Database Products for IMS™
Configuration Guide

Supporting

Version 4.6 of Backup and Recovery Solution for IMS
Version 1.1 of BMC Application Accelerator for IMS
Version 4.6 of CHANGE ACCUMULATION PLUS
Version 2.11 of DATA PACKER/IMS
Version 4.9 of DATABASE INTEGRITY PLUS
Version 3.11 of Fast Path/EP products
Version 6.9 of Fast Path Recovery Utility/Restart Control Facility
Version 4.6 of IMAGE COPY PLUS
Version 2.5 of MAXM Database Advisor for IMS
Version 4.9 of MAXM Reorg Solutions for IMS
Version 4.9 of MAXM Reorg/EP Solutions for IMS
Version 4.9 of POINTER CHECKER PLUS
Version 4.6 of RECOVERY MANAGER for IMS
Version 4.6 of RECOVERY PLUS for IMS

January 2014
Contacting BMC Software

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

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  - 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 issue
- 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, such as file system full
  - messages from related software
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This edition applies to the BMC products and solutions that are listed in the following table.

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<td>4.6</td>
</tr>
<tr>
<td>SECONDARY INDEX UTILITY</td>
<td>3.2</td>
</tr>
<tr>
<td>SECONDARY INDEX UTILITY/EP</td>
<td>4.9</td>
</tr>
<tr>
<td>UNLOAD PLUS for IMS</td>
<td>3.2</td>
</tr>
<tr>
<td>UNLOAD PLUS/EP for IMS</td>
<td>4.9</td>
</tr>
</tbody>
</table>
You can order hardcopy documentation from your BMC sales representative or from the support site. You can also subscribe to proactive alerts to receive e-mail messages when notices are issued.

Conventions

This book 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:**
  
  `testsys/instance/fileName`

Syntax statements

The following example shows a sample syntax statement:

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

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

<table>
<thead>
<tr>
<th>Item</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 a group of 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]` |
| 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}` |
### Syntax statements

<table>
<thead>
<tr>
<th>Item</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A vertical bar means that you can choose only one of the listed items. In the example, you would choose either <code>commit</code> or <code>cancel</code>.</td>
<td>`{commit</td>
</tr>
<tr>
<td>An ellipsis indicates that you can repeat the previous item or items as many times as necessary.</td>
<td><code>columnName . . .</code></td>
</tr>
</tbody>
</table>
Part 1: Configuring database products for IMS

This part describes how to configure BMC database products for IMS. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This part presents the following topics:

Chapter 1
Configuring Backup and Recovery products for IMS ........................................ 23

Chapter 2
Configuring DATA PACKER/IMS ................................................................. 57

Chapter 3
Configuring Database Integrity products for IMS .............................................. 65

Chapter 4
Configuring Fast Path products ................................................................. 83

Chapter 5
Configuring MAXM products for IMS .................................................... 137

Chapter 6
Configuring Application Accelerator ..................................................... 193

Chapter 7
Configuring components for console-enablement .................................... 197
Chapter 1 Configuring Backup and Recovery products for IMS

This chapter describes tasks for configuring BMC Backup and Recovery products for IMS. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

Overview ................................................................. 24
Backup and Recovery Solution for IMS configuration worksheet ............ 25
CHANGE ACCUMULATION PLUS configuration worksheet .................. 27
IMAGE COPY PLUS configuration worksheet ................................ 28
RECOVERY MANAGER for IMS configuration worksheet .................... 29
RECOVERY PLUS for IMS configuration worksheet .......................... 30
Configuring Change Accumulation, Image Copy, and Recovery utilities .... 31
  Obtaining APF authorization ........................................... 31
  APF authorizing product load module libraries ............................ 32
  Configuring the DBUSS ................................................. 33
  Handling PDX enqueues ................................................. 34
  Providing access to the ISPF interface .................................. 34
  Setting ISPF environmental defaults ..................................... 36
  Implementing snapshot technology for the Image Copy utility ............ 38
  Installing the suspend-and-resume interface for the Image Copy utility .... 39
  Installing the AOI ....................................................... 40
  Installing the IMS security exit ........................................ 40
Configuring Recovery Manager functions and utilities ....................... 41
  Evaluating Cross-System Coupling Facility requirements ................ 41
  Handling security in the RMGR environment ............................. 42
  Reviewing data set concatenations .................................... 49
  Starting RMGR ......................................................... 50
  Connecting to IMS ..................................................... 50
  Providing access to the ISPF interface ................................ 52
  Installing the suspend-and-resume interface ................................ 54
  Setting up repository maintenance jobs ................................... 55
You should complete the configuration tasks that are described in this chapter after you install and customize the product libraries through the Installation System.

**NOTE**

For information about installing and customizing the product libraries, see the installation guide.

