.
The Logon Exit routine is entered after the VTAM Logon exit is driven for the terminal logging on and before entry to the Logon routine in DFSCNXA0. The routine runs under an interrupt request block (IRB) that preempts other IMS control region processing. Processing does not resume until after the routine completes.

**Before You Begin**

To invoke a Logon Exit routine you must select option 3 **Call a DELTA PLUS VT logon exit** from the IMSID Options - VT Logon Options panel and then save the options.

Review “Setting VT Logon Options” on page 111 to determine the current settings.

**Setting Logon Exit Routine Conditions**

You must set the following conditions for any Logon Exit routine used by DELTA PLUS:

- Set one of the following return codes in Register R15: 0=OK or 4=Refuse logon.
- If the return code is 0, then register R0 must contain the address of a virtual terminal model name.
- Observe standard IMS linkage and register saving/restoring conventions.
- Adhere to the entry register requirements described in Table 73 on page 522.

**Table 73: Register Contents at Logon Exit Entry**

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Address of logon parameters</td>
</tr>
<tr>
<td>R3</td>
<td>Address of session parameters</td>
</tr>
<tr>
<td>R4</td>
<td>Address of device characteristics</td>
</tr>
<tr>
<td>R8</td>
<td>Address of 2048 byte work area</td>
</tr>
<tr>
<td>R5</td>
<td>Address of VTAM logmode entry</td>
</tr>
<tr>
<td>R10</td>
<td>Address of VCDDSECT</td>
</tr>
<tr>
<td>R11</td>
<td>Address of SCD</td>
</tr>
<tr>
<td>R13</td>
<td>Address of save area</td>
</tr>
<tr>
<td>R14</td>
<td>Return address</td>
</tr>
</tbody>
</table>
Using the Logon Exit Sample Routine

The Logon Exit sample routine provided with DELTA PLUS derives a logon model name through the use of the Translate Subsystem. The TSS table LMODEL is presented with an argument consisting of the physical terminal and the screen size. TSS responds by providing the name of a logon model included in your IMSGEN.

Before calling the Logon Exit sample routine, DELTA PLUS performs a VTAM INQUIRE to determine device type and screen size from the PSERVIC entry in VTAM. The translate call is done to a TSS table named "LMODEL." The result field should be the name of a sysgenned logon model. If you wish to use a TSS Table name other than LMODEL, you must change all occurrences of LMODEL in this exit.

The argument field is structured: TYPEXY

where:

TYPE is 3270, SLU1, SLU2 or SLUP

The type is derived from the first byte of the PSERVIC parameter of the MODETABLE. Check with your VTAM systems programmer for the appropriate MODETABLE definitions.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>=</td>
<td>3270</td>
</tr>
<tr>
<td>01</td>
<td>=</td>
<td>SLU1</td>
</tr>
<tr>
<td>02</td>
<td>=</td>
<td>SLU2</td>
</tr>
<tr>
<td>00</td>
<td>=</td>
<td>SLUP if TSPROF = 04</td>
</tr>
</tbody>
</table>

Note: SLUTYPE3 can be supported as SLUTYPE1.

where X is the primary screen size:

<table>
<thead>
<tr>
<th></th>
<th>=</th>
<th>UNDEFINED DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>=</td>
<td>12X40 DISPLAY</td>
</tr>
<tr>
<td>1</td>
<td>=</td>
<td>24X80 DISPLAY</td>
</tr>
<tr>
<td>2</td>
<td>=</td>
<td>32X80 DISPLAY</td>
</tr>
</tbody>
</table>
where Y is the alternate screen size, the values are the same as above.

**Example:** PSERVIC information found in bind is as follows:

\[ \begin{array}{c|c|c}
0 & = & \text{UNDEFINED DISPLAY} \\
4 & = & 43x80 \text{ DISPLAY} \\
5 & = & 27x132 \text{ DISPLAY} \\
\end{array} \]

SLU222

The corresponding entry in the TSS LMODEL table would be the following argument and functional result:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Functional Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLU222</td>
<td>SLU2MDL</td>
</tr>
<tr>
<td></td>
<td>where: SLU2MDL is the SLUTYPE2 MOD 2 logon model</td>
</tr>
</tbody>
</table>

### Setting IMSID Basic Options

The Logon Exit sample routine obtains the name of the logon model TSS table from the IMSID basic options for the active IMS control region. You must specify this TSS table name as part of the virtual terminal logon model node name selection options.
Logon Exit Sample Routine 1

Use the Logon Exit sample routine 1 to provide a logon model name for a virtual terminal logging on to IMS. The logon model is used to provide default terminal characteristics for the new virtual terminal.

Enter the Logon Exit sample routine 1 after the VTAM Logon exit is driven for the terminal logging on and before entry to the Logon routine in DFSCNXA0. The routine runs under an interrupt request block (IRB) that preempts other IMS control region processing. Processing does not resume until after the routine completes.

Before You Begin

To invoke a Logon Exit routine you must select option 3 Call a DELTA PLUS VT logon exit from the IMSID Options - VT Logon Options panel and then save the options.

Review “Setting VT Logon Options” on page 111 to determine the current settings.

Setting Logon Exit Routine 1 Conditions

You must set the following conditions for any Logon Exit routine used by DELTA PLUS:

- Set one of the following return codes in Register R15: 0=OK or 4=Refuse logon.
- If the return code is 0, then register R0 must contain the address of a virtual terminal model name.
- Observe standard IMS linkage and register saving/restoring conventions.
- Adhere to the entry register requirements described in Table 73 on page 522.

Using the Logon Exit Sample Routine 1

The Logon Exit sample routine 1 provided with DELTA PLUS derives a logon model name through the use of the Translate Subsystem. The TSS table LMODEL is presented with an argument consisting of the physical terminal VTAM node name associated with the terminal logging on. TSS responds by providing the name of a logon model included in your IMSGEN. If the node name is not located in the LMODEL table, the logon exit will attempt to determine the device type based on the
bind parameters and use one of the four default logon models supplied in the IMSID Basic Options panel number 6.

The TSS table LMODEL for this exit has an 8-character argument length and an 8-character functional result. The argument is the VTAM node name and the functional result is the logon model as defined in your IMSGEN which should be used for this terminal.

### Setting IMSID Basic Options

The Logon Exit sample routine obtains the name of the logon model TSS table from the IMSID basic options for the active IMS control region. You must specify this TSS table name as part of the virtual terminal logon model node name selection options.

### Logon Exit Sample Routine 2

Use the Logon Exit sample routine 2 to perform translates on two TSS tables. The first translate looks for the node logging on in a node-to-logon model table to determine the logon model to use for the node. If this translate fails, then the next translate looks for the bind parameters in the standard logon model table.

The Logon Exit sample routine 2 is entered after the VTAM Logon exit is driven for the terminal logging on and before entry to the Logon routine in DFSCNXA0. The routine runs under an interrupt request block (IRB) that preempts other IMS control region processing. Processing does not resume until after the routine completes.

### Before You Begin

To invoke a Logon Exit routine you must select option 3 Call a DELTA PLUS VT logon exit from the IMSID Options - VT Logon Options panel and then save the options.

Review “Setting VT Logon Options” on page 111 to determine the current settings.

### Setting Logon Exit Routine 2 Conditions

You must set the following conditions for any Logon Exit routine used by DELTA PLUS:
Set one of the following return codes in Register R15: 0=OK or 4=Refuse logon.

If the return code is 0, then register R0 must contain the address of a virtual terminal model name.

Observe standard IMS linkage and register saving/restoring conventions.

Adhere to the entry register requirements described in Table 73 on page 522.

Using the Logon Exit Sample Routine 2

This module is called for each virtual terminal VTAM logon. The purpose of the routine is to return the name of a sysgenned VTAM terminal that can be used as a model for creating the control blocks for the terminal attempting to logon.

This implementation of the VTF Logon Exit uses the Translation Subsystem (TSS) to translate the node name into a model name. If the node is not found in the TSS table, the exit attempts to determine the device type and screen size, and performs a second TSS translate to the LMODEL table to determine a logon model.

The first translate is to a node-to-logon model table. The argument is the node name, and the functional result will be the logon model. This is a hard-coded table named "NMODEL." You must create a TSS table by that name unless you change all occurrences of NMODEL in this exit to the table name you wish to use.

The node-based TSS table used by this exit is structured as follows:

**ARGUMENT:** 8-byte VTAM node name padded with blanks

**RESULT:** 8-byte sysgenned terminal logon model name

The Second translate call is only done if the first translate call to the NMODEL table did not find the node name. The Exit does a VTAM Inquire to determine device type and screen size from the PSERVIC entry in VTAM. The translate call is done to a hard-coded TSS table named "LMODEL." You must create a table by this name with the argument as specified below. The result field should be the name of a sysgenned logon model. If you wish to use a TSS Table name other than LMODEL, you must change all occurrences of LMODEL in this exit.

See “Using the Logon Exit Sample Routine” on page 523 for an explanation of how the argument field is built.
Setting IMSID Basic Options

The TSS table names NMODEL and LMODEL are hard-coded in this exit routine and are not specifiable via the IMSID basic options.

Signon Bypass Exit Sample Routine

The Signon Bypass Exit sample routine can be used when you have a combination of terminal users who must sign on and others who are not required to sign on. Those users who will bypass signon will have their LTERM assigned as determined by the Signon Bypass exit. The terminal users who are not assigned an LTERM during this process will be required to sign on. They will be assigned an LTERM according to the signon options specified on the IMSID Basic Options panel.

When IMS signon is not required, use the Signon Bypass Exit sample routine to specify the LTERM name, and to call the virtual terminal Timer facility. The Signon Bypass Exit sample routine receives control prior to initial entry to the IMS Communication Analyzer (DFSICIO0) during the logon process. This exit is called before the DFS3649A message is displayed at the terminal.

The URMDSECT addressed by R1 contains the node name that is in the process of logging on. This routine is required to provide an LTERM name in URMLTERM or issue return code 4. If return code 4 is issued, a transient LTERM name is assigned according to your customization options, and signon is required. You can set byte URMFLAG2 to **URM2ATTL** (alternate time out) or **URM2NOTO** (do not time out).

The Signon Bypass Exit Sample Routine can also provide overrides for the virtual terminal Timer facility. The TSS table LTERMOR (LTERM-Override) controls these overrides. The LTERMOR table also contains arguments and functions. The LTERM name acts as the argument. The function is designated as **A** (alternate time-out value) or **N** (never time-out this terminal).

Before You Begin

To invoke a Signon Bypass Exit routine you must select option 3 **Call a DELTA PLUS VT signon-bypass exit** from the IMSID Options - VT Signon Bypass Options panel and then save the options.

Review “Setting VT Signon Bypass Options” on page 114 to determine the current settings.
Using Multiple LTERMs

When multiple LTERMs are used for a virtual terminal, each LTERM name is returned in the URMXLIST extension area. At entry, R2 contains the address of this area. It consists of 255 24-byte entries. In each entry, the first 8 bytes are reserved for the LTERM name. The final 16 bytes are reserved and should be left at 0. Entries are used from beginning to end. The count of entries used is returned in URMCOUNT. In the extension, the LTERM name is stored in URMLTNAM.

*Note*

To use this feature, you must have selected the option **Support multiple concurrent LTERMs for virtual terminals** on the IMSID Options - VT Options panel.

Using URMCOUNT

URMCOUNT is a one-byte binary number with the following conventions:

- URMCOUNT=0 - LTERM name returned in URMLTERM
- URMCOUNT=1 to 255 - LTERM names returned in the extension list

Using the Work Area

At entry, R4 contains the address of a 3072 byte work area that is used as needed. However, set aside the last 2048 bytes of this area for translation services.

Setting Signon Bypass Exit Routine Conditions

You must set the following conditions for any Signon Bypass Exit sample routine used by DELTA PLUS:

- Set one of the following return codes in Register R15: **0=OK** or **4=Signon is required**.
- Return one or more LTERM names. This is the exit’s only required function.
- Designate whether this virtual terminal should have any virtual terminal Timer facility time-out values. If no time-out values apply, set URMFLAG2 with the URM2NOTO bit.
Designate whether this virtual terminal should have alternate virtual terminal Timer facility time-out values. If these alternate values apply, set URMFLAG2 with the URM2ATTL bit.

If you want the node name to be used as the user/SPQB name, set URMFLAG2 with the URM2USND bit.

Observe standard IMS linkage and register saving/restoring conventions.

Adhere to the entry register requirements described in Table 74 on page 530.

### Table 74: Register Contents at Signon Bypass Exit Entry

<table>
<thead>
<tr>
<th>Registers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Address URMDSECT</td>
</tr>
<tr>
<td>R2</td>
<td>Address of LTERM name</td>
</tr>
<tr>
<td>R4</td>
<td>Address of work area</td>
</tr>
<tr>
<td>R7</td>
<td>Address of CTB</td>
</tr>
<tr>
<td>R9</td>
<td>Address of CLB</td>
</tr>
<tr>
<td>R10</td>
<td>Address of VCDDSECT</td>
</tr>
<tr>
<td>R11</td>
<td>Address of SCD</td>
</tr>
<tr>
<td>R13</td>
<td>Address of save area</td>
</tr>
<tr>
<td>R14</td>
<td>Return address</td>
</tr>
<tr>
<td>R15</td>
<td>Entry point address</td>
</tr>
</tbody>
</table>

### Using Signon Bypass Exit Sample Routine

The Signon Bypass Exit sample routine uses TSS table NLTERM (Node-to-LTERM) to assign the LTERM name. This table is used under all versions of IMS, even though LTERMs are not assigned directly to nodes.

The TSS table NLTERM consists of 8-byte arguments and the corresponding result field. Bytes 1 through 8 of the result field provide the LTERM name.

Virtual terminal Timer facility values are controlled by TSS table LTERMOR (LTERM-Override). The table consists of arguments that are the LTERM names and functions specified as A (alternate values) or N (never time-out this terminal).
Setting IMSID Basic Options

The Signon Bypass Exit sample routine refers to various fields in the IMSID basic options for the active IMS control region. You must specify whether you want multiple concurrent LTERM support and the name of the Node-to-LTERM TSS table. Additionally, you can specify the optional LTERM Timer Override TSS table name to control virtual terminal time-out processing. The IMSID basic options must not require virtual terminals to sign on.

Signon Exit Sample Routines

Five Signon Exit sample routines are provided with DELTA PLUS. You can use these exits in unaltered form, or you can modify them as required to suit the unique needs of your site, provided that the new Signon Exit routine adheres to the conditions discussed on “Setting Signon Exit Routine Conditions” on page 532.

Use a Signon Exit sample routine to specify LTERM names, signon model name, and alternate values for the virtual terminal Timer facility. A Signon Exit routine is called before a successful IMS signon and before the DFS3650 "SESSION STATUS" message is issued.

DELTA PLUS VIRTUAL TERMINAL does not use the standard IMS Signon Exit routine, DFSCSGN0, which has already been driven.

The URMDSECT addressed by R1 contains the node name and userid for the user signing on. This routine is required to provide an LTERM name in URMLTERM or issue return code 4. If return code 4 is issued, then a transient LTERM is assigned according to your customization options.

You can set byte URMFLAG2 to URM2ATTL (use an alternate time-out) or URM2NOTO (do not time out this terminal).

Before You Begin

To create a Signon Exit routine you must select option 4 Call a DELTA PLUS VT signon exit from the IMSID Options - VT Signon Options panel and then save the options.

Review “Setting VT Logon Options” on page 111 to determine the current settings.
Using Multiple LTERMs

When multiple LTERMs are used for a virtual terminal, each LTERM name is returned in the URMXLIST extension area. At entry, R2 contains the address of this area. It consists of 255 24-byte entries. In each entry, the first 8 bytes are reserved for the LTERM name. The last 16 bytes are reserved and should be left 0. Entries are used from beginning to end. The count of entries used is returned in URMCOUNT. In the extension, the LTERM name is stored in URMLTNAM.

Note
To use this feature, you must have selected the option Support multiple concurrent LTERMs for virtual terminals on the IMSID Options - VT Options panel.

Using URMCOUNT

URMCOUNT is a one-byte binary number with the following conventions:

- URMCOUNT=0 - LTERM name is returned in URMLTERM
- URMCOUNT=1 to 255 - LTERM names are returned in the extension list

Using the Work Area

At entry, R4 contains the address of a 3072-byte work area that is used as needed. However, set aside the last 2048 bytes of this area for translation services.

Setting Signon Exit Routine Conditions

You must set the following conditions for any Signon Exit routine used by DELTA PLUS:

- Set one of the following return codes in Register R15: 0=OK or 4=signon refused.
- Set the URMLTERM field to the LTERM name for the user signing on. This is the exit’s only required function.
- Indicate the name of a model node from which device characteristics, such as screen size and other IMS-related terminal options, can be copied. Use the field URMMODEL to specify the name of the model device.
- Designate whether this user should have any virtual terminal Timer facility time-out values. If no time-out values apply, set URMFLAG2 to URM2NOTO (do not time out this terminal).

- Designate whether this user should have alternate virtual terminal Timer facility time-out values. If these alternate values apply, set URMFLAG2 with the URM2ATTL bit.

- If you want the node name to be used as the user/SPQB name, set URMFLAG2 with the URM2USND bit.

- Observe standard IMS linkage and register saving/restoring conventions.

- Adhere to the entry register interface described in Table 75 on page 533.

**Table 75: Register Contents at Signon Exit Entry**

<table>
<thead>
<tr>
<th>Registers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0</td>
<td>0 entry code = signon</td>
</tr>
<tr>
<td>R1</td>
<td>address URMDSECT</td>
</tr>
<tr>
<td>R2</td>
<td>address of LTERM</td>
</tr>
<tr>
<td>R4</td>
<td>address of work area</td>
</tr>
<tr>
<td>R7</td>
<td>address of CTB</td>
</tr>
<tr>
<td>R9</td>
<td>address of CLB</td>
</tr>
<tr>
<td>R10</td>
<td>address of VCDDSECT</td>
</tr>
<tr>
<td>R11</td>
<td>address of SCD</td>
</tr>
<tr>
<td>R13</td>
<td>address of save area</td>
</tr>
<tr>
<td>R14</td>
<td>return address</td>
</tr>
<tr>
<td>R15</td>
<td>entry point address</td>
</tr>
</tbody>
</table>

**Signon Exit Sample Routine 1**

Signon Exit Sample Routine 1 is the simplest Signon Exit routine provided with DELTA PLUS. This routine sets the virtual terminal LTERM name using the VTAM node name or the signed-on userid based upon an IMSID basic option. You must correctly specify the userid instead of the node name in the signon selection technique IMSID basic option.
Signon Exit Sample Routine 3 and RACF

Like Signon Exit Sample Routine 1, Signon Exit Sample Routine 3 sets the virtual terminal LTERM name using the VTAM node name or the signed-on userid based upon the same IMSID basic option. This routine also retrieves additional variable override data from RACF. This information is entered in the RACF DATA field, and is stored by userid. The information can specify that virtual terminal Timer facility alternate time-out values are to be used. This information can also override the LTERM specified by the Signon Exit routine.

The version of IMS you are running determines when this exit is invoked in relation to RACF signon.

This exit is invoked before RACF completes signon. You can use this exit to set the virtual terminal LTERM name, but you cannot use it to retrieve the override data from RACF.

Note

Virtual LTERM names must conform to the resource naming rules outlined in the IBM publication IMS System Definition and Tailoring Reference Manual.

You can include the override data more than once, allowing one specification for one IMS system, for example, and another for all IMS systems. If your site already uses the DATA field for other purposes, the override data can be appended to or included within it, as long as it conforms to the formatting conventions explained in Table 75 on page 533.

At signon time, DELTA PLUS reads the RACF DATA field and analyzes and applies the override data, if it is specified. When locating the override data within the RACF DATA field, it first scans for a unique IMSID and if not found, then for IMS for all IMS systems.

Use the ALTER USER (ALU) command to specify the override data to RACF for existing userids, or the ADD USER (AU) command for new userids. The following example statements use these commands:

- Specify RACF DATA field for new userid JCB. Alternate automatic logoff intervals are indicated for any IMS system to which JCB signs on.
  
  \[\text{AU JCB DATA(‘IMS(,,,A)’)}\]

- Specify RACF DATA field for existing userid RLS. Override the LTERM name to SDT01201 when RLS signs on to IMSID TIMS. RLS already had accounting data for another application specified in the DATA field; You must specify this information again in the update.
  
  \[\text{ALU RLS DATA(‘acctgdata TIMS(,,SDT01201)’)}\]
Specify RACF DATA field for existing userid MTJ, Override the LTERM to LTERMP01 for IMSID PIMS, and to LTERMT99 for all other IMS systems.

```
ALU MTJ DATA('PIMS(,,LTERMP01) IMS(,,LTERMT99)'
```

An example override data statement is shown below:

```
IMS | imsid(amodel,bmodel,lterm,o)
```

**IMS | imsid**

Indicates whether the override data applies to one specific IMSID or all IMS systems. DELTA PLUS searches for the specific IMSID first; if not found, it then searches for IMS. If neither are found, no override information is used for this userid.

**amodel**

Name of an IMSGEN-defined 3270-type signon model terminal which specifies terminal options and screen size to override the logon model for this user. The `amodel` field is ignored if the user logs on to a bmodel-type device, and vice versa. This is an optional operand which generally should not be used.

**bmodel**

Name of an IMSGEN-defined SLUTYPE2 signon model terminal, which specifies terminal options and screen size to override the logon model for this user. The `bmodel` field is ignored if the user logs on to an amodel-type device, and vice versa. This is an optional operand which generally should not be used.

**LTERM**

LTERM name to be substituted for this user. If omitted, the Signon Exit sample routine specifies the userid as the LTERM name.

**A**

Timer facility alternate time-out intervals for this user.

---

**Signon Exit Sample Routine 5 and TSS**

Signon Exit Sample Routine 5 uses TSS to determine the names assigned to virtual terminal LTERMs. The routine queries the TSS table ULTERM (userid-to-LTERM) to see if the table contains the userid that initiated the logon.
The routine returns the LTERM name from the ULTERM table if the userid is found. If no match is found, the IMS signon is denied. The LTERM name is then set to the lowercase node name assigned to the physical terminal from which the IMS logon was initiated.

The ULTERM table contains arguments and functions. The arguments provide IMS system access for the userids, and the corresponding LTERM names act as the functions.

Signon Exit Sample Routine 5 can also provide overrides for the virtual terminal Timer facility. The TSS table LTERMOR (LTERM-Override) controls these overrides. The LTERMOR table also contains arguments and functions. The LTERM name acts as the argument. The function is designated as A (alternate time-out value) or N (never time-out this terminal).

**Setting Signon Exit Sample Routine 5 Conditions**

General register contents at entry to Signon Exit Sample Routine 5 are the same as those shown in Table 75 on page 533.

**Setting IMSID Basic Options**

The following IMSID basic options affect the operation of Signon Exit Sample Routine 5:

- From the IMSID Options - VT Options panel, select the **Support multiple concurrent LTERMs for virtual terminals** option if you want to use multiple LTERMs. If you do not want to use multiple LTERMs, leave this field blank.

- From the IMSID Options - VT Signon Options panel, use the **Key. Select a key on which to base the LTERM name determination** field to specify whether you will use the node name or userid as the translate criteria for the permanent LTERM. The key you select determines which key will be highlighted in the **Method** selection field. BMC Software recommends that you make the table names reflect the key you select. For example, if you use the node name for the key, then you should use an NLTERM table name. If you use userid for the key, BMC Software recommends that you use an ULTERM table name.

  If you choose selection 4 for the **Method** option but do not modify the exit, the table name(s) specified in the **Key to LTERM TSS table name** and/or **LTERM timer override TSS table name** field(s) is used as the default table name.
Signon Exit Sample Routine 7

This module is called before completion of IMS signon. It is used to determine the LTERM(s) that should be associated with the terminal signing on.

This exit can be used to limit the number of times a given userid can signon when the LTERM name is not derived from the userid. This exit performs the following TSS translates:

- A TSS translate is performed on the "MSIGNON" TSS table using the userid as the argument. (The MSIGNON table name is hard-coded in the exit.

  If the userid is found, the RESULT field should contain the maximum number of times this userid can sign on. If the userid is not found or the result is invalid, the default MAXUSER value is used.

  **Note**
  
  The MSIGNON table allows a maximum of 4 digits in the FUNCTIONAL RESULT field. If more than 4 digits are specified, the default value MAXUSER will be used. The recommended size of the MSIGNON table is 8x4.

  The exit then calls the VCDXUSRX routine to determine whether or not the userid is at the maximum number of signons.

  If the maximum number of signons has already been reached, the signon attempt is rejected.

- If multiple LTERM support is enabled in the IMSID options, a TSS translate list is performed on the IMSNLT2 table. IMSNLT2 is a variable which contains the TSS table name specified in the Key to LTERM TSS table name and/or LTERM timer override TSS table name field(s) on the IMSID Options - VT Signon Options panel.

  This translate will return the LTERM(s) to be associated with this terminal. If multiple LTERM support is not enabled, a TSS translate is performed on the IMSNLT2 table. This translate can return a single LTERM and optional security profile. The argument used for these translates will either be the node name or the userid, depending on the key specified on the IMSID Options - VT Signon Options panel. If the argument is not found by the TSS translate, the signon attempt is rejected.

- A third and final TSS translate is performed on the IMSLTOR2 table to determine whether this terminal should use the alternate time-out value, as specified in the IMSID Basic Options panel (Page 3 of 8), or not time-out at all.

  IMSLTOR2 is a variable which contains the TSS table name specified in the IMSID Basic Options panel (Page 8 of 8). The userid is used as the argument for this translate.
Multiple LTERM Support

When multiple LTERMS are used for a virtual terminal, each LTERM name is returned in the URMXLIST extension area. At entry R2 contains the address of this area. It consists of 255 24 byte entries. In each entry the first 8 bytes are reserved for the LTERM name. The last 16 bytes are reserved and should be left zero. Entries are used from beginning to end. The count of entries used is returned in URMCOUNT. In the extension, the LTERM name is stored in URMLTNAM.

URMCOUNT Usage

URMCOUNT is a one-byte binary number with the following convention:

URMCOUNT = 0, LTERM name is returned in URMLTERM. URMCOUNT = 1 through 255, LTERM names are returned in the extension (URMXLIST fields URMLTNAM).

Work Area

At entry R4 contains the address of a 3072 byte work area. The first 2048 bytes of this area should be reserved for translation services, otherwise the area may be used as needed.

Signon Exit Sample Routine 9

Signon Exit 9 allows sites that use the userid as the virtual LTERM name to allow IMS users to sign on multiple times with the same userid. To use Signon Exit 9, you must specify a value of G or Z for the SGN parameter in the IMS Control Region.

The first time an IMS user signs on, Signon Exit 9 uses the base userid as the name of the first LTERM for that userid. In subsequent signons, a numeric suffix is attached to the userid to create additional LTERM names based on that userid.

The suffix of the LTERM name can be up to three characters long. For example, if ABC is your userid, the first LTERM name is ABC, the second is ABC001, the third is ABC002, etc. If your userid is seven characters long, then the suffix will be only one character. Therefore, the length of the LTERM name depends on the length of the base userid.

Signon Exit 9 allows up to 255 signons with the same userid, but you can use the MAXUSER parameter to specify a maximum number of signons per userid. The
maximum number of signons available per userid is also limited by the size of the
userid. For example, if a userid is seven bytes in length, then the suffix can be only
one byte in length, which allows a maximum of 10 signons (the base userid, then the
base userid appended with 1 through 9). If you require more than nine additional
LTERMs per userid, Signon Exit 9 allows you to specify that the suffix be created in
hexadecimal format, which allows X’1’ through X’F’.

Coding conventions for Exit 9 are the same as for other signon exits.

Translation Assist Exit

Program manipulation of an argument value that produces a function value reduces
table storage requirements and I/O. In this way, a Translation Assist exit routine
provides the TSS user with additional flexibility in table design. When a TSS table is
defined with an exit load module name specified, the exit routine can perform the
translation before the table is searched. The exit routine can perform the following
tasks:

■ perform the translation
■ alter the argument
■ request a table search
■ reject the argument

The prologue to the Translation Assist Exit sample contains additional information
on the exit and its interface conventions.