Table 1 lists each product that is covered in this chapter; the three-character product code; the functions, features, utilities, and components that are included with the product; and the location of the product configuration worksheet. For more information about the functions, features, utilities, and components, see the technical documentation that supports the product.

**Table 1   BMC Backup and Recovery products for IMS**

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
<th>Functions, features, utilities, and components</th>
<th>Worksheet</th>
</tr>
</thead>
</table>
| Backup and Recovery Solution for IMS   | BRI          | ■ Change Accumulation utility  
■ Concurrent Pointer Checker function  
■ DBA Toolkit  
■ Image Copy utility  
■ Index Build function  
■ Recovery Advisor  
■ Recovery Manager functions and utilities  
■ Recovery utility  
■ Database Management console  
■ SNAPSHOT UPGRADE FEATURE (SUF) for IMS | page 25     |
| CHANGE ACCUMULATION PLUS               | CAP          | Change Accumulation utility                                                                                  | page 27   |
| IMAGE COPY PLUS                        | ICP          | ■ Image Copy utility  
■ SNAPSHOT UPGRADE FEATURE for IMS                                                                                             | page 28   |
| RECOVERY MANAGER for IMS               | IRM          | Recovery Manager functions and utilities                                                                       | page 29   |
| RECOVERY PLUS for IMS                  | RVP          | Recovery utility                                                                                             | page 30   |
Table 2 is a worksheet that lists the steps you must complete to configure the Backup and Recovery Solution for IMS.

Table 2  Configuring Backup and Recovery Solution for IMS worksheet (part 1 of 2)

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Configuring the DBUSS</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>3. (optional) Provide access to the ISPF interface through a LIBDEF CLIST or through a TSO logon procedure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>To provide access with a LIBDEF CLIST</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>To provide access with a TSO logon procedure</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>4. (optional) Set ISPF environmental defaults.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting ISPF environmental defaults</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>5. (optional) Implement snapshot technology.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing snapshot technology for the Image Copy utility</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>6. (optional) Install the suspend-and-resume interface of APPLICATION RESTART CONTROL for IMS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing the suspend-and-resume interface for the Image Copy utility</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>7. (optional) Install the Automated Operator Interface (AOI).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing the AOI</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>8. (optional) Install the IMS security exit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing the IMS security exit</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>9. Evaluate Cross-System Coupling Facility requirements.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluating Cross-System Coupling Facility requirements</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>10. Handle security in the RECOVERY MANAGER environment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR environment</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR repository</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR IMS Command utility</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>11. Review data set concatenations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reviewing data set concatenations</td>
<td>49</td>
</tr>
<tr>
<td>Step</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>12. Start RECOVERY MANAGER as a started task or as a batch job.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start RMGR as a started task</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Start RMGR as a batch job</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>13. Connect RECOVERY MANAGER to IMS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecting to IMS</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>14. Provide access to the ISPF interface.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>15. (\textit{optional}) Install the suspend-and-resume interface of APPLICATION RESTART CONTROL for IMS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installing the suspend-and-resume interface</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>16. Set up repository maintenance jobs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting up repository maintenance jobs</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>17. (\textit{optional}) Configure components for console-enablement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuring components for console-enablement</td>
<td>197</td>
<td></td>
</tr>
</tbody>
</table>
CHANGE ACCUMULATION PLUS configuration worksheet

Table 3 is a worksheet that lists the steps you must complete to configure CHANGE ACCUMULATION PLUS.

Table 3 Configuring CHANGE ACCUMULATION PLUS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Configuring the DBUSS</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>3. (optional) Provide access to the ISPF interface through a LIBDEF CLIST or through a TSO logon procedure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>To provide access with a LIBDEF CLIST</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>To provide access with a TSO logon procedure</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>4. (optional) Set ISPF environmental defaults.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting ISPF environmental defaults</td>
<td>36</td>
</tr>
</tbody>
</table>
### IMAGE COPY PLUS configuration worksheet

Table 4 is a worksheet that lists the steps you must complete to configure IMAGE COPY PLUS.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Configuring IMAGE COPY PLUS worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step</strong></td>
<td><strong>Page</strong></td>
</tr>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>31</td>
</tr>
<tr>
<td>Obtaining APF authorization</td>
<td>31</td>
</tr>
<tr>
<td>Configuring the DBUSS</td>
<td>33</td>
</tr>
<tr>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>34</td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td>34</td>
</tr>
<tr>
<td>3. <em>(optional)</em> Provide access to the ISPF interface through a LIBDEF CLIST or through a TSO logon procedure.</td>
<td>35</td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>34</td>
</tr>
<tr>
<td>To provide access with a LIBDEF CLIST</td>
<td>35</td>
</tr>
<tr>
<td>To provide access with a TSO logon procedure</td>
<td>35</td>
</tr>
<tr>
<td>4. <em>(optional)</em> Set ISPF environmental defaults.</td>
<td>36</td>
</tr>
<tr>
<td>Setting ISPF environmental defaults</td>
<td>36</td>
</tr>
<tr>
<td>5. <em>(optional)</em> Implement snapshot technology.</td>
<td>38</td>
</tr>
<tr>
<td>Implementing snapshot technology for the Image Copy utility</td>
<td>38</td>
</tr>
<tr>
<td>6. <em>(optional)</em> Install the suspend-and-resume interface of APPLICATION RESTART CONTROL for IMS.</td>
<td>39</td>
</tr>
<tr>
<td>Installing the suspend-and-resume interface for the Image Copy utility</td>
<td>39</td>
</tr>
<tr>
<td>7. <em>(optional)</em> Install the Automated Operator Interface (AOI).</td>
<td>40</td>
</tr>
<tr>
<td>Installing the AOI</td>
<td>40</td>
</tr>
<tr>
<td>8. <em>(optional)</em> Install the IMS security exit.</td>
<td>40</td>
</tr>
<tr>
<td>Installing the IMS security exit</td>
<td>40</td>
</tr>
</tbody>
</table>
RECOVERY MANAGER for IMS configuration worksheet

Table 5 is a worksheet that lists the steps you must complete to configure RECOVERY MANAGER for IMS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Evaluate Cross-System Coupling Facility requirements.</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Evaluating Cross-System Coupling Facility requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Handle security in the RECOVERY MANAGER environment.</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR repository</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Securing the RMGR IMS Command utility</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>3. Review data set concatenations.</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Reviewing data set concatenations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Start RECOVERY MANAGER as a started task or as a batch job.</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Start RMGR as a started task</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Start RMGR as a batch job</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>5. Connect RECOVERY MANAGER to IMS.</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Connecting to IMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Provide access to the ISPF interface.</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. (optional) Install the suspend-and-resume interface of APPLICATION RESTART CONTROL for IMS.</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Installing the suspend-and-resume interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Set up repository maintenance jobs.</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Setting up repository maintenance jobs</td>
<td></td>
</tr>
</tbody>
</table>
RECOVERY PLUS for IMS configuration worksheet

Table 6 is a worksheet that lists the steps you must complete to configure RECOVERY PLUS for IMS.

Table 6  Configuring RECOVERY PLUS for IMS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
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</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Configuring the DBUSS</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
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</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>3. <em>(optional)</em> Provide access to the ISPF interface through a LIBDEF CLIST or through a TSO logon procedure.</td>
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</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>To provide access with a LIBDEF CLIST</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>To provide access with a TSO logon procedure</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>4. <em>(optional)</em> Set ISPF environmental defaults.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting ISPF environmental defaults</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>5. <em>(optional)</em> Install the Automated Operator Interface (AOI).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing the AOI</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>6. <em>(optional)</em> Install the IMS security exit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing the IMS security exit</td>
<td>40</td>
</tr>
</tbody>
</table>
Configuring Change Accumulation, Image Copy, and Recovery utilities

This section describes configuration tasks for the Change Accumulation utility, the Image Copy utility, and the Recovery utility. For information about implementing and using the utilities, see the following manuals:

- Backup and Recovery Products for IMS Change Accumulation Utility User Guide
- Backup and Recovery Products for IMS Image Copy Utility User Guide
- Backup and Recovery Products for IMS Recovery Utility User Guide

**NOTE**
The configuration tasks for the Image Copy utility do not apply to the Image Copy function that is included in the following products:

- MAXM Reorg/EP for IMS
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/Online for IMS

Obtaining APF authorization

This task is required for the following utilities:

- Change Accumulation utility
- Image Copy utility
- Recovery utility

Each of these utilities must be able to execute briefly as an authorized program at various times during processing. Therefore, the utility attempts to establish an APF-authorized environment as follows:

1. The utility determines whether the product modules are being loaded from an APF-authorized STEPLIB, JOBLIB, or LNKLST concatenation of libraries:
   
   - If the libraries are APF authorized, the utility obtains authorization through conventional methods.
   - If the libraries are not APF authorized, the utility proceeds to step 2.

For more information, see “APF authorizing product load module libraries” on page 32.
2. The utility determines whether the DBUSSID keyword is specified on the GLBL control statement or in the global options module:

- If the keyword specifies the subsystem ID of a Database Utilities Subsystem (DBUSS) that is active in the environment, the utility obtains authorization through that DBUSS.

- If the keyword is not specified on the GLBL control statement or in the global options module, the utility proceeds to step 3.

- If the keyword specifies an inactive DBUSS, the utility proceeds to step 4.