Assemble and Link-Edit

Once you have coded your exit, assemble and link-edit it into the APF-authorized
library using any load module name you choose. Sample JCL for the assemble and
link job is in members DLA#SAMP and DLA#SAM2 in the VTFCNTL library.

Implement the Exit

The exit is not dependent on the IMS environment for operation. You can test it in
the TSO environment before implementing it into your IMS control region. An IMS
restart is not required to initially implement an exit. When you define a table using
the EXIT keyword, IMS loads the exit from the STEPLIB you specified. If the exit
routine is subsequently modified, the changes will not be implemented until the next IMS restart.

**Prevent Errors**

When Translate Subsystem Services (TSS) uses a table that was defined with the **EXIT** keyword, the exit is given control prior to the table search. If the exit is not found, translation fails with a return code of 8.
DELTA PLUS Questions and Scenarios

This chapter answers various user questions about DELTA PLUS.

Is Help Available in the ISPF Interface?

Yes! Panel-level, Field-level, and Message help is available in the ISPF interface.

Panel-Level and Field-Level Help

DELTA PLUS provides explanations of all panels and fields in the DELTA PLUS interface. Panel-level help displays a pop-up window that explains the purpose of the panel, provides information about using the panel, and provides a selection list that allows you to view descriptions of the fields available on the panel.

Field-level help displays a pop-up window that describes the purpose of the field. Help is also available for the action bar. See “Message Help Index” on page 69 for information on using online help.

The type of help displayed when you activate the help feature depends on the cursor’s position:

- Panel-level help is displayed if you activate the help feature with the cursor on the Command area or any part of a panel other than the action bar or a data entry field.
- Field-level help is displayed if you activate the help feature with the cursor on a data entry field.
WARNING
Field-level help on the **Rev element attributes** data entry section of the DELTA List Element Edit panel differs from the other DELTA PLUS panels. Field-level help for **Rev element attributes** data entry section of the DELTA List Element Edit panel is displayed only if you press **F6** with the cursor on a data entry field. If you press **F1** in this section, panel-level help is displayed.

You can activate the help feature by performing any of the following actions:

- Press **F1**.
- Press **F6** for the DELTA List Element Edit panel’s **Rev element attributes** data entry section.
- Select the Extended help option from the Help pull-down menu.
- Type **HELP** in the **Command** area.

**Message Help Index**

The DELTA PLUS online help feature provides an index you can use to view information on all error messages that DELTA PLUS can issue.

**Note**
For instructions on how to use the DELTA PLUS message help index, see Using the Message Help Index on page 70.

You can access Message Help using the following methods:

- selecting the Message Help option from the Help pull-down menu
- typing one of the following commands in the **Command** area:
  
  — **MESSAGE**
  
  — **MSG**
  
  — **MSG nnnnnn**, where *nnnnnn* are the numerical digits of the BMC Software error message. For example, BMCDLP186003E would be specified as **186003**.

  You can use generic specifications as well. For example, typing **18%34*** could result in the following list of messages: BMCDLP189340E, BMCDLP189341E, BMCDLP189342E, and BMCDLP189343E.
How Does DELTA PLUS Use XCF, and are XCF Definitions Required?

DELTA PLUS uses XCF to communicate between BMCXLINK and the IMS control region. DELTA PLUS automatically defines the XCF group with the name BMCDxxxx where xxxx is an IMSID or a DELTA PLUS Group name. The installation/customization process does not require XCF definitions.

Does BMCXLINK Still Use a BMP/TRAN/PGM for Communication with the IMS Control Region?

Unlike DELTA IMS, DELTA PLUS does not require the BMP/TRAN/PGM. Communication is accomplished using VTAM and XCF.

What are View Profiles?

View Profiles allow installations to customize the keyword names and descriptions used when editing DELTA Lists, change the defaults for, or prohibit use of individual fields, and enforce standards for DELTA Lists created at a given location or site. You might use this facility to allow the DBA group to ADD, DELETE, or REVISE databases, but not to perform any TRANSACT, APPLCTN, or other such type changes.

DELTA PLUS provides a conversion utility to convert existing DELTA IMS keyword tables into DELTA PLUS View Profiles. Member DLP#UTL4 in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL for this conversion.

Instructions for using the utility are in the comments of this member.

The DELTA PLUS View Profile data set has characteristics that are different from the DELTA IMS keyword table data set.
**Tip**
Select the **Stop before change** and **Start after change** fields for all applicable View Profile elements to ease the transition when you revise elements. If these fields are selected, by default, an element in a DELTA List is /STOpped before the change for that element is executed and is /STArted after the change for that element is completed.

See “View Profiles” on page 82 for more information.

---

**Why Would I Use the MARK (Mk) Facility in a DELTA List?**

Assume you have a DELTA list with 50 elements. When you execute the DELTA list, 49 of the elements execute successfully. You correct the error with the failing element. Instead of deleting the 49 elements that executed successfully (permanently altering the DELTA List) and executing the list with the remaining element, you can deselect Mk for the successful elements and select Mk for the remaining element. At execution, select the **Execute Marked elements only** option. The **MARK** and **UNMARK** commands and the U and K action codes allow you to manipulate the marking of elements easily.

**Can I Change My Display to See More Lines on the DELTA List Element Edit Panel?**

Use the **ALTView** primary command to toggle the current display to an alternate view. All the fields are still available despite which view you choose to display.

**Is It possible to See the IMS MACRO Definitions on the DELTA List Element Edit Panel?**

The **MACro** primary command toggles the current display to show IMS macro statements for the field names or to show the DELTA PLUS field names. All the fields are still available regardless of which view you choose to display.
What Does a Dependent DELTA List Mean?

Frequently, users request a group of changes that need to be made to the IMS system for a given application change or for a new release of the application. It is important that all of the changes be applied; if all of them cannot be made successfully, then NONE of the changes should be made. DELTA PLUS supports this requirement with the concept of dependent changes. Changes are grouped together in a single DELTA List that is designated as a dependent DELTA List. This designation ensures that all changes in the DELTA List are successful or the changes will not be performed.

Note
When the dependent option is selected for a DELTA List that contains a COMMAND element, the success or failure of the COMMAND does not affect execution of the DELTA List.

For example, a dependent DELTA List contains multiple REVISEs and ADDs for transactions and programs. The DELTA List also contains a COMMAND element that issues an invalid IMS command. At execution, the COMMAND element will be flagged as being in error, but the rest of the DELTA List will execute.

Note
For all elements to be viewed as a single unit of work, you must select the Optimize execution option on the DELTA List Execution panel. If not selected, dependence is not enforced.

What Does Executing a DELTA List Coordinated Mean?

A Coordinated request is one in which the DELTA List is executed on all IMS systems in a user-defined group. The DELTA List must complete successfully on all of the IMS systems or it will not be completed on ANY of the systems.

For example, a DELTA PLUS-defined Group of IMS systems named TEST consists of IMS systems IMSA, IMSB and IMSC. A DELTA List is executed against TEST, and the Coordinate option is selected. The DELTA List elements are successfully processed on IMSA and IMSB, but IMSC encounters an error. Changes are backed out on IMSA and IMSB, and results are reported for all three IMS systems detailing the error(s).
Why Would I Use the DELTALST Element within a DELTA List?

The DELTALST element enables you to break a DELTA List into many separate, smaller DELTA Lists, but allows them to be executed together as elements of another DELTA List.

For example, you are adding a new line of business to your IMS system. You could create one DELTA List that contains all the databases for this line of business, another DELTA List for the applications, and so forth. This functionality enables multiple smaller, manageable DELTA Lists instead of one very large DELTA List.

Another possible use is the situation where you have DELTA List with differing DELTA PLUS dependency requirements (see “What Does a Dependent DELTA List Mean?” on page 545 for an explanation). You create three DELTA Lists named MONDAY, TUESDAY, and WEDNSDAY (Dependent option is selected). All three are contained in the DELTA List named REAPPLY, which does not have the Dependent option selected. When REAPPLY is executed, DELTA PLUS will honor the dependency requirement for WEDNSDAY.

What Does Using Variables in a DELTA List Mean, and When Can I Specify Variables in a DELTA List?

DELTA PLUS has been enhanced to add support for the use of variables in a DELTA List. This enhancement enables one DELTA List to be used for multiple IMS systems with differing parameter values.

Variable Definitions allow installations to assign unique values to individual fields for certain DELTA List elements. The element field values can be IMS system dependent, or an installation can define default element field values to be used by all IMS systems when processing DELTA Lists.

You can define unique values for individual fields for certain DELTA List elements using symbolic variables. A symbolic variable is a 1- to 8-character name. This variable can have different values assigned to it based on the IMSID of the IMS systems where the DELTA List will be processed. By assigning different values to the variable, you can process the same DELTA List with different data on different IMS systems.
Using Variables in DELTA List Processing

You can enter variable names as the values for certain DELTA List element fields. Any element field that does not have set, or discrete, values (such as **YES** or **NO**) may contain a variable as a value. You enter a reference to the variable when editing a DELTA List element field by typing an ampersand (&) followed by the variable name and delimited by a period (.). The ampersand means *the value of*, and DELTA PLUS interprets *the value of* the listed variables when processing a DELTA List that contains variables.

You can enter variable names as the values for certain DELTA List element fields. If a variable string is too long for an element field when you are editing a DELTA List element, you can position the cursor on the field and press **Prompt (F4)** to access the Expanded Field Input panel. This panel allows you to enter a variable string up to 32 characters in length, or to select from a list of available variables.

Sample Variable Definitions and their Resolved Values

The following samples show how variables can be defined and resolved.

**PREFIX** is a variable name and its values are defined for the following IMSIDs:

- AA for IMSA
- BB for IMSB
- CC for IMSC

**SUFFIX** is a variable name and its values are defined for the following IMSIDs:

- XX for IMSA
- YY for IMSB
- ZZ for IMSC

When you reference a variable as the value for a DELTA List element field, you must precede the variable name with an ampersand ( &) and delimited by a period (.).

If you type **& PREFIX** as the value for the **Name** field of a DELTA List element, the variable will resolve to

- AA for IMSA
- BB for IMSB
- CC for IMSC

as the values of the **Name** field for each IMSID during DELTA List processing.
If you type & PREFIX.TRAN as the value for the Name field of a DELTA List element, the variable will resolve to

- AATRAN for IMSA
- BBTRAN for IMSB
- CCTRAN for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

If you type & PREFIX & SUFFIX as the value for the Name field of a DELTA List element, the variable will resolve to

- AAXX for IMSA
- BBYY for IMSB
- CCZZ for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

If you type & PREFIX.TRAN & SUFFIX as the value for the Name field of a DELTA List element, the variable will resolve to

- AATRANXX for IMSA
- BBTRANYY for IMSB
- CCTRANZZ for IMSC

as the values of the Name field for each IMSID during DELTA List processing.

What is the Difference between Optimized and One element at a time Execution Modes?

Option Optimize execution instructs DELTA PLUS to attempt execution of the ENTIRE DELTA List as a single unit-of-work in IMS. A single unit-of-work may not be possible if the DELTA List has a change in dependence. Optimized is the recommended mode due to the speed in which the request is executed. Depending on the size of the DELTA List, Optimized mode can perform at an extremely rapid rate versus One element at a time mode. For example, total elapsed time is 20 seconds to add 100 elements non-optimized. The same 100 elements optimized have an elapsed time of 2 seconds. The benefit of executing in Optimized mode increases with a greater number of elements in the DELTA List.
Option **One element at a time** instructs DELTA PLUS to execute the DELTA List sequentially, one element at a time, as previously mentioned. This mode is much slower than Optimize execution mode. However, there are certain occasions when one element at a time is desirable.

For example, transactions T1, T2 and T3 all require the MAXRGN parameter be changed from 3 to 4. Since they must be stopped before they can be revised, you want them stopped for the shortest amount of time possible. With Optimized mode, *all* /STOP commands are done BEFORE the DELTA revise is done, and *all* the /START commands are done AFTER the revise is done. Using **One element at a time** mode, the /STOP is done for T1, T1 is revised, then the /START command for T1 is issued before any activity takes place for T2 or T3.

This mode contains suboption **Pause** after elements with errors which instructs DELTA PLUS to stop the DELTA List execution when an error is encountered.

### Can I View the Execution Results List after I Exit the Panel?

Yes, simply type **RESULTS** from the **Command** line on *any* DELTA PLUS panel. The Execution Results List is available as long as you have executed a DELTA List and are still in the DELTA PLUS dialog session. The Execution Results List is cleared when you exit the DELTA PLUS dialog.
What if I Execute a DELTA List on a Group, and One of the IMS Systems is Down?

If you select the coordinated execution option, DELTA PLUS will apply the element(s) to the systems that are active at the time the request is executed. For systems that join the Group at a later time, DELTA PLUS will attempt to apply the elements at IMS restart time (messages BMCDLP186045I and BMCDLP186046I will be issued). If DELTA PLUS encounters any errors applying element(s), messages BMCDLP186454E and BMCDLP186124A will be issued. If you do not select the coordinated DELTA List execution option, the IMS system(s) that is down will not reflect the changes.

What Is a DELTA PLUS Group and Why Would I Use It?

DELTA PLUS Group options enable a user-defined group of IMS systems to be treated as one IMS system. A group of IMS systems would typically be an IMS data sharing Group, IMS Shared Queues Group, or a group of logically related or duplicated IMS systems.

You can add an IMS system to a group using the DELTA PLUS IMSID options. You define the Group name in the XCF Group (optional) field. The previously defined Group options simply contain the names of the BMCXLINK LUNAME, Log and History File data set names, and a command option. Group options are not required.

One possible use of DELTA PLUS Groups is for IMS systems that are part of a Shared Queues GROUP. Any coordinated changes that you make with DELTA PLUS would be made on all the systems that are part of your DELTA PLUS Group: thus, keeping all of the systems in sync. This is a much simpler process than using IMS Online Change. Online Change requires you to enter /MODIFY PREPARE and /MODIFY COMMIT simultaneously on all the IMS systems. If one of the /MODIFY commands failed on any of the systems, you would have to take corrective action which could jeopardize system synchronization.

You could also use a Group simply to make it easier to issue IMS commands to multiple systems. Instead of issuing the command /DIS Q TRAN on IMSA, IMSB, and IMSC, you could have IMSA, IMSB, and IMSC be a part of GRP1, and issue the command only to GRP1. The output from all three systems would be returned in one display.
How Do I Define a DELTA PLUS Group?

Use the DELTA PLUS Edit Group Options panel to create a new DELTA PLUS Group and specify its options. For each IMS that you want to include in this Group, access the Edit IMSID Options panel and specify the name of DELTA PLUS Group in the **XCF Group** field. After you have specified the Group name, the Confirm Add IMS panel appears. This panel enables the IMSID to be added to the existing Group Log. All coordinated changes on the Group Log will be applied at the next restart of this IMS system. If you *do not* want the coordinated changes on the Group Log, simply bypass this process.

Now all the IMS systems that are a part of the DELTA PLUS Group will be treated as one IMS system. All the IMS systems in the Group will use the *same* BMCXLINK task network LUNAME, DELTA PLUS Log data sets, and DELTA PLUS History File data sets.

How Does DELTA PLUS Keep My Grouped Systems in Sync When One of the Systems is Down?

Assume system IMSA has been defined in the DELTA PLUS IMSID Options to be a part of DELTA PLUS Group GRP1. When IMSA is initialized, DELTA PLUS updates the header record in the Group Log and History File to reflect system IMSA. From this point forward, any coordinated change for GRP1 will also make an entry on the Log for IMSA, even if IMSA is down. At restart of IMSA, all the coordinated changes will be applied.

How Do I Add an IMS System to an Existing Group?

Assume GRP1 contains IMS systems IMSA, IMSB, and IMSC, and all the systems use common IMS SYSGEN input. Due to workload growth, you need to add IMSD.

Based on the guidelines in the following table, complete the appropriate procedure to add an IMS system to an existing Group.
### Situation

| You want all the coordinated changes on the DELTA PLUS Log to be applied during restart of IMSD |
| You do not want any coordinated changes on the DELTA PLUS Log to be applied to IMSD |

### Solution

| Complete “To use solution 1” on page 552. |
| Complete “To use solution 2” on page 552. |

#### To use solution 1

1. Ensure the IMSID options reference the DELTA PLUS Group name (in the **XCF Group** field).

2. Execute the DELTA PLUS Add IMSID utility.
   - To execute the utility in batch, see DLPCNTL member DLP#XUT1 for complete details. Ensure you review and edit this JCL prior to execution.
   - To execute the utility via ISPF, see “Adding an IMSID to an Existing Group’s Log Data Sets” on page 134.

   **Note**
   
   Ensure you have a current backup of the Log and History File data sets before executing this utility.

When IMSD is started the first time, DELTA PLUS will automatically apply all coordinated changes on the Log. IMS control region messages BMCDLP186045I and BMCDLP186046I will be issued to relay this process is taking place. If problems are encountered during the apply process, appropriate messages will be issued to inform you of the problem. If the coordinated changes include variables, the changes cannot be applied.

#### To use solution 2

1. Ensure the IMSID options reference the DELTA PLUS Group name (in the **XCF Group** field).

2. Start the new IMS that will be participating in the existing group. During restart, messages BMCDLP186044I and BMCDLP186125A will be issued. If you do not want coordinated changes to be applied to this new system, reply N and the IMS will be added to the Log and History file and no coordinated changes will be applied.
How Do I Remove an IMS System from an Existing Group Log or History File?

Assume that GRP1 contains IMS systems IMSA, IMSB, and IMSC. You determine that IMSC will no longer be participating in GRP1. IMSC will become a standalone IMS system in another sysplex. You want to remove all details for IMS from the DELTA PLUS Log and History File.

DELTA PLUS provides a batch utility that allows users to remove an IMS system from an existing Group Log and History file. For complete details, see DLPCNTL member DLP#XUT3. Ensure that you review and edit this JCL before execution.

Note
Before executing this utility, ensure that you have a current backup of the Log and History File data sets.

What is the DELTA PLUS XREF Feature?

The DELTA PLUS XREF feature provides information about the defined relationships between IMS system resources. Maintaining this information without DELTA PLUS is a time-consuming manual process. With the DELTA PLUS XREF feature, this information is always current and is available through online displays and batch reports. The DELTA PLUS XREF batch reports include:

- a report for a program of all databases that are referenced, explicitly or implicitly, by that program
- a report sorted by database of all programs that reference each database
- a report sorted by database of all programs that logically (or as an index) reference each database, or any databases that are related to that database
- a report sorted by database of the AREAs that are referenced by each database (DEDBs only)
- a report for a randomizer of all databases that use the randomizer routine
- a report for a compression routine of all databases that use the compression routine
- a report for a transaction of all databases that are used by that transaction
- a report for a database of all transactions that use the database
IMS system programmers and DBAs can use the DELTA PLUS XREF feature to facilitate the administration of IMS systems by keeping an inventory of the IMS environment. In the event of recovery situations, such as a broken database, it allows the user to determine everything that will be affected when the broken database is taken offline. The user can display the IMS components and verify the effect of the changes.

This feature can also be executed in batch. See “DELTA PLUS XREF Feature in Batch” on page 411 for more information on the batch version of this feature and the available batch reports. All ISPF browse commands are supported when browsing the resulting report.

**Sample Online Displays Using the DISPLAY DLP XREF Command and Output of IMS Resource Relationships**

Issue the following command to display information about the relationships between IMS resources, such as databases, programs, transactions, randomizers, and compression routines:

```
/DIS DLP XREF resource1 resource1_name RELresource2
```

*resource1* is PSB, DATABASE, RAND, TRAN, or COMP. *resource1_name* is name of the resource to be displayed. *RELresource2* is the related DMB, PSB, TRAN, or AREA. *RELresource2* is optional.

<table>
<thead>
<tr>
<th>resource1 value</th>
<th>Valid RELresource2 values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSB</td>
<td>DMB</td>
</tr>
<tr>
<td>DATABASE or DB</td>
<td>AREA, PSB, TRAN, DMB</td>
</tr>
<tr>
<td>RAND</td>
<td>DMB</td>
</tr>
<tr>
<td>TRAN</td>
<td>DMB</td>
</tr>
<tr>
<td>COMP</td>
<td>DMB</td>
</tr>
</tbody>
</table>

The following sample command will display the databases that reference the named randomizer:

```
/DIS DLP XREF RAND DFSHDC40
```

The following sample output should display:

```
RANDNAME - DMBS THAT USE THE RANDOMIZER
DFSHDC40 - DBFSAMD4    IVPDB2
*99084/125316*
```
The following sample command will display the PSBs that reference the named database:

/DIS DLP XREF DB DI21PART RELPSB

The following sample output should display:

<table>
<thead>
<tr>
<th>DMB NAME</th>
<th>PSBS THAT REFERENCE THE DMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI21PART</td>
<td>BMPA012 BMP002 BMP004 DFHSM04</td>
</tr>
<tr>
<td>DFHSM05</td>
<td>DFHSM14 DFHSM15 DFHSM24</td>
</tr>
<tr>
<td>DFHSM25</td>
<td>DFSSAM01 DFSSAM02 DFSSAM03</td>
</tr>
<tr>
<td>DFSSAM04</td>
<td>DFSSAM05 DFSSAM06 DFSSAM07</td>
</tr>
<tr>
<td>DFSSAM08</td>
<td>DFSSAM09 QCDNV2 TESTWTR</td>
</tr>
</tbody>
</table>

*99084/130604*

The following sample command will display the referenced databases for the named PSB:

/DIS DLP XREF PSB DFSSAM02 RELDMB

The following sample output should display:

<table>
<thead>
<tr>
<th>PSB NAME</th>
<th>REFERENCED DMBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFSSAM02</td>
<td>DI21PART</td>
</tr>
</tbody>
</table>

*99084/131100*

The following sample command will display the databases used by the named TRAN:

/DIS DLP XREF TRAN PART RELDMB

The following sample output should display:

<table>
<thead>
<tr>
<th>TRANNAME</th>
<th>DMBS USED BY TRANSACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART</td>
<td>DI21PART</td>
</tr>
</tbody>
</table>

*99084/131100*

The following sample command will display the TRANs that use the named database:

/DIS DLP XREF DB DI21PART RELTRAN

The following sample output should display:

<table>
<thead>
<tr>
<th>DMB NAME</th>
<th>TRANSACTIONS THAT USE THE DATABASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI21PART</td>
<td>DSPINV ADDINV</td>
</tr>
</tbody>
</table>

*99084/130604*
Does DELTA PLUS Provide a Utility to Compare IMS Systems (RESLIB, MODBLKS, Stage1 Input)?

DELTA PLUS provides a batch utility (DLP#UTL1) that allows users to compare an existing IMS system definition to a proposed IMS system definition.

This feature helps in the administration of complex environments with multiple IMS systems.

The utility can compare IMS system definitions where the existing IMS system definition is represented by:

- Stage-1 SYSGEN
- IMS RESLIB data set
- IMS MODBLKS data set

and the proposed IMS system definition is represented by a Stage-1 SYSGEN.

The utility can produce a report detailing IMS system differences and can automatically generate a DELTA List containing the differing elements. The DELTA List output could then be executed to synchronize existing or new IMS systems.

See DLPCNTL member DLP#UTL1 for complete details.

Does DELTA PLUS Offer Improvements in the Interrelation between the IMS SYSGEN and DELTA PLUS-Managed Elements?

Absolutely! First, consider how DELTA IMS is currently used. When changes are required to the active IMS system, DELTA Lists are created to revise, add, and otherwise maintain new or existing elements, and are executed. Periodically, all elements are copied from the IMS control region into a DELTA List, converted to Stage-1 macros, and incorporated into the IMS SYSGEN. Alternatively, ACTIVE changes on the DELTA Log are converted to Stage-1 macros and incorporated into the IMS SYSGEN.

When the Stage 2 process is executed, it causes the LINKEDIT dates to change in load modules DFSSMB0x, DFSVNUCx, and DFSDDIRx (for DBCTL) where DELTA
IMS obtains the DB/DC SYSGEN dates. When IMS is initialized, all DELTA IMS changes on the Log become inactive because the DB/DC date(s) have changed, so they are not applied to the IMS system.

With DELTA PLUS, BMC Software is encouraging customers to allow DELTA PLUS to manage the SYSGEN input (APPL, DATABASE, TRANSACT, and so forth). The ideal scenario is the IMS SYSGEN contains only minimal definitions to allow the SYSGEN process to properly generate any required support.

Theoretically, the only time a SYSGEN would be required is for an IMS maintenance or version change, or an IMS macro that DELTA PLUS does not support.

**Available DELTA PLUS/IMS SYSGEN Options**

1) Continue to manage IMS macro changes and IMS SYSGENs using current methods. DELTA PLUS will operate exactly the same as DELTA IMS.

2) Allow DELTA PLUS to manage your IMS system definitions. When an IMS SYSGEN is required for IMS maintenance or version change, DELTA PLUS provides a way to alter the current SYSGEN date(s) for active elements on the DELTA PLUS Log. After successful SYSGEN date(s) modification, active elements on the DELTA PLUS Log will be reapplied at IMS restart.

Member DLP#XUT2 in the DLPCNTL data set executes a DELTA PLUS utility to modify the SYSGEN date(s) on all elements contained in the DELTA PLUS Log.

Review and update the control card in DLPCNTL member DLP#XUT2 to reflect the new SYSGEN date(s).

**What Are the DELTA PLUS Log and History File Data Sets, and How Are They Different?**

DELTA PLUS uses two pairs of data sets for maintaining information concerning the changes made to an IMS control region. The DELTA PLUS Log data sets maintain a record of changes made to the IMS system and are used at restart time for reapplying active changes to the system. The DELTA PLUS History File data sets are useful for auditing purposes and keeping track of the before and after images of changed resources. Consider the DELTA PLUS Log data sets as being required for use by IMS and the DELTA PLUS History File data sets as being used for local site purposes.
Can I Convert My Existing DELTA IMS Log Data Sets to DELTA PLUS Log Data Sets?

You can convert your existing DELTA IMS Log data sets to DELTA PLUS Log and History File data sets. The IMS control region must have UPDATE authority for the DELTA PLUS Log and History File data sets.

**Note**
During IMS control region initialization, the IMS DB/DC SYSGEN linkedit dates are written to the Log and History File control record (if required). The Log and History File SYSGEN dates are also updated following an online change MODBLKS GEN implementation.

Determine which of the following scenarios best fits your environment, and use the corresponding conversion procedure.

**Scenario 1**
Simple conversion of one DELTA IMS Log to one DELTA PLUS Log/History File, no DELTA PLUS Group is used. Use Conversion Procedure 1.

**Scenario 2**
A DELTA PLUS Group Log is to be used, and existing IMS systems use identical IMS SYSGENs (IMS systems are EXACT clones of one another); therefore, the DELTA Logs are the same. Use Conversion Procedure 2.

**Scenario 3**
DELTA PLUS Group Log is to be used, the existing IMS systems are not identical, and will basically *stack* the existing DELTA IMS Log onto the new DELTA PLUS Group Log. Use Conversion Procedure 3.

**Conversion Procedure 1**
Use the following procedure to convert.
1 Allocate and format the new DELTA PLUS Log and History File using either the supplied batch utility or the DELTA PLUS ISPF Utility menu.

2 Edit DLPCNTL member DLP#UTL6. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS system that has been converted from DELTA IMS to DELTA PLUS.

**Conversion Procedure 2**

Use the following procedure to convert.

1 Allocate and format the new DELTA PLUS Log and History File using the predefined Group name via the supplied batch utility or the DELTA PLUS ISPF Utility menu.

2 Edit DLPCNTL member DLP#UTL6. You must determine which existing DELTA IMS Log will be converted to the DELTA PLUS Group Log. Because the IMS systems are identical, all the elements on the new DELTA PLUS Log will be identified as *coordinated*. This designation means DELTA PLUS will apply all elements on the DELTA PLUS Log during IMS initialization to *all* systems that join the Group. Review the comments, ensure DD card COORD is *not* commented out, and update the JCL before submitting the job.

*Note*

After the conversion is completed, you *cannot* convert another DELTA IMS Log at a later date. If coordinated elements already exist on the Group DELTA PLUS Log, further conversions are *not* possible.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by *all* the IMS systems that join the Group. During IMS restart, DELTA PLUS will apply *all* elements to the IMS system. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

**Conversion Procedure 3**

Use the following procedure to convert.
1 Allocate and format the new DELTA PLUS Log and History File using the pre-defined Group name via the supplied batch utility or the DELTA PLUS ISPF Utility menu.

2 Edit DLPCNTL member DLP#UTL6. You must convert one DELTA IMS Log at a time. You cannot execute a DELTA PLUS DELTA List as coordinated until you have finished all conversions. If you do, further conversions will not be possible. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS systems that join the group. During IMS restart, DELTA PLUS will apply all elements that pertain to the IMS system that is restarting. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

**Conversion Utility Considerations**

Before executing the conversion utility, if the DELTA PLUS Group Log contains ANY elements identified as coordinated, conversion will not be possible.

After conversion has completed and the DELTA PLUS Group Log contains elements identified as coordinated, further DELTA IMS Log conversions will not be possible.

See “Converting from DELTA IMS to DELTA PLUS” on page 565 for more information.
Defining Spare Elements

Spare elements must exist in the current IMSGEN before DELTA PLUS can add new VTAM terminals, LTERMs, or subpools to an IMS system. Spare elements are not required for DBCTL regions, since these control blocks do not exist in DBCTL regions.

Spare elements are unused terminal, LTERM, and subpool control blocks which you define with Stage-1 macros and include in your IMSGEN.

The number of spare elements which you should include in your IMS system depends on the number of terminals, LTERMs, and subpools you expect to add between regularly-scheduled IMSGENs.

Spare Element Masks

When DELTA PLUS needs a spare element, it searches through the IMSGEN-defined terminals, LTERMs, and subpools with the aid of a spare element mask until it finds a match. The mask is specified on the DELTA List Edit panel when adding terminals, LTERMs, or subpools. The mask can contain asterisk (*) wild card characters that will match any character or the percent (%) wild character to match a single character in a spare element name.

Sample Spare Element Definitions

Use the TYPE, TERMINAL, and NAME Stage-1 macro statements together to define one or more VTAM terminals and their associated LTERMs in the IMSGEN. The macros have the following hierarchical relationship:

- TYPE specifies a set of defaults that apply to subsequent terminals.

- TERMINAL represents a VTAM node. It can override options specified on the preceding TYPE as well as specify certain other options not permitted on the TYPE statement.
NAME defines one or more LTERMss that are initially assigned to the preceding terminal.

You must supply one or more name statements for each terminal.

Evaluate the terminal types and options currently supported in your environment, and create a spare TYPE statement for each. Next anticipate your terminal requirements for each type of terminal and create the necessary spare terminals for each type. Finally, place a NAME statement after each terminal that lists the LTERMss to be initially assigned to the terminal. Remember that the LTERM may be renamed or assigned by DELTA PLUS to another terminal if necessary.

The sample macro statements shown in the following samples define spare elements for VTAM 3270 and SNA terminals and printers. DELTA PLUS allows the names of network elements to be changed online, but not attributes or options. Be sure to vary the nnn and mmm values in the spare element names so that each spare element has a unique name.

Spare element masks for the following sample definitions are

- $3277* for spare 3277 type devices
- $3286* for spare 3286 devices
- $SLU1* for SLUTYPE1 devices
- $SLU2* for SLUTYPE2 devices
- $SLUP* for SLUTYPEP devices
- $$LT$* for spare LTERMs
- $$RL$* for spare remote LTERMs.
- $$SP$* for spare LU 6.1 subpools

Note
Spare element masks are set to the above defaults. BMC Software recommends that you use these spare element masks or similar masks in your Stage-1 input for spare elements. Usage of these names does not mean that DELTA PLUS will try to match these names with the types of elements being added. It is the customer’s responsibility to use the appropriate spare element mask for the type of element being added.
Sample for VTAM 3270 Terminals and Printers

TYPE
UNITYPE=3270,MSGDEL=SYSINFO,PTRSIZE=IGNORE,FEAT=IGNORE,
UNIT=3277,MODEL=2

TERMINAL
NAME=$3270nnn

NAME
$3270nnn

TERMINAL
NAME=$3286nnn,UNIT=3286,OPTIONS=(SHARE)

NAME
$3286nnn

Sample for SNA SLUTYPE1 Printers

TYPE
UNITYPE=SLUTYPE1,MSGDEL=SYSINFO,OUTBUF=768,
OPTIONS=(NORESP,SHARE)

TERMINAL
NAME=$SLU1nnn,COMPT1=(.MFS-SCS1)

NAME
$SLU1nnn

Sample for SNA SLUTYPE2 Terminals

TYPE
UNITYPE=SLUTYPE2,FEAT=IGNORE,MSGDEL=SYSINFO,MODEL=2

TERMINAL
NAME=$SLU2nnn
NAME

$SLU2nnn

Sample for SNA SLUTYPEP Terminals

TYPE

UNITYPE=SLUTYPEP,FAT=IGNORE,MSGDEL=SYSINFO,
OPTIONS=(NOCOPY), MODEL=2

TERMINAL

NAME=$SLUPnnn

NAME

$SLUPnnn

Sample for Remote LTERM

LINKM1

MSPLINK TYPE=MTM,BUFSIZE=1000 MSLINK PARTNER=AB,
MSPLINK=LINKM1

MSC13

MSNAME SYSID=(3,1)
NAME $$RL$mm1
NAME $$RL$mm2

Sample for LU 6.1 Subpools

VTAM POOL

SUBPOOL

NAME=$$SP$nnn

NAME

$$SP$mmm
Converting from DELTA IMS to DELTA PLUS

This chapter describes how to convert from DELTA IMS to DELTA PLUS. It also explains the steps necessary to perform a smooth transition with minimal impact to your existing system.

Introduction

Several components of DELTA IMS relate directly to DELTA PLUS and are very similar in use. In most cases, however, the internal structure of these components differs and the existing DELTA IMS component cannot be directly used by DELTA PLUS.

This chapter covers the following topics related to conversion:

- Invocation CLIST
- Global Options
- IMSID Options
- SAF Security
- UPF Security
- DELTA PLUS Logs and History Files
- DELTA Lists
- Keyword Tables
- Product Authorization
- Message Numbers
Command Differences

Fallback Considerations

Invocation CLIST

The CLIST that you use to invoke the DELTA PLUS product you purchased determines the product view that will be displayed. When you invoke the DELTA PLUS online interface, the version of the DELTA PLUS Main Menu that is appropriate to the product you selected is displayed.

Use one of the CLISTs shown in Table 77 on page 566 to invoke a product view of the DELTA PLUS online interface.

Table 77: CLISTs for Invoking the DELTA PLUS Online Interface

<table>
<thead>
<tr>
<th>If you want to use . . .</th>
<th>Then use the DLPSAMP member . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>DLPCI@00</td>
</tr>
<tr>
<td>DELTA PLUS for DBCTL</td>
<td>DTDCI@00</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>DLVCI@00</td>
</tr>
</tbody>
</table>

Tip

DELTA PLUS contains a hidden panel that allows you to specify many DELTA PLUS ISPF default product values. This panel (named DLPZUSER) is located in DLPPLIB. DLPZUSER replaces DLAPI@00 used by DELTA IMS. Review DLPZUSER to customize the DELTA PLUS ISPF interface default values. Comments are included in the panel to assist you.

Global Options

Similar to DELTA IMS, the DELTA PLUS global options define common processing options.

You can create a new DELTA PLUS global options module using values specified in an existing DELTA IMS global options module (DLA$GBL0). Use the DELTA PLUS ISPF interface Administration Menu (option 4 on the Main Menu) to complete this task. Select option 1 on the Administration Menu and press Enter. The Global Options Entry panel is displayed. Specify the library that contains the DLA$GBL0 options module in the Global Options library field, and press Enter. DELTA PLUS
will access the DLA$GBL0 options module and populate the following DELTA PLUS global options module fields:

- Generic DASD unit name
- WTO routing/descriptor codes
- Internal trace table dynamic dump sysout class
- User Profile (UPF) data set name
- USERID for authorization check

If DLA$GBL0 does not exist, DELTA PLUS default values are provided. Make any necessary changes.

Table 78 on page 567 identifies each field in the DELTA IMS global options and explains the corresponding field in the DELTA PLUS global options.

Table 79 on page 568 describes the additional fields that DELTA PLUS provides.

### Table 78: Mapping of DELTA IMS Global Options to DELTA PLUS Global Options

<table>
<thead>
<tr>
<th>DELTA IMS Global Option Field</th>
<th>DELTA PLUS Global Option Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four character prefix for BMCLINK session ACBNAME</td>
<td>VTAM User Session ACBNAME prefix</td>
</tr>
<tr>
<td>The WTO message routing codes</td>
<td>Routing code</td>
</tr>
<tr>
<td>The WTO message descriptor codes</td>
<td>Descriptor code</td>
</tr>
<tr>
<td>CHECK/EXECUTE pacing value</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Request status check time interval</td>
<td>Request status check time interval</td>
</tr>
<tr>
<td>Idle BMP automatic shutdown interval</td>
<td>no corresponding field a</td>
</tr>
<tr>
<td>Maximum DL/I command size</td>
<td>no corresponding field a</td>
</tr>
<tr>
<td>BMCLINK ENQ qname</td>
<td>no corresponding field a</td>
</tr>
<tr>
<td>BMCLINK ENQ rname (VTAM interface)</td>
<td>no corresponding field a</td>
</tr>
<tr>
<td>BMCLINK ENQ rname (BMP control)</td>
<td>no corresponding field a</td>
</tr>
<tr>
<td>IMSID options update ENQ qname</td>
<td>no corresponding field b</td>
</tr>
<tr>
<td>Internal trace table size</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Internal trace table dynamic dump sysout class</td>
<td>Trace table dynamic dump sysout class</td>
</tr>
</tbody>
</table>
DELTA IMS Global Option Field | DELTA PLUS Global Option Field
--- | ---
Generic DASD unit name | DASD unit name for temporary files
User profiles data set name | User Profiles data set
Userid for authorization check | Select userid type for batch execution
History information | no corresponding field
IMS operator commands | no corresponding field

a DELTA PLUS replaces BMCLINK with BMCXLINK and no longer uses a BMP to communicate with the IMS control region.
b DELTA PLUS uses standard ISPF services for enqueuing the IMSID options.

Table 79: New DELTA PLUS Global Options Fields

<table>
<thead>
<tr>
<th>DELTA PLUS Global Option Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translate all messages to upper case</td>
<td>Allows you to indicate that all messages generated by DELTA PLUS should be displayed in uppercase letters only.</td>
</tr>
<tr>
<td>Message number prefix</td>
<td>Allows you to indicate which error message prefix should be used by all messages generated by DELTA PLUS.</td>
</tr>
<tr>
<td>View Profile library</td>
<td>Specifies the name of the data set that contains the View Profiles.</td>
</tr>
<tr>
<td>Variable Definition library</td>
<td>Specifies the name of the data set that contains the Variable Definition Sets.</td>
</tr>
</tbody>
</table>

**IMSID Options**

The IMSID options used by DELTA IMS are only a subset of the options contained in the module. Pages 1 and 2 of the DELTA IMS IMSID options relate to the actual operation of DELTA IMS. The remaining options are for DELTA IMS VIRTUAL TERMINAL.

You can create a new DELTA PLUS IMSID options module using values specified in an existing DELTA IMS IMSID options module (DLA#iiii). Use the DELTA PLUS ISPF interface Administration Menu (option 4 on the Main Menu) to complete this task. Select option 2 on the Administration Menu and press Enter. The IMSID/Group Options Entry panel is displayed. Specify the IMSID and the library that contains the DLA#iiii options module(s) in the appropriate fields. Select option 1 and press Enter. DELTA PLUS will access the DLA#iiii options module(s) and populate the following DELTA PLUS IMSID options module fields:

- IMS version/release level
- Allow IMS storage displays
- Allow IMS storage zaps
- Copy IMSID Options to an IMS STEPLIB library when saved
- XRF/FDR Alternate IMSID
- Write IMS commands to History File

**Note**

If the **Copy IMSID Options to an IMS STEPLIB library when saved** option is activated in DELTA IMS, it will also be activated in DELTA PLUS. However, the name in the **IMS STEPLIB library** field will *not* be populated because it is stored in the user’s ISPF profile, *not* in the DELTA IMS options module. You will need to manually enter the value in this field.

Because certain DELTA PLUS fields have no DELTA IMS equivalent, you need to review the remaining current DELTA PLUS options and then specify them.

**Table 80 on page 569** identifies each field in the DELTA IMS IMSID options and explains the corresponding field in the DELTA PLUS IMSID options.

**Table 81 on page 571** describes the additional fields that DELTA PLUS provides.

### Table 80: Mapping of DELTA IMS IMSID Options to DELTA PLUS IMSID Options

<table>
<thead>
<tr>
<th>DELTA IMS IMSID Option Field</th>
<th>DELTA PLUS IMSID Option Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Override IMSID</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>IMS version/release level</td>
<td>IMS version/release level</td>
</tr>
<tr>
<td>DELTA IMS system log code</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you need to change this value.</td>
</tr>
<tr>
<td></td>
<td>DELTA PLUS uses the log record code X'DA'.</td>
</tr>
<tr>
<td>User authorization exit name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>User customization exit name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>Allow IMS storage displays</td>
<td>Allow IMS storage displays</td>
</tr>
<tr>
<td>Allow IMS storage zaps</td>
<td>Allow IMS storage zaps</td>
</tr>
<tr>
<td>Log IMS operator commands</td>
<td>Write IMS commands to History File</td>
</tr>
<tr>
<td>DELTA IMS IMSID Option Field</td>
<td>DELTA PLUS IMSID Option Field</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Copy options to the IMS APF-authorized library when saved</td>
<td>Copy IMSID Options to an IMS STEPLIB library when saved</td>
</tr>
<tr>
<td>XRF/FDR alternate IMSID</td>
<td>XRF/FDR Alternate IMSID</td>
</tr>
<tr>
<td>Alt IMS APF-auth library</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Is this a DBCTL region?</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>IMS DBCTL region &quot;SSM=&quot; suffix name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>IMS PROCLIB data set</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>BMCLINK TRANSACTION CODE</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>BMCLINK task network LU-name</td>
<td>BMCLINK task network LUNAME</td>
</tr>
<tr>
<td></td>
<td>Note: BMC Software recommends that you do not use the same LUNAME for DELTA PLUS that you are using for DELTA IMS because BMCLINK is replaced by BMCXLINK. The VTAM MODETAB definition is different between BMCLINK and BMCXLINK.</td>
</tr>
<tr>
<td>IMS RESLIB data set name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Primary Log</td>
<td>Primary Log</td>
</tr>
<tr>
<td></td>
<td>WARNING: BMC Software strongly recommends that you do not use the same Log data sets for DELTA PLUS that you are using for DELTA IMS because any information on your current DELTA IMS logs will be lost. Use DLPCNTL member DLP#UTL6 to convert a DELTA IMS Log to a DELTA PLUS Log and History File.</td>
</tr>
<tr>
<td>Secondary Log</td>
<td>Secondary Log</td>
</tr>
<tr>
<td></td>
<td>WARNING: BMC Software strongly recommends that you do not use the same Log data sets for DELTA PLUS that you are using for DELTA IMS because any information on your current DELTA IMS logs will be lost. Use DLPCNTL member DLP#UTL6 to convert a DELTA IMS Log to a DELTA PLUS Log and History File.</td>
</tr>
</tbody>
</table>
### Table 81: New DELTA PLUS IMSID Options Fields

<table>
<thead>
<tr>
<th>DELTA PLUS IMSID Options Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XCF Group (optional)</td>
<td>Allows grouping of IMS systems. Grouping is explained in other parts of this manual. Note: BMC Software recommends that you not specify a Group until you have reviewed Group concepts thoroughly.</td>
</tr>
<tr>
<td>Primary/Secondary History File</td>
<td>In addition to the Log data sets, DELTA PLUS uses a pair of data sets for maintaining history (auditing) information. These data sets contain a record for each element executed for the IMS and keep track of the before and after images of IMS resources. These data sets may be formatted using option 3.2.4 from the DELTA PLUS Main Menu. The action bar on the IMSID Options - Basic Options panel also contains an option to format the History File data sets.</td>
</tr>
</tbody>
</table>

### SAF Security

As distributed, access to DELTA PLUS is unrestricted. If you want to protect DELTA PLUS functions, you may limit access through System Authorization Facility (SAF). The SAF security interface is an optional security interface which allows you to protect every function within DELTA PLUS. In general, SAF supports five levels of access to protected resources:

- **NONE**
- **READ**
- **UPDATE**
- **Control**
- **ALTER**
When the functions are protected in DELTA IMS, the only access levels with meaning are NONE and READ. If a user has an access level of NONE to a resource, the user is prevented from doing the function. If a user has an access level of READ or higher, the user is allowed to perform that function.

If the user has READ access to DLALIST.BROWSE then the user can browse DELTA List members.

To streamline the SAF process and to reduce the number of resources needed, DELTA PLUS uses three levels of access:

- NONE
- READ
- UPDATE

For those functions which have a browse and edit capability, an access level of READ allows browse while UPDATE allows edit.

**Example**

If the SAF resource DLP.DELTALST.* is defined and a user has READ access, the user will be allowed to browse DELTA List members, but not be allowed to change them. If a user has UPDATE access, then the user will be able to make changes to DELTA List members.

---

**SAF Resource Rules**

DELTA PLUS allows you to continue to use the *existing* DELTA IMS SAF resource rules or you can use the DELTA PLUS SAF resource rules.

<table>
<thead>
<tr>
<th>Preference</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>To use the <em>existing</em> DELTA IMS SAF resource rules</td>
<td>See the next section, “Using the Existing DELTA IMS SAF Resource Rules” on page 572</td>
</tr>
<tr>
<td>To use the DELTA PLUS SAF resource rules</td>
<td>Refer to Table 82 on page 573</td>
</tr>
</tbody>
</table>

---

**Using the Existing DELTA IMS SAF Resource Rules**

To use the *existing* DELTA IMS SAF resource rules, you must complete the following steps:
1. Change the SAF class in DLPSAMP member DLPYSAF to **DLA#** and then execute the DLPCNTL member DLP#SAF1.

2. Grant READ access to the ACTIVATE and ACTIVATE.ALT resources within class DLA#. The ACTIVATE resource activates SAF usage and ACTIVATE.ALT allows the existing DELTA IMS resource rules to be used.

**Note**
Prior to DELTA PLUS version 2.1.03, if the ACTIVATE.ALT resource was merely defined or if a generic resource granted or denied READ access to it, then the DELTA IMS resources would have been used. Under ACF2, DELTA IMS resources would have been used if ACTIVATE.ALT (and the SAFDEF record) did not exist.

3. Define the following DELTA PLUS SAF resource rules for the additional DELTA PLUS functions that have no DELTA IMS equivalent function:

<table>
<thead>
<tr>
<th>DELTA PLUS SAF Resource</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLP.ADMIN.VARDEF.name</td>
<td>Use DELTA List variables</td>
</tr>
<tr>
<td>DLP.ADMIN.ADDIMS</td>
<td>Add an IMS to the Group Log</td>
</tr>
<tr>
<td>DLP.ADMIN.CHGDATE</td>
<td>Change the dates on the DELTA PLUS Log</td>
</tr>
<tr>
<td>DLP.target.CONVERT.LOG.STAGE1</td>
<td>Convert the DELTA PLUS Log to Stage1 macros</td>
</tr>
<tr>
<td>DLP.VARDEF.name</td>
<td>Execute variable definitions in a DELTA List</td>
</tr>
<tr>
<td>DLP.VIEWPROF.vname</td>
<td>Use View Profiles</td>
</tr>
</tbody>
</table>

*target* = four-character IMSID or a Group name

*name* = one- to eight-character member name

*vname* = one- to eight-character View Profile name

**Note**
The DELTA PLUS Group options are secured by the DELTA IMS IMSID options BROWSE/EDIT/REFRESH SAF resource rules. Also, all History File functions are secured by the corresponding Log File resource rules.

### Table 82: SAF Resource Chart for Converting from DELTA IMS to DELTA PLUS

<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.CHGDATE</td>
<td>READ</td>
</tr>
<tr>
<td>SYSGEN Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Utility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>DELTA IMS SAF Resource</td>
<td>DELTA PLUS SAF Resource</td>
<td>DELTA PLUS Access Level</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Global Options Browse</td>
<td>GLOBAL.BROWSE</td>
<td>DLP.ADMIN.GLOBAL</td>
<td>READ</td>
</tr>
<tr>
<td>Global Options Edit</td>
<td>GLOBAL.EDIT</td>
<td>DLP.ADMIN.GLOBAL</td>
<td>UPDATE</td>
</tr>
<tr>
<td>IMSID Options Browse</td>
<td>iiiii.IMSID.BROWSE</td>
<td>DLP.ADMIN.IMSID</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID Options Edit</td>
<td>iiiii.IMSID.EDIT</td>
<td>DLP.ADMIN.IMSID</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Add IMSID to Group Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.ADDIMS</td>
<td>READ</td>
</tr>
<tr>
<td>Remove IMSID from Group Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.REMOVIMS</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID Options Refresh</td>
<td>iiiii.IMSID.REFRESH</td>
<td>DLP.target.REFRESH.OPTIONS</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID CPU-ID Refresh</td>
<td>iiii.PASSWORD.REFRESH</td>
<td>DLP.target.REFRESH.SECURITY</td>
<td>READ</td>
</tr>
<tr>
<td>Group Options Browse</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.GROUP</td>
<td>READ</td>
</tr>
<tr>
<td>Group Options Edit</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.GROUP</td>
<td>UPDATE</td>
</tr>
</tbody>
</table>

**Note:** BMC Software recommends using the same level of security for Group Options as IMSID Options.
<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>View Profile Use</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.VIEWPROF. <em>vname</em></td>
<td>READ</td>
</tr>
<tr>
<td>CPU-ID Password/Product</td>
<td>PASSWORD.EDIT</td>
<td>DLP.ADMIN.PRODAUTH</td>
<td>READ</td>
</tr>
<tr>
<td>Authorization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELTA List - Browse Member</td>
<td>DLALIST.BROWSE</td>
<td>DLP.DELTALST. <em>name</em></td>
<td>READ</td>
</tr>
<tr>
<td>DELTA List - Edit Member</td>
<td>DLALIST.EDIT</td>
<td>DLP.DELTALST. <em>name</em></td>
<td>UPDATE</td>
</tr>
<tr>
<td>DELTA List - Delete Member</td>
<td>DLALIST.DELETE</td>
<td>No DELTA PLUS Equivalent</td>
<td></td>
</tr>
<tr>
<td>DELTA List - Check</td>
<td>iiiii.DLALIST.CHECK</td>
<td>DLP. <em>target</em>.DELTALST.RUN</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA List - Execute</td>
<td>iiiii.DLALIST.EXECUTE</td>
<td>DLP. <em>target</em>.DELTALST.RUN</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Convert DELTA List to STAGE1</td>
<td>DLALIST_CONVERT</td>
<td>DLP.CONVERT.DELTALST.STAGE1</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Generate</td>
<td>iiiii.DLALOG.GENERATE</td>
<td>DLP. <em>target</em>.CONVERT.LOG.STAGE1</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Generate</td>
<td>iiiii.DLALOG.GENERATE</td>
<td>DLP. <em>target</em>.CONVERT.LOG.DELTALST</td>
<td>READ</td>
</tr>
<tr>
<td>IMS Command Interface</td>
<td>iiiii.IMSCMD. <em>cmd</em></td>
<td>DLP. <em>target</em>.COMMAND. <em>cmd</em></td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log List</td>
<td>iiiii.DLALOG.LIST</td>
<td>DLP. <em>target</em>.LOG.REPORT</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Status</td>
<td>iiiii.DLALOG.STATUS</td>
<td>DLP. <em>target</em>.LOG.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Purge</td>
<td>iiiii.DLALOG.PURGE</td>
<td>DLP. <em>target</em>.LOG.PURGE</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Recover</td>
<td>iiiii.DLALOG.RECOVER</td>
<td>DLP. <em>target</em>.LOG.RECOVER</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Format</td>
<td>iiiii.DLALOG.FORMAT</td>
<td>DLP. <em>target</em>.LOG.FORMAT</td>
<td>READ</td>
</tr>
<tr>
<td>History Report</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP. <em>target</em>.HISTORY.REPORT</td>
<td>READ</td>
</tr>
<tr>
<td>History Status</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP. <em>target</em>.HISTORY.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>History Purge</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP. <em>target</em>.HISTORY.PURGE</td>
<td>READ</td>
</tr>
<tr>
<td>History Recover</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP. <em>target</em>.HISTORY.RECOVER</td>
<td>READ</td>
</tr>
<tr>
<td>Function</td>
<td>DELTA IMS SAF Resource</td>
<td>DELTA PLUS SAF Resource</td>
<td>DELTA PLUS Access Level</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------</td>
<td>---------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>History Format</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP. target.HISTORY.FORMAT</td>
<td>READ</td>
</tr>
</tbody>
</table>

Note: BMC Software recommends using the same level of security for the History Files as the Logs.

<table>
<thead>
<tr>
<th>Storage Display</th>
<th>iiiii.STORAGE.DISPLAY</th>
<th>DLP. target.STORAGE</th>
<th>READ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Zap</td>
<td>iiiii.STORAGE.ZAP</td>
<td>DLP. target.STORAGE</td>
<td>UPDATE</td>
</tr>
</tbody>
</table>

**iii** = four-character IMSID  
**target** = four-character IMSID or a Group name  
**cmd** = three-character IMS command abbreviation  
**vname** = one- to eight-character View Profile name  
**name** = one- to eight-character member name

## UPF Security

Beginning with version 2.1.01, the DELTA PLUS product now supports UPF security.

DELTA PLUS can use your existing DELTA IMS UPF data set if you specify the name of your DELTA IMS UPF data set in the User Profiles data set field in the DELTA PLUS Global Options. If you currently use customized keyword tables, you can convert them to DELTA PLUS view profiles. See “Keyword Tables” on page 580 for more information.

If you executed job DLA#UIDL to install UPF administrator authority for DELTA IMS, you must customize and execute DLPCNTL job DLP#UIDL for DELTA PLUS.

If you executed job DLA#RSCL to activate RACF authorization for DELTA IMS UPDATE and Control levels, you must customize and execute DLPCNTL job DLP#RSCL to activate this authorization in DELTA PLUS.

## DELTA PLUS Logs and History Files

DELTA PLUS uses two pairs of data sets for maintaining information concerning the changes made to an IMS control region. The DELTA PLUS Log data sets maintain a record of changes made to the IMS system and are used at restart time for reapplying active changes to the system. The DELTA PLUS History File data sets are
useful for auditing purposes and keeping track of the before and after images of changed resources.

You must allocate and format a pair of DELTA PLUS History File data sets before attempting to execute DELTA PLUS. The IMS control region must have UPDATE authority for the DELTA PLUS Log and History File data sets.

**Note**

During IMS control region initialization, the IMS DB/DC SYSGEN linkedit dates are written to the Log and History File control record (if required). The Log and History File SYSGEN dates are also updated following an online change MODBLKS GEN implementation.

For information on allocating these data sets, see “Allocating New DELTA PLUS Data Sets” on page 148.

## Conversion from DELTA IMS Log Data Sets to DELTA PLUS Log and History File Data Sets

If you choose, you can convert your existing DELTA IMS Log data sets to DELTA PLUS Log and History File data sets. Determine which of the following scenarios best fits your environment, and use the corresponding conversion procedure.

### Scenario 1

Simple conversion of one DELTA IMS Log to one DELTA PLUS Log/History File, no DELTA PLUS Group is used. Use “Conversion Procedure 1” on page 578.

### Scenario 2

A DELTA PLUS Group Log is to be used, and existing IMS systems use identical IMS SYSGENs (IMS systems are EXACT clones of one another); therefore, the DELTA Logs are the same. Use “Conversion Procedure 2” on page 578.
Scenario 3

DELTA PLUS Group Log is to be used, the existing IMS systems are NOT identical, and will basically stack the existing DELTA IMS Log onto the new DELTA PLUS Group Log. Use “Conversion Procedure 3” on page 579.