For more information, see “Configuring the DBUSS” on page 33.

3. The utility determines whether the default DBUSS (subsystem ID DBUZ) is active:

- If DBUZ is active, the utility obtains authorization through DBUZ.

- If DBUZ is not active, the utility proceeds to step 4.

For more information, see “Configuring the DBUSS” on page 33.

4. The utility searches for an active Cross-Product Connectivity (CPC) subsystem:

- If a CPC subsystem is active in the environment, the utility obtains authorization through that subsystem and reports the subsystem ID in an informational message.

- If no CPC subsystem is active, the utility issues an error message and terminates abnormally.

The CPC subsystem is found automatically; you do not need to provide the subsystem ID. For more information about installing the CPC subsystem, see the BMC Products for IMS Installation Guide. For more information about operating and using the CPC subsystem, see “Operating the BCSS/CPC subsystem” on page 424.

**APF authorizing product load module libraries**

The utilities can obtain necessary APF authorization if the product load module library (hlq.DBULIB or hlq.IMLIB from the distribution tape or ESD image) is APF authorized.

You can use an existing APF library for the product load modules or create a new one. If you use an existing library, a system IPL is not necessary. To create a new APF-authorized library, see your operating system programmer, or add the data set to the APF-authorized list in member IEAAPFnn of SYS1.PARMLIB and perform a system IPL.
Configuring the DBUSS

This task is optional for the following utilities:

- Change Accumulation utility
- Image Copy utility
- Recovery utility

The Database Utilities Subsystem (DBUSS) can be used for APF authorization and other purposes. For more information, see Chapter 13, “Administering and operating the DBUSS.”

The default subsystem ID for the DBUSS is DBUZ. If you use this default ID, you do not need to specify the DBUSSID keyword in utility global options modules or GLBL control statements.

If you plan to use the DBUSS, perform the following steps:

1. **APF authorize the library that contains the DBUSS modules that require authorization.**

   You must APF authorize certain DBUSS modules. You can leave these modules in the product load module library (hlq.DBULIB or hlq.IMLIB on the distribution tape or ESD image) and authorize this library, or you can copy these modules to a separate authorized library. If you provide a separate library name, the Installation System generates the JCL to load the required modules into the authorized library automatically. For information about the modules that you must APF authorize, see Table 75 on page 378.

   The Installation System can use an existing APF library or a new one. A system IPL is not necessary if you use an existing library. To create a new APF-authorized library, see your operating system programmer, or add the data set to the APF-authorized list in member IEAAPFn of SYS1.PARMLIB and perform a system IPL.

2. **Execute the DBUSS.**

   You can execute the DBUSS as a job or as a started task. The Installation System creates JCL to execute the DBUSS as a job. The job copies DBUSS modules to the specified APF-authorized library (if necessary) and starts the DBUSS.
Handling PDX enqueues

You can continue to run the DBUSS as a job with JCL similar to the JCL in Figure 1, or you can create a cataloged procedure as explained in Chapter 13, “Administering and operating the DBUSS.”

Figure 1  Sample JCL to run the DBUSS as a job

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>//DBUSS JOB</code></td>
<td>JOB (account data), 'DBU SUBSYSTEM'.</td>
</tr>
<tr>
<td></td>
<td><code>CLASS=A,MSGCLASS=A</code></td>
</tr>
<tr>
<td><code>//DBUSS EXEC</code></td>
<td>EXEC PGM=DBUZPCCR,PARM='dbui'</td>
</tr>
<tr>
<td><code>//STEPLIB DD</code></td>
<td>DSN=,DBU.AUTHLOAD,DISP=SHR</td>
</tr>
<tr>
<td><code>//SYSUDUMP DD</code></td>
<td>SYSOUT=A</td>
</tr>
</tbody>
</table>

You can override the `dbui` subsystem ID with any name. The `PARM` specification is optional. If you do not specify it, the default subsystem ID is DBUZ.

Handling PDX enqueues

This task is optional for the following utilities:

- Change Accumulation utility
- Image Copy utility
- Recovery utility

The PDX is an optional data set that some database products for IMS can use to store DBD-level options, execution history, and statistics that are gathered during execution. For more information about the PDX, see the IMS Database Supplemental Utilities Reference Manual.

If you are using a PDX data set in a multiple-CPU environment, enqueue problems on the PDX directory are possible. To avoid enqueue problems, register PDX as a global enqueue with your site’s software package that handles cross-system enqueues. The enqueue is a SYSTEMS level enqueue with PDX as the QNAME and the data set name with a length of 44 bytes as the RNAME.

Providing access to the ISPF interface

This task is optional for the following utilities:

- Change Accumulation utility
- Image Copy utility
- Recovery utility
The utilities provide an optional ISPF interface that you can use to set options and view statistics. If you want to use the ISPF interface, provide access to it with a LIBDEF CLIST or with a TSO logon procedure.