Conversion Procedure 1

Use the following procedure to convert.

1 Allocate and format the new DELTA PLUS Log and History File using either the supplied batch utility or the DELTA PLUS ISPF Utility menu.

2 Edit DLPCNTL member DLP#UTL6. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS system that has been converted from DELTA IMS to DELTA PLUS.

Conversion Procedure 2

Use the following procedure to convert.

1 Define DELTA PLUS Group options.

2 Ensure the IMSID options reference the DELTA PLUS Group name (in the XCF Group field).

3 Allocate and format the new DELTA PLUS Log and History File using the predefined Group name via the batch utility jobs (DLP#LOGA and DLP#HISTA in DLPCNTL) or the DELTA PLUS ISPF Utility menu.

4 Edit DLPCNTL member DLP#UTL6. You must determine which existing DELTA IMS Log will be converted to the DELTA PLUS Group Log. Because the IMS systems are identical, all the elements on the new DELTA PLUS Log will be identified as coordinated. This designation means DELTA PLUS will apply all elements on the DELTA PLUS Log during IMS initialization to ALL systems that join the Group. Review the comments, ensure DD card COORD is NOT commented out, and update the JCL before submitting the job.
After the conversion is completed, you cannot convert another DELTA IMS Log at a later date. If coordinated elements already exist on the Group DELTA PLUS Log, further conversions are not possible.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by ALL the IMS systems that join the Group. During IMS restart, DELTA PLUS will apply ALL elements to the IMS system. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

**Conversion Procedure 3**

Use the following procedure to convert.

1. Allocate and format the new DELTA PLUS Log and History File using the pre-defined Group name via the batch utility jobs (DLP#LOGA and DLP#HISTA in DLPCNTL) or the DELTA PLUS ISPF Utility menu.

2. Edit DLPCNTL member DLP#UTL6. You must convert one DELTA IMS Log at a time. You cannot execute a DELTA PLUS DELTA List as coordinated until you have finished ALL conversions. If you do, further conversions will not be possible. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS systems that join the group. During IMS restart, DELTA PLUS will apply ALL the elements that pertain to the IMS system that is restarting. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

**WARNING**

Before executing the conversion utility, if the DELTA PLUS Group Log contains ANY elements identified as **coordinated**, conversion will not be possible.

After conversion has completed and the DELTA PLUS Group Log contains elements identified as **coordinated**, further DELTA IMS Log conversions will not be possible.
DELTA Lists

Although DELTA PLUS also uses DELTA Lists to contain the changes that should be made to the IMS control region, the format of the DELTA List is different between DELTA IMS and DELTA PLUS. DELTA PLUS provides a conversion utility you can use to convert existing DELTA IMS DELTA Lists into DELTA PLUS DELTA Lists. Member DLP#UTL2 in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL to convert DELTA IMS DELTA Lists into DELTA PLUS DELTA Lists. Instructions for using the utility are in the comments of this member.

The DELTA PLUS DELTA PDS has different data set characteristics from the DELTA IMS DELTA PDS, and must first be allocated. Member DLP#PDSA in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL to allocate a new DELTA PLUS DELTA PDS.

Keyword Tables

DELTA IMS allows creation and maintenance of keyword tables to customize the fields in the DELTA List elements. DELTA PLUS also provides this function through the use of View Profiles.

DELTA PLUS provides a conversion utility to convert any customized DELTA IMS keyword tables into DELTA PLUS View Profiles. Member DLP#UTL4 in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL for this conversion. Instructions for using the utility are in the comments of this member.

The DELTA PLUS View Profile data set has characteristics that are different from the DELTA IMS keyword table data set.

Tip

Select the Stop before change and Start after change fields for all applicable View Profile elements to ease the transition when you revise elements. If these fields are selected, by default, an element in a DELTA List is /STOpped before the change for that element is executed and is /STArted after the change for that element is completed.
Product Authorization

The DELTA PLUS product uses the DLPTBL3x password module. Contact your BMC Software sales representative at 800 841 2031 in the United States and Canada (outside these areas, contact your local BMC Software office or agent) to receive a permanent password for DELTA PLUS.

Message Numbers

The DELTA IMS messages in the format of BMC number are now in the format of BMCDLP number for DELTA PLUS. If you currently have automation interrogating DELTA IMS messages, you need to review the System Administration Products for IMS Messages Manual to determine what automation adjustments need to be made for the new or changed message numbers. The Message number prefix global option allows you to change the BMCDLP prefix to either DLP or BMC. The messages issued by the VIRTUAL TERMINAL tier of DELTA PLUS are unchanged in their message format of BMC number.

Command Differences

DELTA PLUS incorporates many of the existing DELTA IMS commands as well as adding a few new ones. The formats of the DELTA PLUS commands are different, however, from the DELTA IMS commands. If you have DELTA IMS commands which are issued by automation, you will need to change those commands to use the new DELTA PLUS command format. Please review “Specifying DELTA PLUS Operator Commands” on page 401.

Fallback Considerations

If you need to fall back from DELTA PLUS to DELTA IMS, consider the following:

- A cold-start of the IMS control region is required any time you go between the two products. Failing to cold-start results in an abend. However, any active element on the Log will be reapplied to the system.

- Any DELTA Lists that are executed using one product will need to be executed again using the other product to ensure that the control region information is accurate. A conversion utility (see “DELTA Lists” on page 580) is available for
converting DELTA IMS DELTA Lists to DELTA PLUS DELTA Lists. No utility exists to convert DELTA PLUS DELTA Lists to DELTA IMS DELTA Lists. However, you can use the utilities provided with each product to convert the DELTA List to stage 1 macros and then convert the stage 1 macros into a DELTA List.
Converting from DELTA PLEX VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL

This chapter describes how to convert from DELTA PLEX VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL. It also explains the steps necessary to perform a smooth transition with minimal impact to your existing system.

Introduction

This chapter covers the following topics related to conversion:

- Invocation CLIST
- Global Options
- IMSID Options
- SAF Security
- UPF Security
- Product Authorization
- TSS Maintenance Programs (DLATSS/DLATSTAT)

Invocation CLIST

The CLIST that you use to invoke the DELTA PLUS product you purchased determines the product view that will be displayed.
When you invoke the DELTA PLUS online interface, the version of the DELTA PLUS Main Menu that is appropriate to the product you selected is displayed.

Use one of the CLISTs shown in Table 83 on page 584 to invoke a product view of the DELTA PLUS online interface.

### Table 83: CLISTs for Invoking the DELTA PLUS Online Interface

<table>
<thead>
<tr>
<th>If you want to use . . .</th>
<th>Then use the DLPSAMP member . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>DLPCI@00</td>
</tr>
<tr>
<td>DELTA PLUS for DBCTL</td>
<td>DTDCI@00</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>DLVCI@00</td>
</tr>
</tbody>
</table>

### Global Options

Because UPF security support has been added to DELTA PLUS VIRTUAL TERMINAL, the field **UPF Profiles data set** is now included in the global options module. For more information on UPF security, see “UPF Security” on page 586.

### IMSID Options

**WARNING**

DELTA PLUS VIRTUAL TERMINAL will continue to use your existing DELTA IMS options module DLA#iiii for VIRTUAL TERMINAL-related settings. Also, if VIRTUAL TERMINAL extended options are in use (module DLA@iiii), DELTA PLUS VIRTUAL TERMINAL will use this load module as well. When any changes are made to the IMSID or extended options through the ISPF interface, the appropriate load module (DLP#iiii, or DLA#@iiii) is saved.

All IMSID (DELTA PLUS and DELTA IMS) and extended options modules must be stored in the same library for use by the ISPF interface.

The DELTA PLUS VIRTUAL TERMINAL product and interface use your existing DELTA PLEX and DELTA IMSID options module(s) and VIRTUAL TERMINAL extended options modules in the following manner:
When you create or change basic IMSID options for DELTA PLUS VIRTUAL TERMINAL, load module DLP#iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.

When you create or change VIRTUAL TERMINAL-related IMSID options other than basic or extended load module DLA#iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.

When you create or change extended IMSID options for VIRTUAL TERMINAL, load module DLA@iiii is link-edited to your DELTA PLUS VIRTUAL TERMINAL options library.

---

**Extended Options**

If you currently use VIRTUAL TERMINAL extended options, these settings have been incorporated in the DELTA PLUS VIRTUAL TERMINAL ISPF interface. The process to assemble and link this special load module is no longer required. Any updates to these options will be saved to module DLA@iiii when you save them through the ISPF interface.

All IMSID (DELTA PLUS and DELTA IMS) and extended options modules must be stored in the same library for use by the ISPF interface.

---

**SAF Security**

Because VIRTUAL TERMINAL is now included in the DELTA PLUS interface, the corresponding SAF resources have been added to DELTA PLUS. If you are currently using SAF security with DELTA PLEX, you may add the resources described in Table 84 on page 585.

---

**Note**

If you are currently using UPF security with VIRTUAL TERMINAL and SAF security with DELTA PLEX, you must convert entirely to either SAF or UPF under DELTA PLUS VIRTUAL TERMINAL. If you are currently using only UPF security and you want to continue using it, verify that the UPF data set name has been transferred to your DELTA PLUS global options.

---

**Table 84: SAF Resource Chart for Converting from DELTA PLEX VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL**

<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back up TSS data set</td>
<td>TSS.BACKUP</td>
<td>DLP.TSS.BACKUP</td>
<td>READ</td>
</tr>
<tr>
<td>Function</td>
<td>DELTA IMS SAF Resource</td>
<td>DELTA PLUS SAF Resource</td>
<td>DELTA PLUS Access Level</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Define TSS table</td>
<td>TSS.DEFINE.tablename</td>
<td>DLP.TSS.DEFINE</td>
<td>READ</td>
</tr>
<tr>
<td>Browse TSS table</td>
<td>TSS.BROWSE.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>READ</td>
</tr>
<tr>
<td>Test TSS table</td>
<td>TSS.BROWSE.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>READ</td>
</tr>
<tr>
<td>Edit TSS table</td>
<td>TSS.EDIT.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>READ</td>
</tr>
<tr>
<td>Search/Modify TSS table</td>
<td>TSS.EDIT.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Format TSS data set</td>
<td>TSS.FORMAT</td>
<td>DLP.TSS.FORMAT</td>
<td>READ</td>
</tr>
<tr>
<td>Load TSS table(s)</td>
<td>TSS.LOAD.tablename</td>
<td>DLP.TSS.LOAD.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Remove TSS table(s)</td>
<td>TSS.REMOVE.tablename</td>
<td>DLP.TSS.REMOVE.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Reorganize TSS data set</td>
<td>TSS.REORG</td>
<td>DLP.TSS.REORG</td>
<td>READ</td>
</tr>
<tr>
<td>Status of TSS data set</td>
<td>TSS.STATUS</td>
<td>DLP.TSS.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>Unload TSS table(s)</td>
<td>TSS.UNLOAD.tablename</td>
<td>DLP.TSS.UNLOAD.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Refresh TSS in-storage buffers</td>
<td>iii.TSS.REFRESH</td>
<td>DLP.target.REFRESH.TSS</td>
<td>READ</td>
</tr>
<tr>
<td>Display VIRTUAL TERMINAL</td>
<td>iii.VTSTATS</td>
<td>DLP.target.VTSTATS</td>
<td>READ</td>
</tr>
<tr>
<td>User Profile Browse</td>
<td>UPF.BROWSE</td>
<td>DLP.ADMIN.UPF</td>
<td>READ</td>
</tr>
<tr>
<td>User Profile Edit</td>
<td>UPF.EDIT</td>
<td>DLP.ADMIN.UPF</td>
<td>UPDATE</td>
</tr>
</tbody>
</table>

*i** = four-character IMSID  
*target* = four-character IMSID or a Group name  
*tablename* = These resource names may also be qualified by table name, for example, TSS.BROWSE.LOGNOD

## UPF Security

Beginning with version 2.1.01, the DELTA PLUS product now supports UPF security. DELTA PLUS can use your existing DELTA IMS UPF data set if you specify the name of your DELTA IMS UPF data set in the User Profiles data set field in the DELTA PLUS Global Options.
Product Authorization

The DELTA PLUS product uses your existing DLPTBL3x password module for DELTA PLUS only. The DLVTBL3x password module is for the DELTA PLUS VIRTUAL TERMINAL product. If you currently run DELTA PLEX VIRTUAL TERMINAL, contact your BMC Software sales representative at 800 841 2031 in the United States and Canada (outside these areas, contact your local BMC Software office or agent) to receive a permanent password for DELTA PLUS VIRTUAL TERMINAL. You may continue to use your existing DELTA PLEX (DLPTBL3x) and DELTA IMS VIRTUAL TERMINAL (DLATBL3x) password modules until you obtain the DLVTBL3x password.

TSS Maintenance Programs (DLATSS/DLATSTAT)

To accommodate both DELTA IMS and DELTA PLEX SAF security resource rules, programs DLATSS (TSS update) and DLATSTAT (TSS data set reporting) have been modified and are now shipped as load modules DLPTSS and DLPTSTAT. To assist in the conversion process, load modules DLATSS and DLATSTAT are still shipped with DELTA PLUS in the pppLIB library, but are simply clones of DLPTSS and DLPTSTAT.
Converting from DELTA IMS VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL

This chapter describes how to convert from DELTA IMS VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL. It also explains the steps necessary to perform a smooth transition with minimal impact to your existing system.

Introduction

Several components of DELTA IMS relate directly to DELTA PLUS and are very similar in use. In most cases, however, the internal structure of these components differs and the existing DELTA IMS component cannot be directly used by DELTA PLUS. This chapter covers the following topics related to conversion:

- Invocation CLIST
- Global Options
- IMSID Options
- SAF Security
- UPF Security
- DELTA PLUS Logs and History Files
- DELTA Lists
- Keyword Tables
- Product Authorization
- Message Numbers
Invocation CLIST

The CLIST that you use to invoke the DELTA PLUS product you purchased determines the product view that will be displayed. When you invoke the DELTA PLUS online interface, the version of the DELTA PLUS Main Menu that is appropriate to the product you selected is displayed.

Use one of the CLISTs shown in Table 85 on page 590 to invoke a product view of the DELTA PLUS online interface.

<table>
<thead>
<tr>
<th>If you want to use . . .</th>
<th>Then use the DLPSAMP member . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTA PLUS</td>
<td>DLPCI@00</td>
</tr>
<tr>
<td>DELTA PLUS for DBCTL</td>
<td>DTDCI@00</td>
</tr>
<tr>
<td>DELTA PLUS VIRTUAL TERMINAL</td>
<td>DLVCI@00</td>
</tr>
</tbody>
</table>

Tip

DELTA PLUS contains a hidden panel that allows you to specify many DELTA PLUS ISPF default product values. This panel (named DLPZUSER) is located in DLPPLIB. DLPZUSER replaces DLAPI@00 used by DELTA IMS. Review DLPZUSER to customize the DELTA PLUS ISPF interface default values. Comments are included in the panel to assist you.

Global Options

Similar to DELTA IMS, the DELTA PLUS global options define common processing options.

You can create a new DELTA PLUS global options module using values specified in an existing DELTA IMS global options module (DLA$GBL0). Use the DELTA PLUS ISPF interface Administration Menu (option 4 on the Main Menu) to complete this task. Select option 1 on the Administration Menu and press Enter. The Global Options Entry panel is displayed. Specify the library that contains the DLA$GBL0
options module in the **Global Options library** field, and press **Enter**. DELTA PLUS will access the DLASGBL0 options module and populate the following DELTA PLUS global options module fields:

- Generic DASD unit name
- Internal trace table dynamic dump sysout class
- WTO routing/descriptor codes
- User Profile (UPF) data set name
- USERID for authorization check

If DLASGBL0 does not exist, DELTA PLUS default values are provided. Make any necessary changes.

*Table 86 on page 591* identifies each field in the DELTA IMS global options and explains the corresponding field in the DELTA PLUS global options.

*Table 87 on page 592* describes the additional fields that DELTA PLUS provides.

---

**Table 86: Mapping of DELTA IMS Global Options to DELTA PLUS Global Options**

<table>
<thead>
<tr>
<th>DELTA IMS Global Option Field</th>
<th>DELTA PLUS Global Option Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four character prefix for BMCLINK session ACBNAME</td>
<td>VTAM User Session ACBNAME prefix</td>
</tr>
<tr>
<td>The WTO message routing codes</td>
<td>Routing code</td>
</tr>
<tr>
<td>The WTO message descriptor codes</td>
<td>Descriptor code</td>
</tr>
<tr>
<td>CHECK/EXECUTE pacing value</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Request status check time interval</td>
<td>Request status check time interval</td>
</tr>
<tr>
<td>Idle BMP automatic shutdown interval</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Maximum DL/I command size</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>BMCLINK ENQ qname</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>BMCLINK ENQ rname (VTAM interface)</td>
<td>no corresponding field</td>
</tr>
</tbody>
</table>

DELTA PLUS replaces BMCLINK with BMCXLINK and no longer uses a BMP to communicate with the IMS control region.
### Table 87: New DELTA PLUS Global Options Fields

<table>
<thead>
<tr>
<th>DELTA PLUS Global Option Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translate all messages to upper case</td>
<td>Allows you to indicate that all messages generated by DELTA PLUS should be displayed in uppercase letters only.</td>
</tr>
<tr>
<td>Message number prefix</td>
<td>Allows you to indicate which error message prefix should be used by all messages generated by DELTA PLUS.</td>
</tr>
<tr>
<td>View Profile library</td>
<td>Specifies the name of the data set that contains the View Profiles.</td>
</tr>
<tr>
<td>Variable Definition library</td>
<td>Specifies the name of the data set that contains the Variable Definition Sets.</td>
</tr>
</tbody>
</table>

**IMSID Options**
WARNING
DELTA PLUS VIRTUAL TERMINAL will continue to use your existing DELTA IMS options module DLA#iii for VIRTUAL TERMINAL-related settings. Also, if VIRTUAL TERMINAL extended options are in use (module DLA@iii), DELTA PLUS VIRTUAL TERMINAL will use this load module as well. When any changes are made to the IMSID or extended options through the ISPF interface, the appropriate load module (DLP#iii, DLA#iii, or DLA@iii) is saved.
All IMSID (DELTA PLUS and DELTA IMS) and extended options modules must be stored in the same library for use by the ISPF interface.

You can create a new DELTA PLUS IMSID options module using values specified in an existing DELTA IMS IMSID options module (DLA#iii). Use the DELTA PLUS ISPF interface Administration Menu (option 4 on the Main Menu) to complete this task. Select option 2 on the Administration Menu and press Enter. The IMSID/Group Options Entry panel is displayed. Specify the IMSID and the library that contains the DLA#iii options module(s) in the appropriate fields. Select option 1 and press Enter. DELTA PLUS will access the DLA#iii options module(s) and populate the following DELTA PLUS IMSID options module fields:

- IMS version/release level
- Allow IMS storage displays
- Allow IMS storage zaps
- Copy IMSID Options to an IMS STEPLIB library when saved
- XRF/FDR Alternate IMSID
- Write IMS commands to History File

Note
If the Copy IMSID Options to an IMS STEPLIB library when saved option is activated in DELTA IMS, it will also be activated in DELTA PLUS. However, the name in the IMS STEPLIB library field will NOT be populated because it is stored in the user’s ISPF profile, NOT in the DELTA IMS options module. You will need to manually enter the value in this field.

Because certain DELTA PLUS fields have no DELTA IMS equivalent, you need to review the remaining current DELTA PLUS options and then specify them.

Table 88 on page 594 identifies each field in the DELTA IMS IMSID options and explains the corresponding field in the DELTA PLUS IMSID options.

Table 89 on page 595 describes the additional fields that DELTA PLUS provides.
Table 88: Mapping of DELTA IMS IMSID Options to DELTA PLUS IMSID Options

<table>
<thead>
<tr>
<th>DELTA IMS IMSID Option Field</th>
<th>DELTA PLUS IMSID Option Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Override IMSID</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>IMS version/release level</td>
<td>IMS version/release level</td>
</tr>
<tr>
<td>DELTA IMS system log code</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>DELTA PLUS uses the log record code X’DA’.</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you need to change this value.</td>
</tr>
<tr>
<td>User authorization exit name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>User customization exit name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>Contact BMC Software Customer Support if you are using this field.</td>
</tr>
<tr>
<td>Allow IMS storage displays</td>
<td>Allow IMS storage displays</td>
</tr>
<tr>
<td>Allow IMS storage zaps</td>
<td>Allow IMS storage zaps</td>
</tr>
<tr>
<td>Log IMS operator commands</td>
<td>Write IMS commands to History File</td>
</tr>
<tr>
<td>Copy options to the IMS APF-authorized library when saved</td>
<td>Copy IMSID Options to an IMS STEPLIB library when saved</td>
</tr>
<tr>
<td>XRF/FDR alternate IMSID</td>
<td>XRF/FDR Alternate IMSID</td>
</tr>
<tr>
<td>Alt IMS APF-auth library</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>Is this a DBCTL region?</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>IMS DBCTL region &quot;SSM=&quot; suffix name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>IMS PROCLIB data set</td>
<td>no corresponding field</td>
</tr>
<tr>
<td>BMCLINK TRANSACTION CODE</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>DELTA PLUS replaces BMCLINK with BMCXLINK and no longer uses a BMP to communicate with the IMS control region.</td>
</tr>
<tr>
<td>BMCLINK PSB name</td>
<td>no corresponding field</td>
</tr>
<tr>
<td></td>
<td>DELTA PLUS replaces BMCLINK with BMCXLINK and no longer uses a BMP to communicate with the IMS control region.</td>
</tr>
</tbody>
</table>
### Table 89: New DELTA PLUS IMSID Options Fields

<table>
<thead>
<tr>
<th>DELTA PLUS IMSID Options Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| XCF Group (optional)          | Allows grouping of IMS systems.  
|                               | Grouping is explained in other parts of this manual.  
|                               | **Note:** BMC Software recommends that you not specify a Group until you have reviewed Group concepts thoroughly. |
### DELTA PLUS IMSID Options

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary/Secondary History File</td>
<td>In addition to the Log data sets, DELTA PLUS uses a pair of data sets for maintaining history (auditing) information. These data sets contain a record for each element executed for the IMS and keep track of the before and after images of IMS resources. These data sets may be formatted using option 3.2.4 from the DELTA PLUS Main Menu. The action bar on the IMSID Options - Basic Options panel also contains an option to format the History File data sets.</td>
</tr>
</tbody>
</table>

### Extended Options

If you currently use VIRTUAL TERMINAL extended options, these settings have been incorporated in the DELTA PLUS VIRTUAL TERMINAL ISPF interface. The process to assemble and link this special load module is no longer required. Any updates to these options will be saved to module DLA@ iii when you save them through the ISPF interface.

All IMSID (DELTA PLUS and DELTA IMS) and extended options modules must be stored in the same library for use by the ISPF interface.

### SAF Security

As distributed, access to DELTA PLUS is unrestricted. If you want to protect DELTA PLUS functions, you may limit access through System Authorization Facility (SAF). The SAF security interface is an optional security interface which allows you to protect every function within DELTA PLUS. In general, SAF supports five levels of access to protected resources:

- NONE
- READ
- UPDATE
- Control
- ALTER

When the functions are protected in DELTA IMS, the only access levels with meaning are NONE and READ. If a user has an access level of NONE to a resource, the user is prevented from doing the function. If a user has an access level of READ or higher, the user is allowed to perform that function.
If the user has READ access to DLALIST.BROWSE then the user can browse DELTA List members.

To streamline the SAF process and to reduce the number of resources needed, DELTA PLUS uses three levels of access:

- NONE
- READ
- UPDATE

For those functions which have a **browse** and **edit** capability, an access level of READ allows **browse** while UPDATE allows **edit**.

If the SAF resource DLP.DELTALST.* is defined and a user has READ access, the user will be allowed to browse DELTA List members, but not be allowed to change them. If a user has UPDATE access, then the user will be able to make changes to DELTA List members.

### SAF Resource Rules

DELTA PLUS allows you to continue to use the existing DELTA IMS SAF resource rules or you can use the DELTA PLUS SAF resource rules.

<table>
<thead>
<tr>
<th>Preference</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>To use the <em>existing</em> DELTA IMS SAF resource rules</td>
<td>See “Using the Existing DELTA IMS SAF Resource Rules” on page 597</td>
</tr>
<tr>
<td>To use the DELTA PLUS SAF resource rules</td>
<td>Refer to Table 90 on page 598 and Table 91 on page 601</td>
</tr>
</tbody>
</table>

### Using the Existing DELTA IMS SAF Resource Rules

To use the *existing* DELTA IMS SAF resource rules, you must complete the following steps:

1. Change the SAF class in DLPSAMP member DLPYSAF to `DLA#` and then execute the DLPCNTL member DLP#SAF1.

2. Grant READ access to the ACTIVATE and ACTIVATE.ALT resources within class DLA#. The ACTIVATE resource activates SAF usage and ACTIVATE.ALT allows the existing DELTA IMS resource rules to be used.
Prior to DELTA PLUS version 2.1.03, if the ACTIVATE.ALT resource was merely defined or if a generic resource granted or denied READ access to it, then the DELTA IMS resources would have been used. Under ACF2, DELTA IMS resources would have been used if ACTIVATE.ALT (and the SAFDEF record) did not exist.

3 Define the following DELTA PLUS SAF resource rules for the additional DELTA PLUS functions that have no DELTA IMS equivalent function:

<table>
<thead>
<tr>
<th>DELTA PLUS SAF Resource</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLP.ADMIN.VARDEF.name</td>
<td>Use DELTA List variables</td>
</tr>
<tr>
<td>DLP.ADMIN.ADDIMS</td>
<td>Add an IMS to the Group Log</td>
</tr>
<tr>
<td>DLP.ADMIN.CHGDATE</td>
<td>Change the dates on the DELTA PLUS Log</td>
</tr>
<tr>
<td>DLP.target.CONVERT.LOG.STAGE1</td>
<td>Convert the DELTA PLUS Log to Stage1 macros</td>
</tr>
<tr>
<td>DLP.VARDEF.name</td>
<td>Execute variable definitions in a DELTA List</td>
</tr>
<tr>
<td>DLP.VIEWPROF.vname</td>
<td>Use View Profiles</td>
</tr>
</tbody>
</table>

Note: Target = four-character IMSID or a Group name  
Name = one- to eight-character member name  
Vname = one- to eight-character View Profile name

The DELTA PLUS Group options are secured by the DELTA IMS IMSID options BROWSE/EDIT/REFRESH SAF resource rules. Also, all History File functions are secured by the corresponding Log File resource rules.

Table 90: SAF Resource Chart for Converting from DELTA IMS to DELTA PLUS

<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.CHGDATE</td>
<td>READ</td>
</tr>
<tr>
<td>SYSGEN Date Change Utility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Options Browse</td>
<td>GLOBAL.BROWSE</td>
<td>DLP.ADMIN.GLOBAL</td>
<td>READ</td>
</tr>
<tr>
<td>Global Options Edit</td>
<td>GLOBAL.EDIT</td>
<td>DLP.ADMIN.GLOBAL</td>
<td>UPDATE</td>
</tr>
<tr>
<td>IMSID Options Browse</td>
<td>iiii.IMSID.BROWSE</td>
<td>DLP.ADMIN.IMSID</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID Options Edit</td>
<td>iiii.IMSID.EDIT</td>
<td>DLP.ADMIN.IMSID</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Add IMSID to Group Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.ADDIMS</td>
<td>READ</td>
</tr>
<tr>
<td>Function</td>
<td>DELTA IMS SAF Resource</td>
<td>DELTA PLUS SAF Resource</td>
<td>DELTA PLUS Access Level</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------</td>
<td>-------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Remove IMSID from Group Log/History File</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.REMOVIMS</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID and Group Options Refresh</td>
<td>iii.IMSID.REFRESH</td>
<td>DLP. target.REFRESH.OPTIONS</td>
<td>READ</td>
</tr>
<tr>
<td>IMSID CPU-ID Refresh</td>
<td>iiii.PASSWORD.REFRESH</td>
<td>DLP. target.REFRESH.SECURITY</td>
<td>READ</td>
</tr>
<tr>
<td>Group Options Browse</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.GROUP</td>
<td>READ</td>
</tr>
<tr>
<td>Group Options Edit</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.GROUP</td>
<td>UPDATE</td>
</tr>
</tbody>
</table>

**Note:** BMC Software recommends using the same level of security for Group Options as IMSID Options.

<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Profile Browse</td>
<td>UPF.BROWSE</td>
<td>DLP.ADMIN.UPF</td>
<td>READ</td>
</tr>
<tr>
<td>User Profile Edit</td>
<td>UPF.EDIT</td>
<td>DLP.ADMIN.UPF</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Variable Definition Browse</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.VARDEF. name</td>
<td>READ</td>
</tr>
<tr>
<td>Variable Definition Edit</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.ADMIN.VARDEF. name</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Variable Definition Use</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.VARDEF. name</td>
<td>READ</td>
</tr>
<tr>
<td>Keyword Table Browse/View Profile Browse</td>
<td>KWT.BROWSE</td>
<td>DLP.ADMIN.VIEWPROF. vname</td>
<td>READ</td>
</tr>
<tr>
<td>Keyword Table Edit/View Profile Edit</td>
<td>KWT.EDIT</td>
<td>DLP.ADMIN.VIEWPROF. vname</td>
<td>UPDATE</td>
</tr>
<tr>
<td>View Profile Use</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.VIEWPROF. vname</td>
<td>READ</td>
</tr>
<tr>
<td>CPU-ID Password/Product Authorization</td>
<td>PASSWORD.EDIT</td>
<td>DLP.ADMIN.PRODAUTH</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA List - Browse Member</td>
<td>DLALIST.BROWSE</td>
<td>DLP.DELTALST. name</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA List - Edit Member</td>
<td>DLALIST.EDIT</td>
<td>DLP.DELTALST. name</td>
<td>UPDATE</td>
</tr>
<tr>
<td>DELTA List - Delete Member</td>
<td>DLALIST.DELETE</td>
<td>No DELTA PLUS Equivalent</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>DELTA IMS SAF Resource</td>
<td>DELTA PLUS SAF Resource</td>
<td>DELTA PLUS Access Level</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------</td>
<td>--------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>DELTA List - Check</td>
<td>iiiii.DLALIST.CHECK</td>
<td>DLP.target.DELTALST.RUN</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA List - Execute</td>
<td>iiiii.DLALIST.EXECUTE</td>
<td>DLP.target.DELTALST.RUN</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Convert DELTA List to STAGE1</td>
<td>DLALIST.CONVERT</td>
<td>DLP.CONVERT.DELTALST.RUN</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Generate</td>
<td>iiiii.DLALOG.GENERATE</td>
<td>DLP.target.CONVERT.LOG.STAGE1</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Generate</td>
<td>iiiii.DLALOG.GENERATE</td>
<td>DLP.target.CONVERT.LOG.DELTALST</td>
<td>READ</td>
</tr>
<tr>
<td>IMS Command Interface</td>
<td>iiiii.IMSCMD.cmd</td>
<td>DLP.target.COMMAND.cmd</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log List</td>
<td>iiiii.DLALOG.LIST</td>
<td>DLP.target.LOG.REPORT</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Status</td>
<td>iiiii.DLALOG.STATUS</td>
<td>DLP.target.LOG.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Purge</td>
<td>iiiii.DLALOG.PURGE</td>
<td>DLP.target.LOG.PURGE</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Recover</td>
<td>iiiii.DLALOG.RECOVER</td>
<td>DLP.target.LOG.RECOVER</td>
<td>READ</td>
</tr>
<tr>
<td>DELTA Log Format</td>
<td>iiiii.DLALOG.FORMAT</td>
<td>DLP.target.LOG.FORMAT</td>
<td>READ</td>
</tr>
<tr>
<td>History Report</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.target.HISTORY.REPORT</td>
<td>READ</td>
</tr>
<tr>
<td>History Status</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.target.HISTORY.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>History Purge</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.target.HISTORY.PURGE</td>
<td>READ</td>
</tr>
<tr>
<td>History Recover</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.target.HISTORY.RECOVER</td>
<td>READ</td>
</tr>
<tr>
<td>History Format</td>
<td>No DELTA IMS Equivalent</td>
<td>DLP.target.HISTORY.FORMAT</td>
<td>READ</td>
</tr>
<tr>
<td>Storage Display</td>
<td>iiiii.STORAGE.DISPLAY</td>
<td>DLP.target.STORAGE</td>
<td>READ</td>
</tr>
</tbody>
</table>

Note: BMC Software recommends using the same level of security for the History Files as the Logs.
### Table 91: SAF Resource Chart for Converting from DELTA IMS VIRTUAL TERMINAL to DELTA PLUS VIRTUAL TERMINAL

<table>
<thead>
<tr>
<th>Function</th>
<th>DELTA IMS SAF Resource</th>
<th>DELTA PLUS SAF Resource</th>
<th>DELTA PLUS Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back up TSS data set</td>
<td>TSS.BACKUP</td>
<td>DLP.TSS.BACKUP</td>
<td>READ</td>
</tr>
<tr>
<td>Define TSS table</td>
<td>TSS.DEFINE.tablename</td>
<td>DLP.TSS.DEFINE</td>
<td>READ</td>
</tr>
<tr>
<td>Browse TSS table</td>
<td>TSS.BROWSE.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>READ</td>
</tr>
<tr>
<td>Test TSS table</td>
<td>TSS.BROWSE.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>READ</td>
</tr>
<tr>
<td>Edit TSS table</td>
<td>TSS.EDIT.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Search/Modify TSS table</td>
<td>TSS.EDIT.tablename</td>
<td>DLP.TSS.EDIT</td>
<td>UPDATE</td>
</tr>
<tr>
<td>Format TSS data set</td>
<td>TSS.FORMAT</td>
<td>DLP.TSS.FORMAT</td>
<td>READ</td>
</tr>
<tr>
<td>Load TSS table(s)</td>
<td>TSS.LOAD.tablename</td>
<td>DLP.TSS.LOAD.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Remove TSS table(s)</td>
<td>TSS.REMOVE.tablename</td>
<td>DLP.TSS.REMOVE.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Reorganize TSS data set</td>
<td>TSS.REORG</td>
<td>DLP.TSS.REORG</td>
<td>READ</td>
</tr>
<tr>
<td>Status of TSS data set</td>
<td>TSS.STATUS</td>
<td>DLP.TSS.STATUS</td>
<td>READ</td>
</tr>
<tr>
<td>Unload TSS table(s)</td>
<td>TSS.UNLOAD.tablename</td>
<td>DLP.TSS.UNLOAD.tablename</td>
<td>READ</td>
</tr>
<tr>
<td>Refresh TSS in-storage buffers</td>
<td>iii.TSS.REFRESH</td>
<td>DLP.target.REFRESH.TSS</td>
<td>READ</td>
</tr>
<tr>
<td>Display VIRTUAL TERMINAL statistics</td>
<td>iii.VTSTATS</td>
<td>DLP.target.VTSTATS</td>
<td>READ</td>
</tr>
</tbody>
</table>

*iii = four-character IMSID
*target = four-character IMSID or a Group name
*tablename = These resource names may also be qualified by table name, for example, TSS.BROWSE.
*LOGNOD
UPF Security

Beginning with version 2.1.01, the DELTA PLUS product now supports UPF security. DELTA PLUS can use your existing DELTA IMS UPF data set if you specify the name of your DELTA IMS UPF data set in the User Profiles data set field in the DELTA PLUS Global Options. If you currently use customized keyword tables, you can convert them to DELTA PLUS view profiles. See “Keyword Tables” on page 605 for more information.

If you executed job DLA#UIDL to install UPF administrator authority for DELTA IMS, you must customize and execute DLPCNTL job DLP#UIDL for DELTA PLUS.

If you executed job DLA#RSCL to activate RACF authorization for DELTA IMS UPDATE and Control levels, you must customize and execute DLPCNTL job DLP#RSCL to activate this authorization in DELTA PLUS.

DELTA PLUS Logs and History Files

DELTA PLUS uses two pairs of data sets for maintaining information concerning the changes made to an IMS control region. The DELTA PLUS Log data sets maintain a record of changes made to the IMS system and are used at restart time for reapplying active changes to the system. The DELTA PLUS History File data sets are useful for auditing purposes and keeping track of the before and after images of changed resources.

You must allocate and format a pair of DELTA PLUS History File data sets before attempting to execute DELTA PLUS. The IMS control region must have UPDATE authority for the DELTA PLUS Log and History File data sets.

Note
During IMS control region initialization, the IMS DB/DC SYSGEN linkedit dates are written to the Log and History File control record (if required). The Log and History File SYSGEN dates are also updated following an online change MODBLKS GEN implementation.

For information on allocating these data sets, see “Allocating New DELTA PLUS Data Sets” on page 148.
Conversion from DELTA IMS Log Data Sets to DELTA PLUS Log and History File Data Sets

If you choose, you can convert your existing DELTA IMS Log data sets to DELTA PLUS Log and History File data sets. Determine which of the following scenarios best fits your environment, and use the corresponding conversion procedure.

**Scenario 1**

Simple conversion of one DELTA IMS Log to one DELTA PLUS Log/History File, no DELTA PLUS Group is used. Use “Conversion Procedure 1” on page 603.

**Scenario 2**

A DELTA PLUS Group Log is to be used, and existing IMS systems use identical IMS SYSGENs (IMS systems are EXACT clones of one another); therefore, the DELTA Logs are the same. Use “Conversion Procedure 2” on page 604.

**Scenario 3**

DELTA PLUS Group Log is to be used, the existing IMS systems are NOT identical, and will basically *stack* the existing DELTA IMS Log onto the new DELTA PLUS Group Log.

Use “Conversion Procedure 3” on page 604.

**Conversion Procedure 1**

Use the following procedure to convert.

1 Allocate and format the new DELTA PLUS Log and History File using either the supplied batch utility or the DELTA PLUS ISPF Utility menu.
2 Edit DLPCNTL member DLP#UTL6. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS system that has been converted from DELTA IMS to DELTA PLUS.

**Conversion Procedure 2**

Use the following procedure to convert.

1 Allocate and format the new DELTA PLUS Log and History File using the pre-defined Group name via the batch utility jobs (DLP#LOGA and DLP#HISTA in DLPCNTL) or the DELTA PLUS ISPF Utility menu.

2 Edit DLPCNTL member DLP#UTL6. You must determine which existing DELTA IMS Log will be converted to the DELTA PLUS Group Log. Because the IMS systems are identical, all the elements on the new DELTA PLUS Log will be identified as *coordinated*. This designation means DELTA PLUS will apply all elements on the DELTA PLUS Log during IMS initialization to *ALL* systems that join the Group. Review the comments, ensure DD card COORD is *NOT* commented out, and update the JCL before submitting the job.

---

**Note**

After the conversion is completed, you *cannot* convert another DELTA IMS Log at a later date. If coordinated elements already exist on the Group DELTA PLUS Log, further conversions are *not* possible.

---

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by *ALL* the IMS systems that join the Group. During IMS restart, DELTA PLUS will apply *ALL* elements to the IMS system. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

**Conversion Procedure 3**

Use the following procedure to convert.

1 Allocate and format the new DELTA PLUS Log and History File using the pre-defined Group name via the batch utility jobs (DLP#LOGA and DLP#HISTA in DLPCNTL) or the DELTA PLUS ISPF Utility menu.
2 Edit DLPCNTL member DLP#UTL6. You must convert one DELTA IMS Log at a time. You cannot execute a DELTA PLUS DELTA List as coordinated until you have finished ALL conversions. If you do, further conversions will not be possible. Review the comments, ensure DD card COORD is commented out, and update the JCL before submitting the job.

After successful utility completion, you will have a DELTA PLUS Log and History File that can be used by the IMS systems that join the group. During IMS restart, DELTA PLUS will apply ALL the elements that pertain to the IMS system that is restarting. If any of the elements cannot be applied, messages will be issued detailing which element(s) was unsuccessful.

Conversion Utility Considerations

Before executing the conversion utility, if the DELTA PLUS Group Log contains ANY elements identified as coordinated, conversion will not be possible.

After conversion has completed and the DELTA PLUS Group Log contains elements identified as coordinated, further DELTA IMS Log conversions will not be possible.

DELTA Lists

Although DELTA PLUS also uses DELTA Lists to contain the changes that should be made to the IMS control region, the format of the DELTA List is different between DELTA IMS and DELTA PLUS. DELTA PLUS provides a conversion utility you can use to convert existing DELTA IMS DELTA Lists into DELTA PLUS DELTA Lists. Member DLP#UTL2 in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL to convert DELTA IMS DELTA Lists into DELTA PLUS DELTA Lists. Instructions for using the utility are in the comments of this member.

The DELTA PLUS DELTA PDS has different data set characteristics from the DELTA IMS DELTA PDS, and must first be allocated. Member DLP#PDSA in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL to allocate a new DELTA PLUS DELTA PDS.

Keyword Tables

DELTA IMS allows creation and maintenance of keyword tables to customize the fields in the DELTA List elements. DELTA PLUS also provides this function through the use of View Profiles.
DELTA PLUS provides a conversion utility to convert any customized DELTA IMS keyword tables into DELTA PLUS View Profiles. Member DLP#UTL4 in the DLPCNTL data set unloaded from the DELTA PLUS product tape contains the necessary JCL for this conversion. Instructions for using the utility are in the comments of this member.

The DELTA PLUS View Profile data set has characteristics that are different from the DELTA IMS keyword table data set.

**Tip**
Select the **Stop before change** and **Start after change** fields for all applicable View Profile elements to ease the transition when you revise elements. If these fields are selected, by default, an element in a DELTA List is /STOpped before the change for that element is executed and is /STArted after the change for that element is completed.

---

**Product Authorization**

The DELTA PLUS VIRTUAL TERMINAL product uses the DLVTBL3x password module. Contact your BMC Software sales representative at 800 841 2031 in the United States and Canada (outside these areas, contact your local BMC Software office or agent) to receive a permanent password for DELTA PLUS VIRTUAL TERMINAL.

**Message Numbers**

The DELTA IMS messages in the format of **BMCnumber** are now in the format of **BMCDLPnumber** for DELTA PLUS. If you currently have automation interrogating DELTA IMS messages, you need to review the *System Administration Products for IMS Messages Manual* to determine what automation adjustments need to be made for the new or changed message numbers. The **Message number prefix** global option allows you to change the **BMCDLP** prefix to either **DLP** or **BMC**. The messages issued by the VIRTUAL TERMINAL tier of DELTA PLUS are unchanged in their message format of **BMCnumber**.
TSS Maintenance Programs (DLATSS/DLATSTAT)

To accommodate both DELTA IMS and DELTA PLEX SAF security resource rules, programs DLATSS (TSS update) and DLATSTAT (TSS data set reporting) have been modified and are now shipped as load modules DLPTSS and DLPTSTAT. To assist in the conversion process, load modules DLATSS and DLATSTAT are still shipped with DELTA PLUS in the *ppplib* library, but are simply clones of DLPTSS and DLPTSTAT.

Command Differences

DELTA PLUS incorporates many of the existing DELTA IMS commands as well as adding a few new ones. The formats of the DELTA PLUS commands are different, however, from the DELTA IMS commands. If you have DELTA IMS commands which are issued by automation, you will need to change those commands to use the new DELTA PLUS command format. Please review “Specifying DELTA PLUS Operator Commands” on page 401.

Fallback Considerations

If you need to fall back from DELTA PLUS to DELTA IMS, consider the following:

- A cold-start of the IMS control region is required any time you go between the two products. Failing to cold-start results in an abend. However, any active element on the Log will be reapplied to the system.

- Any DELTA Lists that are executed using one product will need to be executed again using the other product to ensure that the control region information is accurate. A conversion utility (see “DELTA Lists” on page 605) is available for converting DELTA IMS DELTA Lists to DELTA PLUS DELTA Lists. No utility exists to convert DELTA PLUS DELTA Lists to DELTA IMS DELTA Lists. However, you can use the utilities provided with each product to convert the DELTA List to stage 1 macros and then convert the stage 1 macros into a DELTA List.
Glossary

/DEQUEUE

An IMS command that deletes messages queued to an LTERM.

(EXIT

An IMS command that stops conversational processing between a USER and one or more transactions.

A

ACB

Access method control block or application control block. For more information, see IBM Terminology.

ACBGEN

Application control block generation. For more information, see IBM Terminology.

action menu

The submenu that is accessible from the Action menu on the menu bar. Action menu commands differ based on the node that you select in the SmartDBA console tree. Action menu items can also be accessed by right-clicking on tree nodes.

active entry
A main entry that has a program start time but no program termination time in the PDX directory. This condition indicates that the job has failed or is still running.

**active instances node**

Node used to issue commands--such as display settings, set temporary journal and trace options, dynamically reload options and exits, reset security and statistics, and switch journals. Only Energizer and IMS Connect address spaces have commands.

**address space**

The area of virtual storage available for a particular job.

**administrator authority**

The authorization an ETA user must have in order to create, modify, and delete user access profiles.

**advanced program-to-program communication**

(1) The general facility characterizing the LU 6.2 architecture and its various implementations in products. (2) Sometimes used to refer to the LU 6.2 architecture and its product implementations as a whole, or to an LU 6.2 product feature in particular, such as an APPC application programming interface.

**affinities**

Messages that have unique processing characteristics. Affinities are used by the Affinity Manager to select the datastores that can process the message.

**Affinity Manager**

One of the DataStore Router managers. Determines whether incoming transaction's attributes match any predefined Energizer affinity definitions. If there is a match, the Affinity Manager compiles a list of datastores that can process the message. If there is no match, the Affinity Manager compiles a list of all active datastores that have been defined to Energizer and IMS Connect.

**ALOT**

See autologoff interval on page 612 (ALOT).
AOI

See automated operation interface on page 612 (AOI).

APF

See authorized program facility on page 612 (APF).

APF-authorized library

A library that has been defined in the IEAAPFx member of the MVS SYS1.PARMLIB library.

API

See application program interface on page 611 (API).

APPCC

Advanced program-to-program communication. For more information, see IBM Terminology.

applet

An application program, written in the Java programming language, that can be retrieved from a Web server and executed by a Web browser.

application control block

A control block created from the output of DBDGEN and PSBGEN and placed in the ACB library for use during online and DBB region type execution of IMS.

application program interface

A functional interface supplied by the operating system that allows a transaction program written in a high-level language to use specific data or functions of the operating system. See also implicit API on page 629 and explicit API on page 625.

area

See database area on page 619.
ASOT

See autosignoff interval on page 612 (ASOT).

asynchronous processing

Operations performed separately from the job in which they were requested or tasks performed concurrently in the same job step. Contrast with synchronous processing on page 646.

authorization profile

A method to limit access to, and use of, specific BMC Software product functions and components. See also user authorization profile on page 651.

authorized CPU ID

The identification number associated with a specific CPU. CPU ID passwords enable you to use a specific BMC product on that CPU. See also CPU ID on page 616.

authorized program facility

A facility that identifies programs authorized to use restricted functions.

autologoff interval

A user-specified interval that determines when inactive terminals and printers will be automatically logged off IMS.

automated operation interface

An IMS interface that allows installations to monitor and control IMS activities. The interface enables (1) an application program, using DL/I calls, to issue a subset of IMS operator commands and receive command responses, (2) a user exit routine to monitor activities and take appropriate action, and (3) operator commands, responses, and asynchronous output destined for the IMS master terminal to be logged to the secondary master terminal.

autosignoff interval
A user-specified interval that determines when inactive terminals and printers will be automatically signed off IMS.

**Autosignon**

An DLP feature that allows terminals and printers to bypass the ETO requirement that all devices sign on to IMS.

**B**

**basic sequential access method**

A data set organization that stores or retrieves data blocks in a continuous sequence on a sequential access device or direct access device.

**batch message processing**

A mode of program execution within an online IMS environment. It is accomplished by a batch message processing program that has access to online databases and message queues.

**BDAM data set**

Basic direct access method data set.

**BMCLINK**

An interregion control facility provided with DELTA IMS that allows the DELTA IMS user to communicate with an IMS control region.

**BMCRESLB**

A DD name for the IMS RESLIB data set used in the IMS control region if IMS RESLIB is a LINKLIST data set.

**BMCXLINK**

An interregion control facility provided with the DELTA PLUS and ETA products that allows DELTA PLUS and ETA users to communicate with an IMS control region.
BMP

See batch message processing on page 613 (BMP).

BSAM

See basic sequential access method on page 613 (BSAM).

buffer

A routine or storage area used to compensate for a difference in rate of data flow or time of occurrence of events when transferring data from one device to another.

C

CDRM

Cross-domain resource manager. For more information, see IBM Terminology.

CHKP call

A DL/1 call that generates repositioning log data and results in commit point processing.

CLB

Communications line block. For more information, see IBM Terminology.

client tier

The client tier can reside on a personal computer or a server, depending on the product’s implementation.

client/server

A model of interaction in distributed data processing in which a program at one location sends a request to a program at another location and waits for a response. The requesting program is called the client and the answering program is called a server.
CNT

See communications name table on page 615 (CNT).

cold start

The starting of IMS for the first time or when an error prevents a normal or emergency restart. See also emergency restart on page 624, normal restart on page 638, and restart on page 643.

command

An order for an action to take place or a statement used to request a function. A command consists of the command name and its parameters.

command set

A Message Advisor command consisting of a primary command, subcommand(s), keywords, parameters, and an END command. Some subcommands can be repeated multiple times within a command set.

Common User Access

An IBM set of standards that sets specific guidelines for the look, feel, and behavior of user interfaces.

communications line block

Communications line block. For more information, see IBM Terminology.

communications name table

An IMS control block that represents a logical terminal.

compression

A process that eliminates free space, empty fields, redundancies, and unnecessary data to shorten the length of records or blocks in a data set.
concurrent processing

A processing mode in which two or more processes execute within a given time period.

configuration

This node is used to customize Energizer by adding eLinks, eGroups, IMS Connects, datastores, DataStore Router definitions, and Exit Services definitions (exits).

console

A Windows application that allows you to manage BMC Software products through one interface. See also SmartDBA console on page 645.

control section

The part of a program specified to be a relocatable unit, all elements of which are to be loaded into adjoining main storage locations.

control statement

A statement in a job step that describes an action or task to be performed.

conversation

A logical connection between two transaction programs that use an LU 6.2 session. Conversations are delimited by brackets to gain exclusive use of a session.

conversation transaction

Transaction information is accumulated through multiple interchanges with a terminal, even though the program terminates between interchanges.

CPU

Central processing unit. For more information, see IBM Terminology.

CPU ID
The identification number associated with a specific CPU. CPU ID passwords enable you to use a specific BMC Software product on that CPU.

**CPU ID authorization**

The process of authorizing a BMC Software product so that it will run on a CPU for which you have a license and a valid CPU ID password.

**CPU ID password**

A unique string of characters that enables you to run a specific BMC Software product on a specific CPU.

**cross-domain**

The control of resources involving more than one domain. See also “domain” on page 622.

**cross-domain resource manager**

The functions of the SSCP that control the initiation and termination of VTAM sessions in the VTAM network. See also cross-domain on page 617.

**CSECT**

See control section on page 616 (CSECT).

**CUA**

See Common User Access on page 615 (CUA).

**customer exit**

Message exits that were written outside of Energizer (in assembler language) and are maintained by you. The exits cannot use the full capabilities of Energizer and must be defined to Energizer to use DataStore Routing. See also message exits on page 635.
D

DASD

See direct access storage device on page 621 (DASD).

Data Base Recovery Control

A feature of the IMS Database Manager that facilitates easier recovery of IMS databases. DBRC maintains information required for database recoveries, generates recovery control statements, verifies recovery input, maintains a separate change log for database data sets, and supports sharing of IMS databases and areas by multiple IMS subsystems.

data entry database

A database consisting of one or more areas. It is a direct-access database in which each area contains both root and dependent segments.

Data Language/I

The IMS data manipulation language, which is a common high-level interface between a user application and IMS. DL/I calls are invoked from application programs written in languages such as PL/I, COBOL, VS Pascal, C, and Ada. It can also be invoked from assembler language application programs by subroutine calls. IMS lets the user define data structures, relate structures to the application, load structures, and reorganize structures.

data management block

An IMS control block in main storage that describes and controls a physical database. It is constructed from information obtained from the ACB library or the DBD library.

database

A collection of data with a given structure for accepting, storing, and providing data for multiple users. IMS databases are organized hierarchically to eliminate data redundancy.

database administrator
A person who defines, organizes, manages, controls, and protects one or more databases. Usually, a database administrator is also responsible for database integrity, security, performance, and recovery.

**database area**

The subset of a DEDB.

**database description**

A description of the physical and logical characteristics of a DL/1 database. It describes attributes such as the database organization and access method, the segments and fields in a database record, and the relationship between types of segments. The DBD is created by coding a series of DL/1 macros which are then assembled and link-edited into a DBD library. DBDs can be used during batch processing of databases and as input to the ACBGEN process.

**database recovery**

The process of restoring a corrupted physical database data set to a point in time before the corruption occurred.

**datastore**

IMS TM system that provides transaction and database processing.

**DataStore Router**

Directs a transaction to the datastore that is best equipped to process a transaction.

**DBA**

Database administrator. For more information, see IBM Terminology.

**DBCS**

See “double-byte character set” on page 622 (DBCS).

**DBCTL**

Database Control. For more information, see IBM Terminology.
DBD

See “database description” on page 619 (DBD).

DBD-type ACB

An application control block that describes a database.

DBRC

See Data Base Recovery Control on page 618 (DBRC).

DEADQ

A value that selects or rejects messages that are on the IMS dead letter queue (with ETO). DEADQ is accepted by all Message Advisor commands that use the DESTYPE= keyword.

DEDB

See data entry database on page 618 (DEDB).

descriptor

A skeleton from which an IMS control block is dynamically built. There are four types of descriptors: LOGON, USER, MFS device, and MSC.

descriptor list

Information created and stored through DLP that allows for the dynamic addition or deletion of descriptors on an IMS system.

destination

Any point or location, such as a transaction, LTERM, IMS system, or MSC name, to which information is sent.

destination name table

An internal table containing the names of all destination SMBs, CNTs, and VCNs.
device characteristics table

An MFS table that describes the screen size and physical terminal features defined for IBM 3270 or SLU type 2 devices.

device input format

An MFS control block that describes the format of data sent from the device.

device output format

The MFS control block that describes the format of data sent to the device.

device relative record number

The sequence number of a logical record indicating the location of the record in a data set.

DIF

Device input format. For more information, see IBM Terminology.

direct access storage device

A device that contains data and allows random read and write access.

DL/I

See Data Language/I on page 618 (DL/I).

DL/I database

A database that is created and accessed using DL/I and uses one of the following database organization methods: HSAM, HISAM, SHISAM, HDAM, HIDAM, SHSAM, GSAM, MSDB, or DEDB.

DMB

See data management block on page 618 (DMB).
DNT

See destination name table on page 620 (DNT).

dock

Action that detaches a window from the task pane so that it becomes its own free-floating window (contents of the window are the same in dock and undock modes).

DOF

See device output format on page 621 (DOF).

domain

The part of a computer network in which the data processing resources are under common control.

double-byte character set

A set of characters in which each character is represented by two bytes. Languages, such as Japanese, which contain more symbols than can be represented by 265 code points require double-byte characters. See also kanji on page 633.

DRRN

See “device relative record number” on page 621.

DSECT

See dummy control section on page 622 (DSECT).

dummy control section

A control section that an assembler can use to format an area of storage without producing any object code.

DUMPQ
A parameter on the IMS /CHECKPOINT command. A DUMPQ requests an immediate shutdown of IMS. It allows IMS to complete input and output messages in transit. IMS writes the message queues and SPA data sets to the system log along with checkpoint data.