For more information, see “To provide access with a LIBDEF CLIST” or “To provide access with a TSO logon procedure” on page 35.

**To provide access with a LIBDEF CLIST**

The Installation System creates the BMCDBU CLIST for accessing the ISPF interface. The CLIST uses ISPF LIBDEF facilities to invoke the BMC Software DBU Product Selection Menu, from which you can access the ISPF interfaces for the solutions and products.

**NOTE**

The BMCDBU CLIST dynamically allocates an ISPTLIB DD statement. The ISPTLIB statement is required if allocations are performed in user logon procedures.

To execute the BMCDBU CLIST and the ISPF interface, enter the following TSO command on an ISPF panel that accepts TSO commands:

```
EX 'hlq.DBUSAMP(BMCDBU)'
```

**NOTE**

If you selected merged libraries for your installation, IMSAMP replaces DBUSAMP in the TSO command.

**To provide access with a TSO logon procedure**

To provide access to the ISPF interface with a TSO logon procedure, perform the following steps:

1. **Modify TSO logon procedures.**

   Make the changes that are indicated in Table 7 to the TSO logon procedure for each user who requires access to the ISPF interface. In this table, *hlq* indicates the high-level qualifier of the data sets that contain the DBU product modules.

**Table 7  Product libraries to add to logon procedures (part 1 of 2)**

<table>
<thead>
<tr>
<th>Product library</th>
<th>Concatenated library</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>hlq</em>.DBULIB or <em>hlq</em>.IMLIB</td>
<td>ISPLLIB or STEPLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUPLIB or <em>hlq</em>.IMPLIB</td>
<td>ISPPLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUMLIB or <em>hlq</em>.IMMLIB</td>
<td>ISPMLIB</td>
</tr>
</tbody>
</table>
### Setting ISPF environmental defaults

<table>
<thead>
<tr>
<th>Product library</th>
<th>Concatenated library</th>
</tr>
</thead>
<tbody>
<tr>
<td>hlq.DBUSLIB or hlq.IMSLIB</td>
<td>ISPSLIB</td>
</tr>
<tr>
<td>hlq.DBUTLIB or hlq.IMTLIB</td>
<td>ISPTLIB</td>
</tr>
</tbody>
</table>

2. Add the products and solutions to an ISPF product menu.

Place the BMC Software DBU Product Selection Menu on the ISPF primary menu (ISR@PRIM) according to your site’s standards. Use the following modifications as an example:

- Add a line to the panel **BODY** section that indicates solution and product selection codes and explanations of the selection choices. For example:

  ```
  % B +BMC Database Utilities
  ```

- Modify the menu selection validation statement that selects the solutions and products when users enter the selection codes on the menu panel. For example:

  ```
  &ZSEL = TRANS( TRUNC(&ZCMD,'.')
  .
  .
  B,'PANEL(DBUPPRIM) NEWAPPL(DBUX')
  .
  .
  ```

3. Test the ISPF interface:

   A. Log off and log back on.

   B. From the panel you modified in the previous step, enter solution and product selection codes. The BMC Software DBU Product Selection Menu is displayed.

---

**Setting ISPF environmental defaults**

This task is optional for the following utilities:

- Change Accumulation utility
- Image Copy utility
- Recovery utility
If you want to use the ISPF interface for the utilities, you can modify members of the panel library (hlq.DBUPLIB or hlq.IMPLIB) to set up environmental defaults for variables and refer to the appropriate data sets at your site. Table 8 lists members that you may need to modify, describes the variables that you need to review and possibly change, and provides other information about the variables.