DYNAMIC

A value that selects or rejects messages destined to either ETO or VTF LTERMs. DYNAMIC is accepted by all Message Advisor commands that use the DESTYPE= keyword.

dynamic allocation

A feature that allows a program to allocate data sets based on the resources currently needed and information from control blocks, rather than from DD statements.

dynamic LTERM

Any LTERM in your IMS network not defined to IMS in the IMSGEN, but rather by DELTA PLUS VIRTUAL TERMINAL or ETA. If an LTERM assigned to a dynamic terminal is not found among IMGEN-defined LTERMs or existing dynamic LTERMs, IMS creates a new dynamic LTERM with the name it requires. See also logical terminal on page 634.

dynamic printer

Any printer not defined in an IMGEN, but rather defined to IMS by DELTA PLUS VIRTUAL TERMINAL or ETA. Dynamic terminal node names and LTERM names can be contained in a TSS table. The table allows possible dynamic printer LTERM names to be validated and, when needed, translated into the dynamic printer node names. See also terminal on page 648.

dynamic terminal

Any terminal not defined in an IMGEN, but rather created at logon time by DELTA PLUS VIRTUAL TERMINAL or ETA. Dynamic terminal control blocks reside in the IMS control region only while that dynamic terminal is logged on to IMS. Dynamic terminal control blocks are deleted when dynamic terminals are logged off, thereby freeing virtual storage for another dynamic terminal user. See also terminal on page 648.

E

ECSA

See extended common storage area on page 625 (ECSA).
eGroup

A logical grouping of IMS Connects that use the same routing method. Because the eGroup name will be used as an XCF group name, the eGroup name must be unique. It must not match any existing XCF group name.

eLink

Energizer address space that provides the communications link between the UIM server and the IMS Connects. The eLink allows you to change the environment and obtain system-related information.

emergency restart

A restart of IMS/VS following an IMS/VS or operating system failure. See also cold start on page 615, normal restart on page 638, and restart on page 643.

entry-sequenced data set

A VSAM data set in which records are loaded with respect to their contents. ESDS relative byte addresses cannot change.

ESDS

See entry-sequenced data set on page 624 (ESDS).

ETO

See Extended Terminal Option. For more information, see IBM Terminology.

EXCP

See execute channel program on page 624.

execute channel program

An operating system macro instruction used by the physical IOCS to start execution of a single channel program. It normally refers to the number of I/O operations initiated to perform an action, such as reading a work file or writing a file to disk or tape.
EXER Subroutine

IMS Connect term. When IMS Connect detects an error in the output buffer after execution of the previous READ subroutine completes, control is passed to the EXER subroutine in the same user exit where the READ subroutine is executed. For more information, see the IMS Connect Guide and Reference manual.

Exit Services

Energizer component that expands the basic functionality of IMS Connect—such as dynamic reload capabilities, virtual exits, and security exits.

explicit API

In APPC, the SAA communications API.

extended common storage area

A common storage area residing above the 16-MB line that contains data areas that all address spaces can address.

extended recovery facility

A software facility designed to minimize the impact of various failures on IMS/ESA users.

Extended Terminal Option

An IBM feature that dynamically creates NODE/LTERM definitions and eliminates the need to statically define them in the IMS sysgen.

F

Fast Path

An IMS feature for applications that need fast response and usually process large numbers of transactions. DEDBs and MSDBs are Fast Path databases.

Fast Path database

Another term for a DEDB or MSDB.
FBA device

Fixed-block-architecture device. For more information, see IBM Terminology.

fields

Data that is displayed on the SmartDBA console task pane. To save the field information in the options library, click the SmartDBA console Save button.

fixed-block-architecture device

A disk storage device that stores data in blocks of fixed size.

format set

An MFS format definition, all message definitions that refer to it, and any table referred to by the format.

full-function database

A database that is created and accessed using DL/I and uses one of the following database organization methods: HSAM, HISAM, SHSAM, SHISAM, HDAM, or HIDAM.

G

GDG

See general register storage on page 626 (GDG).

general register storage

 Registers R1 to R15 store or compute values or addresses.

general resource serialization

An MVS facility that maintains integrity across multiple MVS users of the same resource.
**generation data group**

A group of data sets with the same base name and a qualifier that contains an integer value. Each time the system generates a GDG data set, the integer value increases by one, which keeps the data sets in chronological order.

**get unique**

An IMS call format. Get unique retrieves a specific segment by using the segment search argument (SSA) to determine which segment to get.

**GETMAIN**

An operating system macro used to obtain virtual storage from the operating system.

**global options**

Options that govern how DELTA PLUS operates on all IMS systems that use DELTA PLUS. DELTA PLUS consists of various elements associated through VTAM and/or normal IMS inter-region communication. The information you specify in the DELTA PLUS global options keep these elements operating according to standards that you establish. These global options apply to all IMS systems that use DELTA PLUS.

**graphical user interface**

A type of interface that enables users to communicate with a program by manipulating graphical elements rather than by entering commands—such as the SmartDBA console. Typically, a graphical user interface includes a combination of graphics, pointing devices, menu bars, overlapping panes, and icons.

**Group options**

Options that enable a user-defined group of IMS systems to be treated as one IMS system. A group of IMS systems would typically be an IMS Datasharing Group, IMS Shared Queues Group, or a group of logically related or duplicated IMS systems.

**GRS**

General register storage or general resource serialization. For more information, see IBM Terminology.
GU
See “get unique” on page 627.

GUI
See graphical user interface on page 627 (GUI).

H
high input/output pool
An IMS/ESA buffer pool that is located above the 16-MB line. HIOP contains the input and output buffers that are used by VTAM.

HIOP
See high input/output pool on page 628.

Host Web Services
Short name for IMS TCP/IP OTMA Connection. It is also the prefix of the module and messages. Only Web clients can use the short name, and any TCP/IP client can connect to IMS through HWS.

host/sysplex
Represents the enterprise server (z/OS system) on which the console web server and your applications run.

HWS
See Host Web Services on page 628.

HWSJAVA
Java message exit, which is invoked if a message arrives from a client using IMS Connector for Java.
HWSUINIT

User initialization exit. This exit runs when IMS Connect initializes and terminates. Its purpose is to customize the initialization process. It is used to load tables and issue user-defined messages.

I

I/O

Input/output operation. The transfer or retrieval of data between processor storage and peripheral equipment.

I/O PCB

Input/output program communication block. The mechanism by which a program obtains an input message from a terminal and returns a reply to that terminal.

IDCAMS

A multifunction service program that is used to manage both VSAM and non-VSAM data sets and integrated catalog facility or VSAM catalogs. It is used to define data sets and allocate space for them; convert indexed-sequential data sets to key-sequenced data sets; modify data set attributes in the catalog; reorganize data sets; facilitate data portability between operating systems; create backup copies of data sets, data set records, and catalog entries.

image copy

The process of creating a duplicate or backup copy of a database data set.

image copy data set

A data set created using the image copy process.

implicit API

In APPC, an extension of the IMS standard DL/I API.

IMS
See Information Management System on page 630 (IMS).

IMS Connect

A registered IBM product that provides e-business access to IMS applications and data.

IMS Request Message

Prefix of messages that are sent to an IMS Connect.

IMS Resource Lock Management

An IMS component for managing block-level data sharing among IMS systems and for resources accessed in a single system.

IMSID

IMS identification. A unique four-letter identifier for a specific IMS system and its associated regions.

IMSID options

Options that specify customization information for each IMS system that uses DELTA PLUS.

Information Management System

Any of several system environments available with Database Manager and Transaction Manager, capable of managing complex databases and terminal networks.

INIT Subroutine

IMS Connect term. After a message exit has been successfully loaded, the INIT subroutine for that message exit is called. For more information, see the IMS Connect Guide and Reference manual.

initial program load

The procedure that causes an operating system to initialize for operations.
installation verification procedure

A procedure that you can run to verify that you correctly installed a product.

Integrated Storage Control

A feature on some IBM System/370 Processing Units that controls the 3330 Disk Storage and Control units and the associated 3330 disk drives.

Interactive System Productivity Facility

An IBM-licensed program that serves as a full-screen editor and dialog manager.

Intersystem Communication

An extension of MSC. It permits IMS to connect to another IMS subsystem or to a user-written system as long as both systems use Intersystem Communication.

IPL

Initial program load. For more information, see IBM Terminology.

IRLM

IMS Resource Lock Management. For more information, see IBM Terminology.

IRM

See IMS Request Message on page 630 (IRM).

ISC

See Intersystem Communication on page 631.

ISPF

See Interactive System Productivity Facility on page 631 (ISPF).
ISPF interface

The structure of panels and dialogs that enables you to work with a software product from within TSO.

ITASK

A task created within the IMS system to perform a unit of work.

IVP

See installation verification procedure on page 631.

IWAIT

IMS wait. The process that an ITASK uses to wait for the completion of an event.

J

Java

A general purpose programming language with a number of features that make the language well-suited for use on the World Wide Web. Small Java applications are called Java applets and can be downloaded from a Web server and run on your computer by a Java-compatible Web browser, such as Netscape Navigator or Microsoft Internet Explorer.

JCL

See job control language on page 632 (JCL).

job

One or more programs executed synchronously under control of the operating system (OS/VS) and Job Entry Subsystem (JES).

job control language

A control language used to identify a job to the operating system and describe the job's requirements.
K

kanji

A graphic character set consisting of symbols used in Japanese ideographic alphabets. Each character is represented by two bytes.

key-sequenced data set

A VSAM data set in which records are loaded in key sequence and controlled by an index.

keyword

A name or symbol that identifies an option associated with a Message Advisor command or subcommand. Message Advisor keywords are followed by an equal (=) sign and are separated by a comma (,).

KSDS

See key-sequenced data set on page 633 (KSDS).

L

LIBDEF

An ISPF feature that provides for the dynamic definition of application data sets, thus allowing application data sets to be specified during an ISPF session. This feature eliminates the need for allocation statements to define all application data sets before invoking an ISPF session.

LINKLIST

A member in an MVS system data set that defines libraries that should be accessed during job processing.

load

A weighting factor that is assigned to a datastore for load balancing.
Load Balancer

Routing method that is used by the DataStore Router. Determines where to route the message based upon one of the routing methods: Workload Manager (WLM) Sysplex Routing Services or Statistical.

logical partition

The division of a computer's processors, memory, and storage into multiple sets of resources that can be operated independently with its own operating system and applications.

logical record

In VSAM, a unit of information normally pertaining to a single subject; a logical record is the user record requested of, or given to, the data management function.

logical terminal

A destination. Each logical terminal has a name that is related to one or more physical terminals.

logical unit

A host port through which you can access network services.

logical unit name

May be required to uniquely identify a destination which is a TPNAME.

LPAR

Logical partition. For more information, see IBM Terminology.

LTERM

See logical terminal on page 634 (LTERM).

LU

Logical unit. For more information, see IBM Terminology.
LU-LU session

A session between two logical units, providing communication between two end users or between an end user and an LU services component.

LUNAME

See logical unit name on page 634.

M

main storage database

A root-segment database residing in main storage that can be accessed to a field level.

master terminal operator

The person using the logical terminal that controls all IMS resources and online operations.

menu

Displays a list of commands. Most menus are located on the menu bar at the top of the SmartDBA console. Some menu items are specific to the BMC Software product that you are using. Pop-up menus are available when you right-click text, objects, or other items.

message

Data transmitted between any two terminals, application programs, IMS systems, and between IMS systems and IMS Connect. Each message has one or more segments.

Message Advisor Server

A functional unit that provides a shared interface to IMS control regions. The Message Advisor Server provides a method by which the content of IMS message queues can be managed. It can run either as a started task or in batch mode.

message exits
Exits that can be created in assembler language and are defined to Energizer (Customer Exits), or exits that are created and maintained in Energizer (Virtual Exits). See also “user message exit” on page 651.

**message format service**

An IMS facility that lets application programs deal with logical data rather than device-dependent data. MID/MOD and DIF/DOF control blocks are used to describe the data and devices.

**message input descriptor**

The MFS control block that describes the format of the data read by the application program.

**message output descriptor**

The MFS control block that describes the format of the output data produced by the application program.

**message processing program**

An IMS/ESA application program that is driven by transactions and that can access online IMS/ESA databases and message queues.

**message queue**

The data set in which messages are queued before being processed or sent to a terminal.

**messages pane**

The bottom pane in the SmartDBA console. It displays system status and warnings. Message information includes: severity, status, message source, message ID, and message.

**MFS**

Message format service. For more information, see IBM Terminology.

**MID**

Message input descriptor. For more information, see IBM Terminology.
middleware tier

Tier that resides on the mainframe and contains the UIM server. The UIM server handles the communication between the client and the product.

MOD

Message output descriptor. For more information, see IBM Terminology.

MODBLKS

Two data sets, an active and an inactive set, where the IMS Online Change modifications are placed for an IMS system update. Changes are made to the inactive data set and are applied to IMS by making that data set active.

MPP

Message processing program. For more information, see IBM Terminology.

MSC

See Multiple Systems Coupling on page 638 (MSC).

MSDB

See main storage database on page 635 (MSDB).

MSNAME

An IMS macro used to define a name that represents remote and local system identifiers (SYSIDs). This name is a destination name for IMS messages sent to remote IMS systems with MSC. The linkname on the MSNAME macro, transaction names, and LTERM names must be unique. The MSNAME is represented by the LNB control block.

MTO

See master terminal operator on page 635 (MTO).
Multiple Systems Coupling

An IMS feature that permits geographically dispersed IMS systems to communicate with each other.

multiple virtual storage

The control supervisor under which IMS executes.

MVS

Multiple virtual storage. For more information, see IBM Terminology.

N

navigation pane

The left pane of the SmartDBA console. It displays the hierarchical organization of your enterprise environment. The hierarchical structure lets you drill down through the components. The components in the navigation pane have right-click menus.

node

(1) An IMS resource that represents a physical VTAM terminal. The node is represented by a VTCB control block. (2) For Energizer, a location on the tree that represents a component. Each node on the tree has a corresponding icon.

normal restart

A restart of IMS after a termination caused by the IMS /CHECKPOINT command. See also cold start on page 615, emergency restart on page 624, and normal restart.

O

OLDS

Online log data set. For more information, see IBM Terminology.
online log data set

The data set in which log records are kept for an online system.

Open Transaction Manager Access

A transaction-based, connectionless client/server protocol. Its implementation is specific to IMS in a sysplex environment. The domain of the protocol is restricted to the domain of the Cross-System Coupling Facility (XCF). OTMA is designed to be a high-performance, comprehensive protocol that allows clients (OS/390 applications) to submit transactions to IMS or to issue IMS commands and receive output from IMS application programs and from IMS itself.

OTMA

See Open Transaction Manager Access on page 639 (OTMA).

override options

Options set at the entry or PSB level.

P

pane

One of the three main areas of the SmartDBA console. See also "messages panes", "navigation pane", and "task pane".

parallel processing

Concurrent or simultaneous execution of two or more processes in a single unit. Contrast with serial processing on page 644.

parameter

A keyword variable used with a command or subcommand to affect its result.

partition specification table
An IMS/ESA control block that contains the following dependent-region information: type of region, data transferred by DL/I, and status codes.

**partitioned data set**

A data set in direct access storage that is divided into portions, called members, each of which can contain a program, part of a program, or data. Synonymous with library.

**password**

Computer security. A specific string of characters that are entered by a user and authenticated by the system to determine the user's privileges to access and change data and system operations.

**PCB**

See program communication block on page 641 (PCB).

**PCL**

Physical child last pointer. A segment prefix pointer in a physical parent used by DL/I to access the last occurrence of a dependent physical child segment.

**PDS**

See partitioned data set on page 640 (PDS).

**physical terminal**

A hardware device attached to the computer and supported by IMS/DC as a terminal. A physical terminal usually has one or more LTERM(s) associated with it.

**pointer**

A 4-byte value that contains the address of a segment.

**pop-up menu**

Menu items that can be accessed by right-clicking on tree nodes. Pop-up menu commands differ based on the node that you select in the SmartDBA console tree.
port

In IMS TCP/IP OTMA Connection, HWS address space represents several port numbers; each port will provide access to one of a number of sockets that are associated with the IMS Transaction Manager system that HWS is connected to.

processing options

Data that is stored in the options library. Using the SmartDBA console Save button translates field values into the proper format to store in the options library.

product license

An agreement between your organization and BMC Software stating the extent of your legal right to use a specific product and the system and CPU on which you will run the product.

product tier

The product tier resides on the mainframe and contains BMC Software products.

program communication block

Two types of PCB can exist in a PSB. Database PCBs describe the hierarchical structure of the sensitive segments and indicate the types of IMS calls that are valid. Data communication PCBs describe the source and destinations of messages.

program specification block

A control block that relates a DL/I application program with the databases that it accesses. A PSB consists of one or more PCBs and is built during the PSBGEN process.

PSB

See program specification block on page 641 (PSB).

PSBGEN

Program specification block generation. For more information, see IBM Terminology.
PST

See partition specification table on page 639.

PTERM

Physical terminal. For more information, see IBM Terminology.

PURGE

A parameter on the IMS /CHECKPOINT command. A PURGE is the most time-consuming method of terminating IMS. It processes all messages in the input queue (if the transactions and program are not stopped) and transmits all output (if the line and terminal are not stopped). Any unprocessed input messages and any untransmitted output messages are written to the system log along with checkpoint data.

Q

QBUF

See queue buffer on page 642.

queue buffer

The message queue buffer that resides in the queue pool.

quiesce

To end a process by allowing operations to complete normally.

R

RACF

See Resource Access Control Facility on page 643 (RACF).

RCNT

See "Remote Communications Name Tables".
READ Subroutine

When a complete request message that originated at a TCP/IP client has been received, control is passed to the READ subroutine in the message exit whose MSGID matches the MSGID of that request message. For more information, see the *IMS Connect Guide and Reference manual*.

RECON data set

The data sets DBRC uses to contain information about logging activity and events (such as image copies) that can affect the recovery of databases. See also Data Base Recovery Control on page 618.

remote communication name table

An IMS queue associated with an MSC logical link to allow routing of asynchronous output messages to the local LTERM in another IMS.

remote LTERM

An LTERM on an MSC-connected IMS system where a transaction originated.

request

A unit of work that contains one or more command sets. Requests are stored as members in the Message Advisor request library.

RESLIB

The IMS library data set that contains the authorized load modules for the IMS system.

Resource Access Control Facility

An IBM-licensed program that provides access control by identifying and by verifying the users to the system, authorizing access to protected resources, logging the detected unauthorized attempts to enter the system, and logging the detected accesses to protected resources.

restart
The process of resuming the execution of a computer program using the data recorded at a checkpoint. See also cold start on page 615, emergency restart on page 624, and normal restart on page 638.

S

SAA

See Systems Application Architecture on page 647.

SBCS

See single-byte character set on page 644 (SBCS).

SCD

System contents directory. For more information, see IBM Terminology.

scheduler message block

An IMS transaction control block.

scratch pad area

In IMS conversational processing, a work area in main storage or on DASD used to retain information from the application program for executions of the application program from the same terminal.

serial processing

Sequential or consecutive execution of two or more processes in a single device. Contrast with parallel processing on page 639.

session

Series of commands that come from the same client and belong to the same logical sequence.

single-byte character set
A character set in which a 1-byte code represents each character.

SLDS
System log data set. For more information, see IBM Terminology.

SmartDBA console
A Windows application that allows you to manage BMC products through one interface. See also "console".

SMB
Scheduler message block. For more information, see IBM Terminology.

SMF
See system management facilities on page 646 (SMF).

SMP
See System Modification Program on page 647 (SMP).

SNAPQ
A parameter on the IMS /CHECKPOINT command. A SNAPQ does not shut IMS down; it copies the message queues while online operations continue.

socket
End-point to which clients can connect. This address is unique on the entire network.

SPA
Scratch pad area. For more information, see IBM Terminology.

spare element pool
A group of unused terminal, LTERM, and subpool control blocks used by DELTA IMS DC and DB/DC to add terminals, LTERMs, and subpools between IMSGENs.

**SPQB**
Subpool Queue Block. For more information, see IBM Terminology.

**SSCP**
System services control point. For more information, see IBM Terminology.

**SSCT**
See subsystem control vector table on page 646.

**subsystem control vector table**
Used as a common reference point, SSCT enables jobs that are running in different address spaces to communicate with each other.

**synchronous processing**
A mode of operation in which multiple tasks are executed one at a time.

**system contents directory**
A DL/I control block that contains pointers to various other DL/I modules and control blocks.

**system log data set**
An archived version of the IMS log data set or the log produced by the execution of a batch IMS job step.

**system management facilities**
The function of the operating system control program that records information you can use to evaluate system usage.
System Modification Program

A product that applies software maintenance to OS/VS systems.

**system services control point**

The focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network.

**Systems Application Architecture**

A collection of selected software interfaces, conventions, and protocols published by IBM, including the Common User Access architecture, the Common Programming Interface, and the Common Communications Support.

**T**

**task control block**

An MVS control block that identifies an MVS task.

**task pane**

The right pane in the SmartDBA console. It is your work area. When you select an action from a menu in the SmartDBA console, the window that corresponds to the selected action displays in the task pane. Depending on the selected action, tabs display reports or data entry fields.

**TCB**

See task control block on page 647 (TCB).

**TCP/IP**


**TERM Subroutine**
IMS Connect term. When IMS Connect is shutting down, control is passed, in turn, to the TERM subroutine in each message exit that is active. For more information, see the IMS Connect Guide and Reference manual.

terminal

A hardware device attached to the computer and supported by IMS/TM. Applicable hardware devices are display units and printers. A terminal usually has one or more logical terminals (LTERMs) associated with it.

Time Sharing Option

An operating system option that provides interactive time sharing from remote terminals.

TP

See transaction program on page 648 (TP).

TP PCB

Telecommunication program communication block. For more information, see IBM Terminology.

TP_PROFILE

A VSAM data set owned by APPC/MVS that provides attribute information for transaction profile names used by APPC applications.

TPNAME

A value that selects or rejects messages from APPC LU 6.2 transaction programs. TPNAME is accepted by all Message Advisor commands that use the DESTYPE= keyword.

transaction program

In APPC terminology, an application.

transactions
Units of work that are performed by one or more transaction programs; involves a specific set of input data and initiating a specific process or job on an IMS. Do not confuse with messages. See also message on page 635.

Translate Subsystem Services

A DELTA PLUS VIRTUAL TERMINAL and ETA generalized table lookup feature that allows you to create and use tables of data to specify IMS customization options.

Transmission Control Protocol/Internet Protocol

A set of communication protocols that support peer-to-peer connectivity functions for local and wide area networks.

tree

A representation of the hierarchical organization of your enterprise environment. The tree allows you to drill down through the hierarchy to access nodes.

tree node

A location on the tree that represents a component. Each node on the tree has a corresponding icon.

TSO

See Time Sharing Option on page 648 (TSO).

TSS

See "Translate Subsystem Services".

U

UIM server

User Interface Middleware server. The UIM server is common to a family of BMC Software IMS products. The UIM server is a TCP/IP application that facilitates communication between client workstations and the mainframe.
UIMx

Common component for all products that use the UIM server. The term is used during the installation process.

undock

Action that reattaches a window to the task pane (contents of the window are the same in dock and undock modes).

unknown destination

A destination to which output has been queued, but which does not exist on the IMS system because the LTERM was not IMSGEN-defined or has not been dynamically created. The DELTA PLUS VIRTUAL TERMINAL and ETA products allow you to control the creation of unknown destinations.

Unsolicited Output feature

A DELTA PLUS VIRTUAL TERMINAL and ETA feature that allows you to specify whether unknown destinations should be created on an IMS system. This feature can also be used to specify options for unknown destinations (if you allow them to be created) and for dynamic printer LTERMs and the associated SPQB and VCNT control block structures.

UPDS

See user profile data set on page 651 (UPDS).

USB

See "user signon block".

USER

In DLP documentation, this term denotes the IMS user element.

user access profile

Information used by the internal security feature of DELTA PLUS and ETA. User access profiles specify the product features that a user (specified by user ID) can utilize on a specified IMS system.
user authorization profile

A method of limiting access to, and use of, specific BMC Software product functions and components.

user exit interface

A feature that allows execution of user-written code at specific points during the execution of a process.

user ID

A string of characters that uniquely identifies a user to an IMS system.

user message exit

IMS Connect term. A message exit that is created and maintained by using assembler language. These exits process the requests that IMS Connect receives from the client or datastore.

user profile data set

For the ETA and DELTA PLUS products, a partitioned data set used to store the ETA and DELTA PLUS user access profiles. The user access profiles control access to ETA and DELTA PLUS functions.

user signon block

Contains a user ID that has been specified by the /SECURITY ALLOW command.

user/SPQB

In DELTA IMS documentation, denotes the IMS user element. See also “SPQB” on page 646.

V

virtual exit

Message exit that was created in Energizer, but without using assembler language. The exits are maintained and updated using the SmartDBA console.
virtual LTERM

In an IMS network, any LTERM that is not defined to IMS in the IMSGEN but is instead created when needed. If an LTERM assigned to a virtual terminal does not exist among IMSGEN-defined LTERMs or virtual LTERMs, a new virtual LTERM with the required name can be created.

virtual printer

Any SLU 1- or 328x-type printer that is not defined in an IMSGEN but is instead created when needed and later deleted. A possible virtual printer LTERM name can be validated and, when needed, translated into the virtual printer node name. Virtual printer LTERMs are created when needed, and additional elements are created shortly after output is ready to be sent to the printer.

Virtual Storage Access Method

An access method for direct or sequential processing of fixed and variable length records on direct access devices.

Virtual Telecommunications Access Method

IBM software that controls communication and the flow of data in an SNA network by providing the SNA application programming interfaces and SNA networking functions. An SNA network includes subarea networking, Advanced Peer-to-Peer Networking (APPN), and High-Performance Routing (HPR).

virtual terminal

Any 3270- or SLU 2-type terminal that is not defined in an IMSGEN but is instead created at logon time and deleted after the user logs off IMS. Installations can specify that the IMS terminal control block for a virtual terminal resides in the IMS control region.

virtual terminal control block

A control block created at logon exit time that consists of a prefix and copies of the appropriate model control blocks. A suffix of one word is added to each virtual communications line block. This suffix contains a code that identifies the control block as virtual.

VSAM
See Virtual Storage Access Method on page 652 (VSAM).

VSPCNT

A value that selects or rejects messages destined to ISC destinations. VSPCNT is accepted by all Message Advisor commands that use the DESTYPE= keyword.

VTAM

See Virtual Telecommunications Access Method on page 652 (VTAM).

VTAM LU 6.2

A VTAM method that enables an application to communicate with other applications.

VTAM LU-LU session

A VTAM port through which BMCXLINK enables a DELTA PLUS or ETA user to communicate with an IMS control region.

W

Wildcard character

A pattern matching character. A special character (such as *, +, or ?) that can represent one or more characters.

WLM

Workload Manager Sysplex Management Services. WLM is one type of workload balancing. The other is statistical.

WorkLoad Governor

An Energizer feature that protects the availability of datastores by limiting the number of transactions passing through IMS Connect.

Write-to-operator with reply
An optional feature that allows a product to write a message to the system console operator to inform the operator of errors and unusual system conditions that could require correction. The operator can respond with requested input data.

**WTOR**

Write-to-operator with reply. For more information, see IBM Terminology.

**X**

**XCF Group**

A group is the set of related members defined to XCF by a multisystem application. Members of the group can send and receive data between MVS systems with other members of the same group. A group can span one or more systems in a sysplex and represents a complete logical entity to XCF.

**XMIT Subroutine**

IMS Connect term. When a complete response message has been received from the datastore, control is passed to the XMIT subroutine in the message exit whose MSGID matches the MSGID of the response message (which matches the MSGID of the original request message). For more information, see the IMS Connect Guide and Reference manual.

**XRF**

Extended recovery facility. For more information, see IBM Terminology.
Index

/DEQUEUE
   definition 609
/DISPLAY command examples 420
/DISPLAY IMS operator command 416
   reserved keywords and parameters 59, 416
/DISPLAY VT TRACE command 57
/END IMS operator command 428
(EXIT
   definition 609
/SECURITY IMS operator command 425
/TEST MFS IMS operator command 427
/TRACE IMS operator command 429
$VTFCBS macro 515
$VTFMAP macro 515
$VTFTEST macro 519
$VTFTRCE macro 56

A
ABEND batch command 288
ACB
   definition 609
ACBGEN 178, 215
   definition 609
action bar 64, 67
action codes

INSERT COPY (IC) 159
INSERT ELEMENT (IE) 159
AFTER (A) 159
BEFORE (B) 159
CHECK (CK) 159
COPY (C) 159
DELETE (D) 159
DELTA List 159
DETAIL (S) 159
EDIT DELTA LIST (E) 159
EXCLUDE (X) 159
EXECUTE (EX) 159
INSERT (I) 159
MARK (K) 159
MOVE (M) 159
REPEAT (R) 159
UNMARK (U) 159
action menu
   definition 609
activate the Journal 437
active entry
   definition 609
active instances node
   definition 610
add
   application element 174
   command element 181
   comment element 188
   database element 178
   DELTALST element 184
   LTERM element 200
   route code element 193
   subpool element 203
   terminal element 197
   transaction element 190
ADD batch TSS command 504
adding an IMSID to an Existing Group\xd5s Log
   and History File data sets 134
address space
   definition 610
administrator authority
definition 610
advanced program-to-program communication
definition 610
affinities
definition 610
Affinity Manager
definition 610
AFTER (A) action code 159
ALLOC keyword for CHANGE command 415
allocate DELTA PLUS History File data sets 341
allocate DELTA PLUS Log data sets 330
Allocate New DELTA PLUS History File Data Set panel 341
Allocate New DELTA PLUS Log Data Set panel 330
Allocate New Variable Definition Library panel 294
allocating a Variable Definition library 294
allocating DELTA PLUS data sets 148
allocating History File data sets for DELTA PLUS 321
allocating Log data sets for DELTA PLUS 321
ALOT
definition 610
ALTVIEW primary command 142, 156, 207, 544
AOI
definition 611
APF
definition 611
APF-authorized library
definition 611
API
definition 611
APPC
definition 611
applet
definition 611
application control block
definition 611
application program interface
definition 611
area
definition 611
ASOT
definition 612
asynchronous processing
definition 612
authorization profile
definition 612
authorized CPU ID
definition 612
authorized program facility
definition 612
Auto-start feature 43, 152
Auto-stop feature 43, 152
autologoff interval
definition 612
automated operation interface
definition 612
autosignoff interval
definition 612
Autosignon
definition 613

B

basic sequential access method
definition 613
batch DELTA List Conversion utility sample JCL 372
batch Generate a DELTA List Conversion utility sample JCL 373
batch History File maintenance commands 344
batch History File Maintenance utility sample JCL 344
batch History File Report Utility sample JCL 384
batch History File utilities 384
batch Log Conversion utility sample JCL 371, 372
batch Log list 389
batch Log maintenance commands 333
batch Log Maintenance utility sample JCL 333
batch Log report utilities 389
batch Log Report Utility sample JCL 389
batch message processing
definition 613
batch TSS commands 496
ADD 504
CALL 506
DEFINE 499
DELETE 505
DLATSS TSO Command Processor 497
END 499
executing 508
FORMAT 498
LIST 502
LOAD 503
READ 499
REMOVE 502
RENAME 505
REPLACE 501
REVISE 505
SET 506
TRANSLATE 506
UNLOAD 503
batch XREF feature sample JCL 411
BDAM data set
definition 613
BEFORE (B) action code 159
benefits
DELTA PLUS for DBCTL 49
BMCLINK
definition 613
BMCRESLB
definition 613
BMCXLINK 395
communication 395
definition 613
HELP command 396
start 396
terminate 397
Trace facility 396
BMCXLINK diagnostics 439
operator dumps 440
storage dumps 440
traces 440
BMP
definition 614
BSAM
definition 614
buffer
definition 614
CALL batch TSS command 506
callable routine 57
CANCEL primary command 141, 156, 207
CDRM
definition 614
CHANGE command
overview of enhancements 415
CHANGE parameters
find string 253
change string 253
context 253
direction 253
element field 253
element type 253
limitations 253
CHANGE primary command 156, 249
instructions for using 253
check
DELTA List 261
DELTA List element 281
CHECK (CK) action code 159
CHECK batch command 288
Check feature
batch, output 290
CHECK primary command 156, 207
CHGREP 354
CHKP call
definition 614
CK primary command 207
CLB
definition 614
CLEAR primary command 142, 207
client tier
definition 614
client/server
definition 614
CLISTs
DELTA PLUS 50
CNT
definition 615
cold start
definition 615
colors
online interface
change 75
command
definition 615
command set
definition 615
commands
<table>
<thead>
<tr>
<th>Command</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>/DISPLAY IMS operator command</td>
<td>416</td>
</tr>
<tr>
<td>/DISPLAY VT TRACE</td>
<td>57</td>
</tr>
<tr>
<td>/END IMS operator command</td>
<td>428</td>
</tr>
<tr>
<td>/SECURITY IMS operator command</td>
<td>425</td>
</tr>
<tr>
<td>/TEST MPS IMS operator command</td>
<td>427</td>
</tr>
<tr>
<td>/TRACE IMS operator command</td>
<td>429</td>
</tr>
<tr>
<td>ABEND batch command</td>
<td>288</td>
</tr>
<tr>
<td>ADD batch TSS command</td>
<td>504</td>
</tr>
<tr>
<td>AFTER (A) action code</td>
<td>159</td>
</tr>
<tr>
<td>ALTVIEW primary command</td>
<td>142, 156, 207, 544</td>
</tr>
<tr>
<td>BEFORE (B) action code</td>
<td>159</td>
</tr>
<tr>
<td>CALL batch TSS command</td>
<td>506</td>
</tr>
<tr>
<td>CANCEL primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>CHANGE primary command</td>
<td>156, 249, 253</td>
</tr>
<tr>
<td>CHECK (CK) action code</td>
<td>159</td>
</tr>
<tr>
<td>CHECK batch command</td>
<td>288</td>
</tr>
<tr>
<td>CHECK primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>CK primary command</td>
<td>207</td>
</tr>
<tr>
<td>CLEAR primary command</td>
<td>207</td>
</tr>
<tr>
<td>COPY (C) action code</td>
<td>159</td>
</tr>
<tr>
<td>COPY primary command</td>
<td>156</td>
</tr>
<tr>
<td>DBCTL OFF primary command</td>
<td>155, 173, 207</td>
</tr>
<tr>
<td>DBCTL ON primary command</td>
<td>155, 173, 207</td>
</tr>
<tr>
<td>DEFINE batch TSS command</td>
<td>499</td>
</tr>
<tr>
<td>DELETE (D) action code</td>
<td>159</td>
</tr>
<tr>
<td>DELETE batch TSS command</td>
<td>505</td>
</tr>
<tr>
<td>DELETE primary command</td>
<td>207</td>
</tr>
<tr>
<td>DESELect ALL primary command</td>
<td>207</td>
</tr>
<tr>
<td>DETAIL (S) action code</td>
<td>159</td>
</tr>
<tr>
<td>DISPLAY DLP command</td>
<td>401, 405</td>
</tr>
<tr>
<td>DUMP primary command</td>
<td>430</td>
</tr>
<tr>
<td>EDIT DELTA LIST(E) action code</td>
<td>159</td>
</tr>
<tr>
<td>EDIT primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>END batch TSS command</td>
<td>499</td>
</tr>
<tr>
<td>END primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>EXCLUDE primary command</td>
<td>156</td>
</tr>
<tr>
<td>EXEC batch command</td>
<td>288</td>
</tr>
<tr>
<td>EXECUTE (EX) action code</td>
<td>159</td>
</tr>
<tr>
<td>EXECUTE primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>EXIT batch command</td>
<td>288</td>
</tr>
<tr>
<td>FHelp primary command</td>
<td>207</td>
</tr>
<tr>
<td>FIND primary command</td>
<td>156, 249, 430</td>
</tr>
<tr>
<td>FORMAT batch History File command</td>
<td>344</td>
</tr>
<tr>
<td>FORMAT batch Log command</td>
<td>333</td>
</tr>
<tr>
<td>FORMAT batch TSS command</td>
<td>498</td>
</tr>
<tr>
<td>HIDE primary command</td>
<td>298</td>
</tr>
<tr>
<td>History File maintenance commands (batch)</td>
<td>344</td>
</tr>
<tr>
<td>IF batch command</td>
<td>288</td>
</tr>
<tr>
<td>INSERT (I) action code</td>
<td>159</td>
</tr>
<tr>
<td>INSERT primary command</td>
<td>298</td>
</tr>
<tr>
<td>LIST batch TSS command</td>
<td>502</td>
</tr>
<tr>
<td>LOAD batch TSS command</td>
<td>503</td>
</tr>
<tr>
<td>Locate primary command</td>
<td>298</td>
</tr>
<tr>
<td>MACRO OFF primary command</td>
<td>142, 207, 544</td>
</tr>
<tr>
<td>MACRO ON primary command</td>
<td>142, 207, 544</td>
</tr>
<tr>
<td>MARK (K) action code</td>
<td>159</td>
</tr>
<tr>
<td>MARK ALL primary command</td>
<td>156</td>
</tr>
<tr>
<td>MESSAGE primary command</td>
<td>69, 542</td>
</tr>
<tr>
<td>MOVE (M) action code</td>
<td>159</td>
</tr>
<tr>
<td>NEW primary command</td>
<td>207</td>
</tr>
<tr>
<td>NEXT primary command</td>
<td>430</td>
</tr>
<tr>
<td>NOTES primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>OPEN primary command</td>
<td>156</td>
</tr>
<tr>
<td>OPTIONS primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>OPTS primary command</td>
<td>207</td>
</tr>
<tr>
<td>PREV primary command</td>
<td>430</td>
</tr>
<tr>
<td>PROFile primary command</td>
<td>207</td>
</tr>
<tr>
<td>PROFILE primary command</td>
<td>156</td>
</tr>
<tr>
<td>PROMPT primary command</td>
<td>207</td>
</tr>
<tr>
<td>PURGE batch History File command</td>
<td>344</td>
</tr>
<tr>
<td>PURGE batch Log command</td>
<td>333</td>
</tr>
<tr>
<td>RCHNG primary command</td>
<td>156</td>
</tr>
<tr>
<td>READ batch TSS command</td>
<td>499</td>
</tr>
<tr>
<td>RECOVER batch History File command</td>
<td>344</td>
</tr>
<tr>
<td>RECOVER batch Log command</td>
<td>333</td>
</tr>
<tr>
<td>RELO primary command</td>
<td>430</td>
</tr>
<tr>
<td>REMOVE batch TSS command</td>
<td>502</td>
</tr>
<tr>
<td>RENAME batch TSS command</td>
<td>505</td>
</tr>
<tr>
<td>REPEAT (R) action code</td>
<td>159</td>
</tr>
<tr>
<td>REPLACE batch TSS command</td>
<td>501</td>
</tr>
<tr>
<td>REPORT batch command</td>
<td>386, 391</td>
</tr>
<tr>
<td>RESet primary command</td>
<td>298</td>
</tr>
<tr>
<td>RESET primary command</td>
<td>156, 207</td>
</tr>
<tr>
<td>RESOlive primary command</td>
<td>207</td>
</tr>
<tr>
<td>REVISE batch TSS command</td>
<td>505</td>
</tr>
<tr>
<td>RFND primary command</td>
<td>156</td>
</tr>
<tr>
<td>SAVe primary command</td>
<td>298</td>
</tr>
<tr>
<td>SAVE primary command</td>
<td>156</td>
</tr>
<tr>
<td>SESelect ALL primary command</td>
<td>207</td>
</tr>
<tr>
<td>SELECT batch command</td>
<td>384, 390</td>
</tr>
<tr>
<td>SET batch TSS command</td>
<td>506</td>
</tr>
<tr>
<td>SHOW primary command</td>
<td>298</td>
</tr>
<tr>
<td>SORT primary command</td>
<td>156, 298</td>
</tr>
<tr>
<td>STATUS batch History File command</td>
<td>344</td>
</tr>
<tr>
<td>STATUS batch Log command</td>
<td>333</td>
</tr>
<tr>
<td>TRANSLATE batch TSS command</td>
<td>506</td>
</tr>
<tr>
<td>TSS commands</td>
<td>496</td>
</tr>
<tr>
<td>UNLOAD batch TSS command</td>
<td>503</td>
</tr>
</tbody>
</table>
UNMARK (U) action code 159
UNMARK ALL primary command 156
ZAP command 430
Common User Access
definition 615
communications line block
definition 615
communications name table
definition 615
complete DELTA PLUS History File format 343
complete DELTA PLUS Log format 332
Complete History File Report panel 381
complete or changed History File reports 381
compression
definition 615
concurrent processing
definition 616
condition settings
logon sample exit routine 522
logon sample exit routine 1 525, 526
signon bypass sample exit routine 529
signon sample exit routine 532
configuration
definition 616
Confirm Delete panel 480
Confirm History File Format panel 343
Confirm History Purge panel 338
Confirm History Recovery panel 339
Confirm Log Format panel 332
Confirm Log Purge panel 327
Confirm Log Recovery panel 328
Confirm Remove panel 489
confirm TSS table entry deletions 480
confirmation panels
cancel 72
console
definition 616
control blocks 511
user signon block (USB) 514
virtual communications name (VCN) 513
virtual printer override (VPO) 514
virtual terminal control block (VLB) 513
virtual terminal global area (VCD) 512
virtual terminal pending element (VTE) 514
control section
definition 616
control statement
definition 616
conventions, documentation 19
conversation
definition 616
collection transaction
definition 616
conversion utilities 364, 366, 368
convert a DELTA List to stage-1 macros 368
convert a DELTA List to stage-1 macros,batch 372
Convert DELTA List to Stage 1 Macros panel 368
Convert Log to DELTA List panel 366
Convert Log to Stage 1 Macros panel 364
convert the DELTA PLUS Log to a DELTA List 366
convert the DELTA PLUS Log to a DELTA List,batch 372
convert the DELTA PLUS Log to stage-1 macros 364
convert the DELTA PLUS Log to stage-1 macros,batch 371
COPY (C) action code 159
Copy Element from IMS pop-up window
access the pop-up window 246
copy elements 246
COPY primary command 141, 156
CPU
definition 616
CPU ID
definition 616
CPU ID authorization
definition 617
CPU ID options
refreshing 138
CPU ID password
definition 617
creating a DELTA List 151
creating a variable definition 293
creating LTERMs using /START or /STOP command 412
cross-domain
definition 617
cross-domain resource manager
definition 617
CSECT
definition 617
CUA
definition 617
customizer exit
definition 617
customization
DELTA PLUS
  IMSID options, specifying 88
DELTA PLUS data sets, allocating 148
DELTA PLUS for DBCTL
  IMSID options, specifying 88
DELTA PLUS VIRTUAL TERMINAL
  IMSID options, specifying 92
  IMSID options, specifying basic 93
global options, specifying 84
Group Log and History File data sets
  adding an IMSID 134
Group options, specifying 130
Variable Definition library, allocating 294
Variable Definition library, specifying 296
View Profiles, editing 141
  accessing panels 82
FDR setup 129
global options 84
Group options 130
IMSID basic options 93
IMSID options 88
Variable Definition Sets, creating 298
Variable Definition Sets, editing 298

D

DASD
  definition 618
Data Base Recovery Control
  definition 618
data entry database
  definition 618
Data Language/I
  definition 618
data management block
  definition 618
data set
  TSS 471
database
  definition 618
database administrator
  definition 618
database area
  definition 619
database description
  definition 619
database recovery
  definition 619
datastore
  definition 619
DataStore Router
  definition 619
DBA
  definition 619
DBCS
  definition 619
DBCTL
  DELTA PLUS 49
    definition 619
DBCTL OFF primary command 155, 173, 207
DBCTL ON primary command 155, 173, 207
DBD
  definition 620
DBD-type ACB
  definition 620
DBDGEN 178, 215
DBRC
  definition 620
DEADQ
  definition 620
DEDDB
  definition 620
DEFAULT primary command 141
default Variable Definition Set
  instructions for specifying 304
DEFINE batch TSS command 499
Define Tables panel 488
define TSS table 488
defining logon models 444
defining signon models 446
delete
  table entry confirmation 480
  TSS table entries 480
DELETE (D) action code 159
DELETE batch TSS command 505
DELETE primary command 207
DELTA IMS
  converting to DELTA PLUS 565
  Customization panel 474
  Primary Menu 474
  repository guidelines 347
DELTA IMS repository 347
  format and data set allocation 356
  purge 356
  recovery 356
  status 356
DELTA IMS VIRTUAL TERMINAL
converting to DELTA PLUS VIRTUAL TERMINAL 589
features
virtual printers 53
virtual terminal control blocks 54
virtual terminals 54
overview 53
restrictions and compatibility 59
DELTA IMS VIRTUAL TERMINAL and TSS 469
DELTA List
edit commands
initial 73
action codes 159
batch Check and Execute commands 288
batch commands 288
begin edit session 161
beginning a check session 257
beginning an edit session 161
beginning an execute session 269
check 154
Check and Execute in batch 288
checking 261
comparing Check and Execute 265
convert the DELTA PLUS Log 366
convert the DELTA PLUS Log, batch 372
convert to stage-1 macros 368
convert to stage-1 macros, batch 372
copy elements 246
creating and editing 151
description 151
duplicate elements 43, 152
edit commands 156
action codes 159
primary 156
edit list elements 206
edit select 164
double 156
eclipse online 269
executing 272
executing a DELTA List 154
generating, batch 373
output from batch Check 290
output from batch Execute 290
primary commands 156
purpose 151
select a DELTA List to Check 260
select a DELTA List to Execute 271
DELTA List Change Elements pop-up window
access the pop-up window 253
DELTA List Check 261
DELTA List Edit/Execute Entry panel
access the panel 161, 166, 174, 178, 181, 184, 188,
190, 193, 197, 200, 203, 210, 215, 220, 222,
224, 226, 233, 236, 239, 243, 246, 249, 253,
257, 261, 269, 272, 281, 284, 305, 308, 311,
316
DELTA List Element Check 281
DELTA List Element Edit
edit commands
primary 207
primary commands 207
DELTA List Element Edit panel
access the panel 210, 215, 220, 222, 224, 226, 233,
236, 239, 243, 281, 284, 308, 311
DELTA List Element Execute 284
DELTA List Element Execution panel
access the panel 281, 284
DELTA List elements
APPLCTN 174, 210
checking 281
COMMAND 181, 220
COMMENT 188, 224
DATABASE 178, 215
DELTALST 184, 222
duplicate elements 154
executing 284
LTERM 200, 239
RTCODE 193, 233
SUBPOOL 203, 243
TERMINAL 197, 236
TRANSACT 190, 226
DELTA List Execute 272
DELTA List Find Elements pop-up window
access the pop-up window 249
DELTA List library
allocating 148
instructions for specifying 161, 166, 174, 178,
181, 184, 188, 190, 193, 197, 200, 203, 210,
215, 220, 222, 224, 226, 233, 236, 239, 243,
246, 249, 253, 257, 261, 269, 272, 281, 284,
305, 308, 311, 316
DELTA List to Stage1 Macros Report output 368
DELTA Log 321
utilities online 375
DELTA PLEX VIRTUAL TERMINAL
converting to DELTA PLUS VIRTUAL TERMINAL 583
DELTA PLUS
administration features 395
changes to IMS 26
converting from DELTA IMS 565
customization, FDR setup 129
DBCTL 49
definition 25
Journal 437
operational considerations 41
usage with IMS Online Change 41
utilities 323, 334, 364, 366, 368, 375
XREF feature in batch 411
XREF feature online 408
DELTA PLUS Data Set Allocation Menu 294
DELTA PLUS for DBCTL 49
DELTA PLUS Lists, creating and editing 51, 155
DELTA PLUS History File
data sets 439
DELTA PLUS History File data sets
allocate 341
format 341
maintaining 334
DELTA PLUS Log
data sets 439
enlarging 328
expanding 328
list in batch 389
purge 327
recovery 328
DELTA PLUS Log data sets
allocating 148
DELTA PLUS Logs
maintaining 323
DELTA PLUS User Preferences pop-up window
304
DELTA PLUS VIRTUAL TERMINAL
converting from DELTA IMS VIRTUAL
TERMINAL 589
converting from DELTA PLEX VIRTUAL
TERMINAL 583
locating tasks 61
virtual storage requirements 54
DELTA PLUS VIRTUAL TERMINAL IMSID options
DFS3650I SESSION STATUS format name 103
enable DELTA PLUS VIRTUAL TERMINAL 103
extended options 122
held conversation exit interval 98
idle virtual printer logoff intervals 98
maximum security allowed users 98
maximum virtual terminal pending entries (VTE) 98
method for obtaining a Logon Model node name 111
method for obtaining LTERM with signon required 118
method for obtaining LTERMs with signon bypass 114
Pass VTAM user data 122
Primary History File data set name 93
Require ALLROWS keyword on /DIS
TSSTABLE command 107
require signon for ALL virtual terminals 103
Secondary Log data set name 93
setting limits for virtual terminals 98
setting logon options 111
setting options for virtual terminals 103
setting signon bypass options 114
setting signon options 118
setting TSS options 107
TSS table data set name 107
virtual printer table 107
XRF Alternate IMSID 93
/DEQ messages 122
/EXIT conversations 122
/EXIT non-held conversations after held conversation interval 122
Allow more than 8 LTERMs per USER 122
BMCXLINK task network LUNAME 93
Bypass RACF authorization for conversations 122
Call ETO logoff exit DFSLGFX0 122
Call ETO logon exit DFSLGNX0 122
Call ETO signoff exit DFSSGFX0 122
DFS3649A /SIGN COMMAND REQUIRED format name 103
Do not delete USERs and LTERMs at signoff 122
Do not issue WTOR for coordinated request errors 93
Enable DELTA PLUS VT compatibility with session managers 122
FDR Alternate IMSID 93
FID class for /DISPLAY command 122
idle conversation logoff/exit intervals 98
idle terminal logoff intervals 98
Ignore DFS3650I replacement message when running ACF2 or Top Secret 122
IMS STEPLIB library 93
IMS storage displays 93
IMS storage zaps 93
IMSID 93, 98, 103, 107, 111, 114, 118, 122
Key 118
Key to LTERM TSS table name 118
logon TSS table name 111
LTERM timer override TSS table name 114, 118
maximum virtual printer overrides (VPO) 98
Node to LTERM TSS table name 114
notify MTO of auto logoffs and exits 103
number of TSS cache buffers 107
Pass VTAM user data from logon to signon 122
Prefixes for session manager node names 122
Preserve response mode across signons 122
Primary Log data set name 93
Reset PRESET mode (IMS 7.1 and earlier) 122
Retry signon bypass when initial signon fails 122
Secondary History File data set name 93
support multiple concurrent LTERMs for virtual terminals 103
unsolicited output table name 107
unsolicited output TRANSACT table name 107
Use DFS3649A replacement format on sysgened terminals 122
Use DFS3650I replacement format on sysgened terminals 122
Use LTERM edit routine DFSCNTE0 122
Userid and password supplied in VTAM user data 122
virtual printer timer override 107
virtual remote LTERMs table name 107
VT system log code 103
VTAM user data contains trailing blanks 122
write IMS commands to History File 93
XCF Group 93
DELTA PLUS VIRTUAL TERMINAL resource requirements
GETMAIN and CWAP storage 55
virtual storage 54
VLB and VCN composition 55
DELTA repository reports, batch 352
dequeue virtual LTERM 453
description 620
descriptor list 620
DESELect ALL primary command 207
destination 620
destination name table 620
destination search sequence 620
virtual LTERM 443
DETAIL (S) action code 159
device characteristics table 621
device input format 621
device output format 621
device relative record number 621
diagnostics
BMCAJNIK 439
IMS control region 438
IMS system log tapes 55
TSO/ISPF 440
virtual terminal trace facility 55
DIF 621
direct access storage device 621
display
DELTA List to Stage 1 Macros Report 368
Log to Stage 1 Macros Report 364
DISPLAY command examples 420
DISPLAY DLP command 401, 405
DISPLAY IMS operator command 416
display IMS storage 430
DISPLAY VT TRACE 57
DL/I 621
definition 621
DL/I database 621
definition 621
DLA@iii modules
DELTA PLUS VIRTUAL TERMINAL instructions for creating 93, 584
DLA#iii modules
DELTA PLUS VIRTUAL TERMINAL instructions for creating 93, 584
DLATSS TSO Command Processor
batch TSS commands 497
DLP#iii modules
DELTA PLUS VIRTUAL TERMINAL
instructions for creating 93, 584

DMB
definition 621

DNT
definition 622
dock
definition 622

DOF
definition 622
domain
definition 622
double-byte character set
definition 622

DRRN
definition 622

DSECT
definition 622
dual data sets
REP1 347
REP2 347
dummy control section
definition 622

DUMP primary command 430

DUMPQ
definition 622

DYNAMIC
definition 623
dynamic allocation
definition 623
dynamic LTERM
definition 623
dynamic printer
definition 623
dynamic terminal
definition 623

e

ECSA
definition 623
eedit

application element 210
color element 220
comment element 224
database element 215
DELTA LIST 222
LTERM element 239
route code element 233
subpool element 243
terminal element 236
transaction element 226
edit a TSS table 479, 485
edit commands 156
DELTA List Element Edit, primary commands 207
DELTA List, action codes 159
DELTA List, primary commands 156
EDIT DELTA LIST (E) action code 159
Edit Global Options panel 296
Edit Group Options panel 130
EDIT primary command 142, 156, 207
edit table panel 479, 485
editing a DELTA List 151
eGroup

definition 624
element attributes
cross-field validation 44, 153
Element Error panel 265, 276
elements
APPLCTN 174, 210
COMMAND 181, 220
color, DELTA List execution 45, 153
COMMENT 188, 224
cross-field validation 44, 153
DATABASE 178, 215
DELTA LIST 184, 222
duplicates in a DELTA List 43, 152
LTERM 200, 239
Model after field 44, 153
partial revise 44, 153
RTCODE 193, 233
SUBPOOL 203, 243
TERMINAL 197, 236
TRANSACT 190, 226
eLink

definition 624
eemergency restart
definition 624
END batch TSS command 499
END IMS operator command 428
END primary command 156, 207

DELTA PLUS User Guide
expanding
  DELTA PLUS Log 328
  History File 339
Expedited Message Handler, setting buffer size 226
explicit API
definition 625
extended common storage area
definition 625
extended help 68
extended recovery facility
definition 625
EXTENDED TERMINAL ASSIST PLUS
accessing 76
EXTENDED TERMINAL ASSIST PLUS - Main Menu
  access the panel 76
Extended Terminal Option
definition 625

F
FAQ 541
Fast Path
definition 625
Fast Path database
definition 625
Fast Path EMH, setting buffer size 226
FBA device
definition 626
FDR
  IMSID Options 129
  customizing DELTA PLUS 129
features
  Change management features 31
  Coordinated change feature 40
  Dynamic change features 26
  IMS resource management features 38
  XREF, online 408
  XREF,batch 411
FHelp primary command 207
field value prompts 66
field-level help 68
fields
definition 626
  Model after 44, 153
  File Select Print Utility 58
FIND parameters
context 249
direction 249
element field 249
element type 249
find string 249
limitations 249
FIND primary command 156, 249, 430
instructions for using 249
fixed-block-architecture device
definition 626
FORMAT batch TSS command 498
format DELTA PLUS History File data sets 341
format DELTA PLUS Log data sets 330
Format Library panel 492
format set
definition 626
full-function database
definition 626
function keys
definition 626
function assignment
change 76
G

GDG
definition 626
general register storage
definition 626
general resource serialization
definition 626
generating a DELTA List
batch 370
generating a Stage-1 report 364
generating a terse report 379
generating complete or changed reports 381
generation data group
definition 627
generic DASD unit name 84
get unique
definition 627
GETMAIN
definition 627
global options 84
Message number prefix 84
Translate all messages to upper case 84
User Profiles data set name 84
definition 627
generic DASD unit name 84
instructions for specifying, library 84, 93, 98,
103, 107, 111, 114, 118, 122, 130, 296
panel for specifying 296
prefix for BMCXLINK session ACBNAME 84
request status check time interval 84
trace table dynamic dump sysout class 84
user ID for authorization check 84
Variable Definition data set name 84, 296
View Profiles data set name 84
WTO message descriptor codes 84
WTO message routing codes 84
Global Options Entry panel 296
global options library
instructions for specifying 84, 93, 98, 103, 107,
111, 114, 118, 122, 130, 296
g graphical user interface
definition 627
Group options 130
overview 81
BMCXLINK task network LUNAME 130
definition 627
DELTA PLUS Primary History File data set
name 130
DELTA PLUS Primary Log data set name 130
DELTA PLUS Secondary History File data set
name 130
DELTA PLUS Secondary Log data set name 130
Group Name 130
IMS STEPLIB library 130
instructions for specifying, library 130
library restrictions 81
panel for specifying 130
updating in the control region 137
write IMS commands to History File 130
Group options library
instructions for specifying 130
Groups
creating new 133
GRS
definition 627
GU
definition 628
GUI
definition 628
H