### Table 8 Variables to modify in the DBU panel library

<table>
<thead>
<tr>
<th>Member</th>
<th>ISPF variable</th>
<th>Description</th>
<th>Saved in user profile?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPPI@00</td>
<td>&amp;RCU1ALM</td>
<td>A YES or NO value used as the operand of the #.ALARM control word in all Change Accumulation utility ISPF message definitions.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;CAP1RPTU</td>
<td>The default ISPF library unit name to use when displaying the Change Accumulation utility statistics in the ISPF interface. The default is VIO.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;RCU1RPTV</td>
<td>The default ISPF library volume serial to use when displaying the Change Accumulation utility statistics in the ISPF interface.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;CAP1OPTL</td>
<td>The load library for storing the Change Accumulation utility options modules.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;CAP1PDXN</td>
<td>The default PDX library for storing Change Accumulation utility statistics.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;CAP1DBDL</td>
<td>The default IMS DBDLIB data set containing your organization’s DBDs.</td>
<td>yes</td>
</tr>
<tr>
<td>ICPP@00</td>
<td>&amp;RCU1ALM</td>
<td>A YES or NO value that is used as the operand of the #.ALARM control word in all Image Copy utility ISPF message definitions.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;ICP1RPTU</td>
<td>The default ISPF library unit name to use when displaying the Image Copy utility statistics in the ISPF interface. The default is VIO.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;RCU1RPTV</td>
<td>The default ISPF library volume serial to use when displaying the Image Copy utility statistics in the ISPF interface.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;ICP1OPTL</td>
<td>The load library for storing the Image Copy utility options modules.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;ICP1PDXN</td>
<td>The default PDX library for storing DBD-level options and Image Copy utility statistics.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;ICP1DBDL</td>
<td>The default IMS DBDLIB data set containing your organization’s DBDs.</td>
<td>yes</td>
</tr>
<tr>
<td>RVPPP@00</td>
<td>&amp;RCU1ALM</td>
<td>A YES or NO value used as the operand of the #.ALARM control word in all Recovery utility ISPF message definitions.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;RVP1RPTU</td>
<td>The default ISPF library unit name to use when displaying the Recovery utility statistics in the ISPF interface. The default is VIO.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;RCU1RPTV</td>
<td>The default ISPF library volume serial to use when displaying the Recovery utility statistics in the ISPF interface.</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>&amp;RVP1OPTL</td>
<td>The load library for storing the Recovery utility options modules.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;RVP1PDXN</td>
<td>The default PDX library for storing DBD-level options and Recovery utility statistics.</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>&amp;RVP1DBDL</td>
<td>The default IMS DBDLIB data set containing your organization’s DBDs.</td>
<td>yes</td>
</tr>
</tbody>
</table>
Implementing snapshot technology for the Image Copy utility

Change only the *user-modifiable defaults* that are located between the dashed line comments. If you use the ISPF EDIT global change command, you might unintentionally change other values.

Some of these default values are saved in individual user profiles the first time that a user accesses the ISPF interface. You must change these values before anyone uses the ISPF interface; otherwise, users must manually change their own profile defaults.

**Implementing snapshot technology for the Image Copy utility**

This task is optional for the Image Copy utility.

The Image Copy utility includes the BMC SNAPSHOT UPGRADE FEATURE (SUF) for IMS component at no additional cost. SUF enables the use of the Snapshot Copy function and the Instant Snapshot Copy function of the Image Copy utility. SUF provides a subset of the functions and features of the BMC EXTENDED BUFFER MANAGER (XBM) for IMS product.

When you install a product that includes the Image Copy utility, the Installation System will also install XBM during the installation session. You must customize and implement the SUF component of XBM to use it with the Image Copy utility.

For more information about configuration tasks that apply to XBM and SUF, see the *EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide*. 
Installing the suspend-and-resume interface for the Image Copy utility

This task is optional for the Image Copy utility.

If you want to use the optional suspend-and-resume interface of APPLICATION RESTART CONTROL (AR/CTL) for IMS to automatically handle batch message processing (BMP) programs during snapshot copy processing, perform the following steps:

1. Install AR/CTL as explained in the APPLICATION RESTART CONTROL Installation Guide.

2. If CHANGE RECORDING FACILITY for IMS is not installed (and you do not plan to install it as a licensed product), perform the tasks that are described in the following sections:
   - “Enabling BMC functions in IMS control regions” on page 173
   - “Preparing the IMS control region” on page 175
   - “Obtaining APF authorization” on page 160

   CHANGE RECORDING FACILITY handles communication between the Image Copy utility and AR/CTL. A license for CHANGE RECORDING FACILITY is not required.

   If CHANGE RECORDING FACILITY is already installed, no action is necessary.

3. Make the Backup and Recovery Solution for IMS or the IMAGE COPY PLUS CPU authorization password available to the BMC Consolidated Subsystem (BCSS) that supports AR/CTL.

   You can include the library that contains the password module in the AESPAUTH DD statement concatenation in the BCSS startup procedure, or you can copy the password module to a library that is already in the AESPAUTH DD concatenation. For more information, see the AR/CTL documentation set.


   In addition, make the AR/CTL execution load module library and the BMC load library available to the Image Copy utility job step. You can add these libraries to the STEPLIB, JOBLIB, or LNKLST concatenation.

5. In each BMP that you want AR/CTL to control, implement AR/CTL checkpoint/restart services as described in the APPLICATION RESTART CONTROL User Guide.
6 Execute the Snapshot Copy job step.

The job step must be APF authorized; you can APF authorize the load module library or use the Database Utilities Subsystem (DBUSS).

Installing the AOI

This task is optional for the Image Copy utility and the Recovery utility.

If you want to use the Automated Operator Interface (AOI) with the Image Copy utility or the Recovery utility, you must perform AOI setup tasks. The tasks depend on the AOI method that you use.

For information about the AOI methods and the tasks that are required to implement them, see the *Backup and Recovery Products for IMS Image Copy Utility User Guide*.

Installing the IMS security exit

This task is optional for the Image Copy utility and the Recovery utility.

If you want to use the IMS Command Entry feature, the AOI, or both with the Image Copy utility or the Recovery utility, you can install an optional security exit for IMS command processing. A sample IMS security exit is provided, but BMC does not warrant or support this exit.

For more information, see the *Backup and Recovery Products for IMS Image Copy Utility User Guide*. 
Configuring Recovery Manager functions and utilities

This section describes configuration tasks for Recovery Manager (RMGR) functions and utilities.

**NOTE**

This manual refers to the collection of Recovery Manager functions, utilities, features, and components simply as RMGR. For information about the functions and features of RMGR, see the Backup and Recovery Products for IMS Recovery Manager User Guide.

Evaluating Cross-System Coupling Facility requirements

RMGR uses the operating system Cross-System Coupling Facility (XCF). During communication processes, RMGR uses the following names to establish or join XCF groups:

<table>
<thead>
<tr>
<th>XCF groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCIRM00</td>
<td>one for each active RMGR</td>
</tr>
<tr>
<td>BMCIRM01</td>
<td>one for each active RMGR, and one for each active IMS</td>
</tr>
<tr>
<td></td>
<td>This group is not used with a legacy multiple-RMGR configuration.</td>
</tr>
<tr>
<td>IRMCimsid</td>
<td>one for the RMGR, and one entry for each batch job communicating with the RMGR</td>
</tr>
<tr>
<td>RMGR name</td>
<td>one for the RMGR, and one entry for each batch job communicating with the RMGR</td>
</tr>
<tr>
<td>sharegroup name</td>
<td>one identifying the RMGR</td>
</tr>
</tbody>
</table>

These names must be unique in the XCF domain.

To ensure that the XCFMEMBER limit will not be exceeded when multiple utility jobs are initializing simultaneously, review the operating system definitions for XCF and adjust them, if necessary. The following command can be entered from the system console:

```
/D XCF,Couple
```
Handling security in the RMGR environment

The command response indicates the maximum number of members that are defined and the maximum number of members that have been used, as shown in the following example:

```
SYSPLEX COUPLE DATA SETS
PRIMARY DSN: SYS1.XCF.CDSP1
  VOLSER: XCFP01     DEVN: A94C
  FORMAT TOD MAXSYSTEM MAXGROUP(PEAK) MAXMEMBER(PEAK)
  04/09/2001 14:52:53  12  300   (91)  103  (35)
ALTERNATE DSN: SYS1.XCF.CDSP2
  VOLSER: XCFP04     DEVN: A94F
  FORMAT TOD MAXSYSTEM MAXGROUP MAXMEMBER
  04/09/2001 14:53:01  12  300         103
```

Handling security in the RMGR environment

Standard security methods are used to secure RMGR components and to allow RMGR and its users to access IMS and other resources in the environment. The following sections describe how security is handled in the RMGR environment.

Securing the RMGR environment

The Recovery Manager functions and utilities require authorization for many functions. To establish the proper authorizations, perform the following steps:

1. Ensure that the RECOVERY MANAGER for IMS (RMGR) load library (hlq.DBULIB or hlq.ILMLIB) is APF authorized.

2. Add entries to the AUTHPGM section of the IKJTSOxx member of PARMLIB (the TSO authorized program list) to authorize the IRMAUTH program and the IRRMAPI10 program for RMGR.

3. If your organization uses program-pathing to the IMS DBRC DSPURX00 module, ensure that the RMGR started task or job is allowed access to DSPURX00.

   Program-pathing is described in the RACF documentation as “Protecting Load Modules as Controlled Programs.”

4. If your facility uses an ACF2 command-limiting table, ensure that the IRMIMAN program is added to the table.
If you have the BMC APPLICATION RESTART CONTROL (AR/CTL) for IMS product and you want to use the AR/CTL suspend-and-resume interface for automatic handling of BMPs during the Hold Point of Consistency function, make sure that the library that contains the RMGR CPU authorization password is included in the AESPAUTH DD concatenation in the JCL to start the BMC Consolidated Subsystem (BCSS).

For more information, see the APPLICATION RESTART CONTROL Reference Manual.

---

**NOTE**

The single-RMGR configuration does not interface with AR/CTL. If you use the AR/CTL suspend-and-resume interface, you must continue to use a legacy configuration. For more information, see “Understanding RMGR configuration” on page 245.

---

Provide the RMGR started task with authority to update the repository data sets and the IMS RECON data sets.

The RMGR started task requires the same authorization as DBRC.

Provide the RMGR started task with authority to issue operating system commands.