HIDE primary command 298
high input/output pool
definition 628
HIOP
definition 628
History File
allocate and format 341
batch maintenance 344
complete or changed History File reports 381
enlarging 339
expanding 339
output data set 377
purge 338
recovery 339
report format and sequence 377
report input items 377
report sequence 377
report types 377
terse report 379
History File allocate and format 341
History File data sets, DELTA PLUS 439
History File format completion 343
History File maintenance
batch 344
History File maintenance commands 344
History File purge 338
History File recovery 339
History File Report (Changed) panel 381
History File report input items 377
History File report output data set 377
History File report sequence 377
History File report types 377
changed 377
complete 377
terse 377
user 377
History File status 336
History File Status panel 336
History File utilities 334
batch 384
Host Web Services
definition 628
host/sysplex
definition 628
HWS
definition 628
HWSJAVA
definition 628
HWSUINIT
definition 629
I

I/O
definition 629
I/O PCB
definition 629
IDCAMS
definition 629
IF batch command 288
image copy
definition 629
image copy data set
definition 629
implicit API
definition 629
IMS
storage display and zap 430
definition 629
instructions for specifying target for DELTA
List Check function 261, 316
instructions for specifying target for DELTA
List Execute function 272
instructions for specifying target for element
Check function 281
instructions for specifying target for element
Execute function 284
instructions for specifying target for History
File Utility functions 334
instructions for specifying target for Log Utility
functions 323
Master Terminal log 439
IMS commands
CHANGE command
TSS keyword 415
/DISPLAY 416
/END 428
/SECURITY 425
/TEST MFS 427
/TRACE 429
batch 412
online 397
IMS Connect
definition 630
IMS control region diagnostics 438
DELTA PLUS History File data sets 439
DELTA PLUS Log data sets 439
IMS Master Terminal log 439
IMS system log 439
system log tapes 57
IMS data-sharing group
  instructions for specifying target for DELTA
    List Check function 261, 316
  instructions for specifying target for DELTA
    List Execute function 272
  instructions for specifying target for element
    Check function 281
  instructions for specifying target for element
    Execute function 284
  instructions for specifying target for History
    File Utility functions 334
  instructions for specifying target for Log Utility
    functions 323
IMS MODBLKS
  input source for DELTA List,batch 373
IMS Online Change usage 41
IMS Request Message
  definition 630
IMS RESLIB
  input source for DELTA List,batch 373
IMS Resource Lock Management
  definition 630
IMS resource modeling 44, 153
IMS STEPLIB library
  instructions for specifying 88, 93, 130
IMS Storage Display panel 430
IMS SYSGEN dates 322
IMS system log tapes 57
  diagnostics 55
IMSGEN-defined terminals and virtual terminals
  444
IMSID
  definition 630
IMSID basic options 93
IMSID options 88
overview 81
XRF Alternate IMSID 88
BMCXLINK task network LUNAME 88
  definition 630
DELTA PLUS Primary History File data set name 88
DELTA PLUS Primary Log data set name 88
DELTA PLUS Secondary History File data set name 88
DELTA PLUS Secondary Log data set name 88
Do not issue WTOR for coordinated request
  errors 88
FDR Alternate IMSID 88
IMS STEPLIB library 88
IMS storage displays 88
IMS storage zaps 88
IMSID 88
instructions for specifying, library 88, 93, 98,
  103, 107, 111, 114, 118, 122
library restrictions 81
logon sample exit routine 524
logon sample exit routine 1 526
logon sample exit routine 2 528
signon bypass sample exit routine 531
signon sample exit routine 531
updating in the control region 137
write IMS commands to History File 88
XCF Group 88
IMSID options library
  instructions for specifying 88, 93, 98, 103, 107,
    111, 114, 118, 122
IMSIDs
  creating new 128
include excluded TSS table values 481
Include Scan Values panel 481
included rows revise panel 483
included rows revised 483
included values panel 481
Index Term 347, 352, 353
Information Management System
  definition 630
INIT Subroutine
  definition 630
initial program load
  definition 630
inoperative or non-existent virtual printer devices
  463
insert
Application element 174
Command element 181
Comment element 188
Database element 178
DELTA ST element 184
LTERM element 200
Route code element 193
Subpool element 203
Terminal element 197
Transaction element 190
Insert (I) action code 159
Insert Copy (IC) action code 159
Insert Element (IE) action code 159
Insert Element Options pop-up window access the pop-up window 174, 178, 181, 184, 188, 190, 193, 197, 200, 203, 246
Insert IMSID pop-up window 298
Insert primary command 298
Insert primary command 156
Insert Single Element pop-up window access the pop-up window 174, 178, 181, 184, 188, 190, 193, 197, 200, 203
Insert Variable pop-up window 298
Inserting DELTA List elements 173
Installation verification procedure definition 631
Integrated Storage Control definition 631
Interactive System Productivity Facility definition 631
Intersystem Communication definition 631
IPL definition 631
IRLM definition 631
IRM definition 631
ISC definition 631
ISPF conventions 63
ISPF interface definition 632
ISPF panel conventions CANCEL command 66 END command 66 entering commands 66 RETURN command 66
ITASK definition 632
IVP definition 632
IWAIT definition 632

J
Java definition 632
JCL
 batch DELTA List Conversion utility sample JCL 372
 batch Generate a DELTA List Conversion utility sample JCL 373
 batch History File Maintenance utility sample JCL 344
 batch History File Report Utility sample JCL 384
 batch Log Conversion utility sample JCL 371, 372
 batch Log Maintenance utility sample JCL 333
 batch Log Report Utility sample JCL 389
 batch XREF feature sample JCL 411
 definition 632
 Stage-1 Conversion Aid example JCL 508
 Job definition 632
 Job control language definition 632
 Journal activate the Journal 437 output 438

K
Kanji definition 633
Key-sequence data set definition 633
Keyword definition 633
KSDS definition 633
LIBDEF
definition 633
library browse panel 494
library format panel 492
library reorganize panel 493
library status panel 493
library unload panel 492
LINKLIST
definition 633
LIST batch TSS command 502
list DELTA PLUS Log in batch 389
load
definition 633
Load Balancer
definition 634
LOAD batch TSS command 503
Load Tables panel 490
Locate primary command 298
Log
close a DELTA List 366
close a DELTA List,batch 371
close to stage-1 macros 364
close to stage-1 macros,batch 371
generate Stage-1 report 364
Log allocate and format 330
Log control record 322
Log data sets, DELTA PLUS 439
Log format completion 332
Log maintenance
batch 333
Log maintenance commands 333
Log purge 327
Log recovery 328
log report examples 388, 393
log status 325
Log Status 325
Log Status panel 325
log tapes
IMS system 57
Log to Stage1 Macros Report output 364
log utilities
online 375
Log utilities 323
logical partition
definition 634
logical record
definition 634
logical terminal
definition 634
logical unit
definition 634
logical unit name
definition 634
logo panel
startup 74
logon sample exit routine 521
condition settings 522
IMSID options 524
register contents 522
logon sample exit routine 1 525
condition settings 525, 526
IMSID options 526
logon sample exit routine 2 526
IMSID options 528
LPAR
definition 634
LTERM
definition 634
multiple LTERM restricts pattern masking 59, 103, 448, 472, 488
LTERMOR
TSS table definition 528, 535
LTERMS, create using /START or /STOP command 412
LU
definition 634
LU 6.1 subpool
example 564
LU-LU session
definition 635
LUNAME
definition 635
MACRO OFF primary command 142, 207, 544
MACRO ON primary command 142, 207, 544
macros
$VTFCBS 515
$VTFTEST 519
$VTFTRCE 56
main storage database
   definition 635
MARK (K) action code 159
MARK ALL primary command 156
masks
   spare element 561
Master Terminal log 439
master terminal operator
   definition 635
member selection list panel 164, 260, 271
menu
   definition 635
message
   definition 635
Message Advisor Server
   definition 635
message exits
   definition 635
message format service
   definition 635
message input descriptor
   definition 636
Message number prefix 84
message output descriptor
   definition 636
MESSAGE primary command 69, 542
message processing program
   definition 636
message queue
   definition 636
messages pane
   definition 636
MFS
   definition 636
MID
   definition 636
middleware tier
   definition 637
MOD
   definition 637
MODBLKS
   definition 637
model control blocks, virtual terminal 444
models
   logon 444
   signon 446
   virtual printer 461
modetable 460
modify table panel 487
modify TSS table 487
MOVE (M) action code 159
MPP
   definition 637
MSC
   definition 637
MSDB
   definition 637
MSNAME
   definition 637
MTO
   definition 637
Multiple Systems Coupling
   definition 638
multiple virtual storage
   definition 638
MVS
   definition 638
MVS system log 439

N
name patterns and wildcard characters 472
navigation pane
   definition 638
NEW primary command 207
New Table Entry panel 479
new TSS table entry 479
NEXT primary command 207, 430
NLTERMs
   Stage-1 Conversion Aid 508
node
   definition 638
normal restart
   definition 638
NOTES primary command 156, 207

O
OLDS
   definition 638
online interface
   action bar 64
   action bar selections 67
   headings 64
   online help 68
   selection fields 64
online log data set
   definition 639
online TSS commands 474
online TSS tables 475
OPEN primary command 142, 156
Open Transaction Manager Access
definition 639
operational considerations 41
operator dump
  BMCXLINK diagnostics 440
  IMS control region diagnostics 438
options
  basic IMSID 93
  global 84
  Group 130
  IMSID 88
OPTIONS primary command 156, 207
OPTS primary command 207
OTMA
definition 639
output
  DELTA List to Stage1 Macros Report 368
  Journal 438
  Log to Stage1 Macros Report 364
output data set
  History File report 377
override options
definition 639
override virtual printers (VPO) 413, 464

P

pane
definition 639
panel conventions
  CANCEL command 66
  END command 66
  entering commands 66
  RETURN command 66
panel-level help 68
panels
accessing for customization 82
Allocate New DELTA PLUS History File Data Set panel 341
Allocate New DELTA PLUS Log Data Set panel 330
Complete History File Report 381
Confirm Delete panel 480
Confirm History File Format 343
Confirm History Purge panel 338
Confirm History Recovery panel 339
Confirm Log Format 332
Confirm Log Purge panel 327
Confirm Log Recovery panel 328
Confirm Remove panel 489
Convert DELTA List to Stage 1 Macros 368
Convert Log to DELTA List 366
Convert Log to Stage 1 Macros 364
Define Tables panel 488
DELTA IMS Customization panel 474
DELTA IMS Primary Menu 474
Edit Global Options 296
Edit Group Options 130
Element Error panel 265, 276
Exclude Scan Values panel 480
Execute IMS Command panel 397
Execution Results panel 267, 278
Format Library panel 492
Global Options Entry 296
History File Report (Changed) 381
History File Status panel 336
IMS Storage Display panel 430
Include Scan Values panel 481
Insert IMSID pop-up window 298
Insert Variable pop-up window 298
Load Tables panel 490
Log Status panel 325
Macro $VTFTEST Format 519
member selection list panel 164, 260, 271
New Table Entry panel 479
Refresh Tables panel 491
Remove Table panel 489
Reorganize Library panel 493
Report Specifications 375
Revise Excluded Rows panel 484
Revise Included Rows panel 483
Table Edit panel 479, 485
Table Edit panel after excluding arguments 480
Table Edit panel showing included table Values 481
Table Edit panel showing reset values 484
Table Edit panel showing updated table Values 483
Table Modify panel 487
Table Search panel 486
Table Select panel 477
Table Test panel 486
Terse History File Report 379
Translate Tables panel 475
TSS Library Status panel 493
TSS Status Browse panel 494
Unload Library panel 492
Unload Tables panel 490
Variable Definition Edit Entry 298
Variable Definition List 298
parallel processing
definition 639
parameter
definition 639
partition specification table
definition 639
partitioned data set
definition 640
password
definition 640
PCB
definition 640
PCL
definition 640
PDS
definition 640
PGOF command 134
physical terminal
definition 640
pointer
definition 640
pop-up menu
definition 640
port
definition 641
preferences
cancel confirmation 72
colors 71
instructions 75
confirmation 71
default Variable Definition Set 73
function keys 71
instructions 76
save on exit confirmation 72
startup 71
instructions 74
prefix for BMCXLINK session ACBNAME 84
PREV primary command 430
prevent TSS table damage 474
PREVious primary command 207
primary commands
CANCEL 141, 156, 207
CLEAR 142, 207
COPY 141, 156
DEFAULT 141
EDIT 142, 156, 207
OPEN 142, 156
PREVious 207
PROMPT 142, 207
SAVE 142, 156
ALTVIEW 142, 156, 207, 544
CANCEL 141, 156, 207
CHANGE 156, 249, 253
CHECK 156, 207
CK 207
CLEAR 142, 207
COPY 141, 156
DBCTL OFF 155, 173, 207
DBCTL ON 155, 173, 207
DELETE 207
DESELect ALL 207
DUMP 430
EDIT 142, 156, 207
END 156, 207
EXCLUDE 156
EXECUTE 156, 207
FHelp 207
FIND 156, 249, 430
HIDE 298
Insert 298
INSERT 156
Locate 298
MACRO OFF 142, 207, 544
MACRO ON 142, 207, 544
MARK ALL 156
MESSAGE 69, 542
NEW 207
NEXT 207, 430
NOTES 156, 207
OPEN 142, 156
OPTIONS 156, 207
OPTS 207
PREV 430
PROFILE 207
PROFILE 156
PROMPT 142, 207
RCHNG 156
RELO 430
RSet 298
RESET 156, 207
RESOlve 207
RFND 156
SAVe 298
SAVE 142, 156
SELect ALL 207
SHOW 298
SORT 156, 298
UNMARK ALL 156
problem determination documentation 441
processing options
product license
product tier
PROFile primary command 207
PROFILE primary command 156
program communication block
definition 641
program specification block
definition 641
PROMPT primary command 142, 207
prompting 66
PSB
definition 641
PSBGEN
definition 641
PST
definition 642
PSTOP virtual printers 463
PTERM
definition 642
PURGE
definition 642
purge the History File 338
purge the Log 327
Q
QBUF
definition 642
questions 541
queue buffer
definition 642
quiesce
definition 642
R
RACF
definition 642
RACF, sample signon exit routine 534
RCHNG primary command 156
RCNT
  definition 642
READ batch TSS command 499
READ Subroutine
  definition 643
RECON data set
  definition 643
recover the History File 339
recover the Log 328
recovering from errors
  DELTA List Check 265
Refresh Tables panel 491
refresh TSS tables
  batch 508
  online 491
register contents
  logon exit entry 522
  signon bypass exit entry 529
RELO primary command 430
remote communication name table
  definition 643
remote LTERM
  definition 643
remote LTERMs example 564
remote LTERMs, virtual 463
REMOVE batch TSS command 502
Remove Table panel 489
RENAME batch TSS command 505
Reorganize Library panel 493
REPEAT (R) action code 159
REPLACE batch TSS command 501
REPORT batch command 386, 391
report examples 388, 393
report format and sort sequence 377
Report Output data sets
  allocating 148
Report Specifications panel 375
reports
  DELTA PLUS XREF batch reports 411
  DELTA PLUS XREF online reports 408
request
  definition 643
request status check time interval 84
RESSet primary command 298
RESET primary command 156, 207
reset values panel 484
RESLIB
resolution errors 314
RESOlve primary command 207
Resolve Variables pop-up window 311, 314
Resource Access Control Facility
  definition 643
restart
  definition 643
restrictions 59
results list
  DELTA List Execute 267, 278
REVISE batch TSS command 505
revise excluded rows 484
Revise Excluded Rows panel 484
revise included rows 483
Revise Included Rows panel 483
RFND primary command 156
running local batch
  Check or Execute 288
S
SAA
  definition 644
sample exit routine table 520
sample exit routines 520
  exit assembly guide 520
save library
  for Group option modules, instructions for specifying 130
  for IMSID option modules, instructions for specifying 84, 88, 93, 98, 103, 107, 111, 114, 118, 122
SAVe primary command 298
SAVE primary command 142, 156
SBCS
  definition 644
SCD
  definition 644
scheduler message block
  definition 644
scratch pad area
  definition 644
scrolling 65
search table panel 486
security changes
  DELTA PLUS
  security changes to IMS 26
SECURITY IMS operator command 425
select a DELTA List
   edit 164, 260, 271
select a TSS table 477
SELect ALL primary command 207
SELECT batch command 384, 390
select table panel 477
serial processing
   definition 644
session
   definition 644
SET batch TSS command 506
SHOW primary command 298
signon bypass
   using 447
signon bypass sample exit routine 528
   condition settings 529
   IMSID options 531
   multiple LTERMs 529
   register contents 529
   URMCOUNT 529
   work area 529
signon sample exit routine 531
   condition settings 532
   IMSID options 531
   multiple LTERMs 532
   URMCOUNT 532
   work area 532
signon sample exit routine 1 533
signon sample exit routine 3 and RACF 534
signon sample exit routine 5 and TSS 537
   IMSID options 536
   TSS 535
signon sample exit routine 7 537
signon sample exit routine 9 538
single-byte character set
   definition 644
SLDS
   definition 645
SmartDBA console
   definition 645
SMB
   definition 645
SMF
   definition 645
SMP
   definition 645
SNA SLUTYPE1 printers example 563
SNA SLUTYPE2 terminals example 563
SNA SLUTYPEP terminals example 564
SNAPQ
   definition 645
socket
   definition 645
SORT primary command 156, 298
SPA
   definition 645
spare element masks 561
spare element pool
   definition 645
spare elements
   example definitions 561
special IMS elements
   node VTFBMCLB 515
specifying a default Variable Definition Set 73
specifying a Variable Definition library 296
specifying an initial edit command 73
SPQB
   definition 646
SSCP
   definition 646
SSCT
   definition 646
Stage-1 Conversion Aid
   example JCL 508
   execution 508
   implementation 507
   NLTERMs 508
   virtual printer 507
Stage-1 input
   updated 366
Stage-1 macros
   convert a DELTA List 368
   convert a DELTA List, batch 372
   convert the DELTA PLUS Log 364
   convert the DELTA PLUS Log, batch 371
Stage-1 Report
   generate 364
start DELTA PLUS VIRTUAL TERMINAL
   disable ETO 93
   enable DELTA PLUS VIRTUAL TERMINAL 93
status report, TSS batch 510
storage dump
   BMCXLINK diagnostics 440
   IMS control region diagnostics 438
subsystem control vector table
   definition 646
synchronous processing
   definition 646
syntax statement conventions 20
system contents directory
definition 646
system log
  MVS 439
tapes 57
system log data set
definition 646
system management facilities
definition 646
System Modification Program
definition 647
system services control point
definition 647
Systems Application Architecture
definition 647

T
table define panel 488
  Table Edit panel 479, 485
    after excluding arguments 480
    showing included table values 481
    showing reset values 484
    showing updated table values 483
table load panel 490
  Table Modify panel 487
table refresh panel 491
table remove confirm panel 489
table remove panel 489
  Table Search panel 486
  Table Select panel 477
  Table Test panel 486
table unload panel 486
task control block
definition 647
task pane
definition 647
TCB
definition 647
TCP/IP
definition 647
TERM Subroutine
definition 647
terminal
definition 648
  Terse History File Report panel 379
  terse History File report, generate 379
  TEST MFS IMS operator command 427
test table panel 486
test TSS table 486

Time Sharing Option
definition 648
Timer facility
  held conversation exit interval 98, 456
  idle conversation logoff/exit intervals 98
  idle printer logoff 465
  idle terminal logoff 454
  idle terminal logoff intervals 98
  idle virtual printer logoff intervals 98
  request status check time interval 84
  unattended virtual printer 465
  unattended virtual terminal 453
  virtual printer timer override 107
TP
definition 648
TP PCB
definition 648
TP_PROFILE
definition 648
TPNAME
definition 648
trace
  IMS dispatcher trace facility 58
  BMCXLINK 396
  trace table 56
trace facility
  IMS dispatcher trace facility 58
  TRACE IMS operator command 429
trace table dynamic dump sysout class 84
transaction program
definition 648
transactions
definition 648
TRANSLATE batch TSS command 506
Translate Subsystem Services
definition 649
Translate Subsystem tables 469
Translate Tables panel 475
Translation Assist exit
  assemble and link-edit 539
  implement the exit 540
  prevent errors 540
Transmission Control Protocol/Internet Protocol
definition 649
tree
definition 649
tree node
definition 649
TSO
definition 649
TSO/ISPF diagnostics 440
TSS
  batch status report 510
definition 649
TSS and DELTA IMS VIRTUAL TERMINAL 469
TSS commands 496
  online 474
  See also batch TSS commands and online TSS commands 469
TSS data set 471
  enqueues 472
  records 471
TSS keyword for CHANGE command 415
TSS Library Status panel 493
TSS library utilities
  create a TSS library status report 493
  format a TSS library 492
  generate a TSS library status report 494
  recommendations 495
  reorganize a TSS library 493
  unload a TSS library 492
TSS Status Browse panel 494
TSS table damage prevention 474
TSS table search and modify 486
TSS table test 486
TSS table utilities
  confirm a removed TSS table 489
  define a TSS table 488
  load a TSS table 490
  refresh a TSS table
    batch 508
    online 491
  remove a TSS table 489
  unload a TSS table 490
TSS table values excluded 480
TSS tables 469
  confirm table entry deletions 480
  define TSS table 488
  edit TSS table 479, 485
  exclude table values 480
  modify TSS table 487
  new TSS table entry 479
  online 475
  refreshing 139
  search TSS table 486
  select TSS table 477
  signon sample exit routine 5 535
  test TSS table 486
TSS virtual printer table 460
  type of History File report 377
changed 377
  complete 377
  user 377
type of log report
  terse 377
  user 377

U

UIM server
  definition 649
UIMx
  definition 650
UNALLOC keyword for CHANGE command 415
undock
  definition 650
unknown destination
  definition 650
UNLOAD batch TSS command 503
Unload Library panel 492
Unload Tables panel 490
UNMARK (U) action code 159
UNMARK ALL primary command 156
unsolicited output
  warning 107, 466
Unsolicited Output feature
  definition 650
unsolicited output table name 107
unsolicited output to undefined virtual LTERMs 465
unsolicited output TRANSACT table name 107
updated table values panel 483
uploading Stage-1 input 366
UPDS
  definition 650
Upper case messages 84
usability tip
  DEQ extended option 453
  specifying signon required 103
USB 514
  definition 650
USER
  definition 650
user access profile
  definition 650
user authorization profile
  definition 651
user exit interface
  definition 651
user ID
definition 651
user message exit
definition 651
user profile data set
definition 651
user questions 541
user signon block
definition 651
user signon block (USB) 514
user/SPQB
definition 651
userid for authorization check 84
using a variable definition during DELTA List processing 293
utilities 323, 334, 364, 366, 368, 375
allocate and format 341
batch 384
batch History File report 384
batch Log report 389
conversion 364, 366, 368
conversion, batch 370
conversion, online 363
History File 334
History File format completion 343
History File purge 338
History File recovery 339
History File status 336
Log 323
Log format completion 332
Log purge 327
Log recovery 328
log status 325
online 375
Utilities Menu panel
access the panel 323, 334, 364, 366, 368, 375

V
valid dynamic transaction names 107
value prompts 66
Variable Definition Edit Entry panel 298
Variable Definition library 296
instructions for allocating 294
Variable Definition List panel 298
Variable Definition Set
instructions for specifying 305
instructions for specifying, default 304
default 73
Variable Definition Sets
data set name 84, 296
instructions for editing 298
overriding a default 316
overriding default Variable Definition Set for a DELTA List 261, 272, 281, 284, 316
specifying a default 304
specifying for a DELTA List 305
A(ction) field 298
Description field 298
IMSID field 298
instructions for creating 298
Title field 298
Value field 298
Variable Definition Set name field 298
Variable field 298
variable definitions 293, 314
allocating a Variable Definition Library 294
creating Variable Definition Sets 298
editing Variable Definition Sets 298
overriding a default Variable Definition Set 316
overriding default Variable Definition Set for a DELTA List 261, 272, 281, 284, 316
resolving a variable definition for a field value 311
samples 314, 547
specifying a default Variable Definition Set 304
specifying a variable definition for a field value 308
specifying a Variable Definition Library 296
specifying a Variable Definition Set for a DELTA List 305
using variable definitions in DELTA List processing 305, 547
viewing variable definition resolution errors 314
creating 293
using during DELTA List processing 293
VCD 512
VCN 513
View Profiles 82
data set name 84
DELTA PLUS 50
Command defaults 143
Comment 143
creating new 148
Default value 143
Description 143
Element Access 143
Element Type 143
Field access 143
Field ID 143
Field Name 143
Field Order 143
Force update when queue count /> 0 143
instructions for specifying 161, 166, 174, 178,
181, 184, 188, 190, 193, 197, 200, 203, 210,
215, 220, 222, 224, 226, 233, 236, 239, 243,
246, 249, 253, 257, 261, 269, 272, 281, 284,
305, 308, 311, 316
Macro 143
Marked for Execution 143
overview 50, 82
Remarks 143
Select field for revise 143
Start program after change 143
Stop program before change 143
View Profile name field 143
virtual exit
definition 651
virtual LTERM
definition 652
dequeue 453
virtual printer 459, 462
definition 652
inoperative or non-existent 463
models 461
set up 459
Stage-1 Conversion Aid 507
TSS table 460
TSS table example 460
virtual printer override (VPO) 413, 464, 514
virtual printer timer override 107
virtual printer TSS table name 107
virtual remote LTERMs 463
virtual remote LTERMs table name 107
Virtual Storage Access Method
definition 652
virtual storage requirements
DELTA PLUS VIRTUAL TERMINAL 54
Virtual Telecommunications Access Method
definition 652
virtual terminal 443
and IMSGEN-defined terminals 444
collection blocks 511
definition 652
event records 451
log records 451
virtual terminal and LTERM statistics
Virtual Terminal Statistics panel 449
log records 451
shutdown statistics 451
virtual terminal control block
definition 652
virtual terminal model control blocks
defining logon models 444
virtual terminal sample exit routines table 520
Virtual Terminal Statistics panels 449
virtual terminal trace facility
diagnostics 55
trace table element 56
virtual terminals
exit assembly guide 520
logon sample exit routine 521
logon sample exit routine 1 525
logon sample exit routine 2 526
model control blocks 444
sample exit routines 520
signon bypass sample exit routine 528
signon sample exit routine 531
signon sample exit routine 1 533
signon sample exit routine 3 and RACF 534
signon sample exit routine 5 and TSS 535
VLB 513
VPO limits 98
VPRINTER 460
VSAM
definition 652
VSPCNT
definition 653
VTAM
definition 653
VTAM LU 6.2
definition 653
VTAM LU-LU session
definition 653
VTE 514
VTE limits 98
VTFBMCLB 515
VTFBMCUS 515
## W
- Wildcard character
  - Definition 653
- Wildcard characters
  - Name patterns 472
- Wildcard masking warning
  - Unsolicited output 107, 466
  - Virtual printer 443
- WLM
  - Definition 653
- Workload Governor
  - Definition 653
- Write-to-operator with reply
  - Definition 653
- WTO message descriptor codes 84
- WTO message routing codes 84
- WTOR
  - Definition 654

## X
- XCF Group
  - Definition 654
- XMIT subroutine
  - Definition 654
- XREF feature in batch 411
- XREF feature online 408
- XRF
  - Definition 654
  - Delta Plus Virtual Terminal IMSID Options 93
  - IMSID Options 88

## Z
- Zap command 430
- Zap IMS storage 430