During startup, the started task internally issues the following z/OS system MODIFY command to capture tracing information for diagnostic purposes if required at a later time:

```
F rmgrname,SNAP
```

For more information, see “Using RMGR-enhanced modify commands” on page 290.

Make sure that the appropriate authority levels are set for the resources shown in Table 9. Your standard security procedures are used to set these authority levels.

Access to resources from the RMGR ISPF interface and batch jobs is controlled by the TSO user ID of the user. Access to resources from the RMGR started task or job is controlled by the specific task or job name.

The RMGR started task or job requires the same authorization as DBRC.

---

**WARNING**

If authorization is not set at levels specified in Table 9, system 913 abends may occur in the RMGR started task or job or in the RMGR ISPF interface.
Handling security in the RMGR environment

If you want to secure the IMS system commands that RMGR can issue through the IMS Command utility (program IRMICMD), implement system authorization facility (SAF) definitions as explained in “Securing the RMGR IMS Command utility” on page 45.

### Securing the RMGR repository

Users of the RMGR ISPF interface need a minimum of read access to the repository data set. Users who perform the following tasks need update access to all repository data sets:

- define the initial product setup
- create or maintain groups, utilities, and profiles
- initiate functions against groups

**NOTE**

If the RMGR repository is secured by your system authorization facility (such as RACF, ACF2, or Top Secret) and you want to use the RMGR Recovery Extensions feature with the BMC Image Copy, Change Accumulation, and Recovery utilities, the utility job must have authority to update the RMGR repository.

<table>
<thead>
<tr>
<th>Resource</th>
<th>RMGR started task or job</th>
<th>RMGR ISPF interface users</th>
</tr>
</thead>
<tbody>
<tr>
<td>data sets listed on the IMS Environment panel (RESLIB, DBDLIB, PSLIB, MDALIB, ACBLIB, and MODSTAT libraries)</td>
<td>read, fetch, or execute</td>
<td>read, fetch, or execute</td>
</tr>
<tr>
<td>IMS archived log prefixes</td>
<td>read</td>
<td>N/A</td>
</tr>
<tr>
<td>IMS RECONs</td>
<td>update</td>
<td>read</td>
</tr>
<tr>
<td>repository backup GDG</td>
<td>create/update</td>
<td>N/A</td>
</tr>
<tr>
<td>JCL partitioned data set (JOBPDS) specified in the RMGR startup SYSIN, in profiles, or at initiation of the Create Recovery JCL function</td>
<td>update</td>
<td>update</td>
</tr>
<tr>
<td>log analysis summary file</td>
<td>create/update</td>
<td>read</td>
</tr>
<tr>
<td>For a description of this file and how it is used, see the Backup and Recovery Products for IMS Recovery Manager User Guide.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMGR BMCPSWD library</td>
<td>read</td>
<td>read</td>
</tr>
<tr>
<td>PFX libraries used by the BMC Fast Path Indexer/EP product</td>
<td>read, fetch, or execute</td>
<td>read, fetch, or execute</td>
</tr>
<tr>
<td>operator commands</td>
<td>issue</td>
<td>N/A</td>
</tr>
<tr>
<td>DBRC GENJCL commands</td>
<td>issue</td>
<td>N/A</td>
</tr>
</tbody>
</table>

---

**Table 9  Suggested RMGR security authority**

9 If you want to secure the IMS system commands that RMGR can issue through the IMS Command utility (program IRMICMD), implement system authorization facility (SAF) definitions as explained in “Securing the RMGR IMS Command utility” on page 45.
When SECUREREPOSITORY=YES is specified at RMGR startup, security checking is performed in the RMGR ISPF interface. During initialization of the RMGR ISPF interface, a RACROUTE check is executed to determine the repository access authority of the user. After the initial check, each time that a repository read or update is required, the user authority level is verified. If the user is not authorized to perform the access, RMGR displays an error message and denies access to the function. For more information about RMGR startup and the SECUREREPOSITORY keyword, see “Starting RMGR” on page 50.

**NOTE**

If the RMGR repository is secured by your system authorization facility (such as RACF, ACF2, or Top Secret) and you want to use the RMGR Recovery Extensions feature with the BMC Image Copy, Change Accumulation, and Recovery utilities, the utility job must have authority to update the RMGR repository.

### Securing the RMGR IMS Command utility

You can secure the IMS system commands that RMGR can issue through the IMS Command utility (program IRMICMD) by using the system authorization facility (SAF).

**NOTE**

If your system security product automatically restricts access to resources unless access is explicitly granted, your security administrator must define and grant access to IMS Command utility resources. Otherwise, the utility cannot issue any IMS commands successfully.

The SAF resource names that secure the RMGR IMS Command utility begin with the qualifier BBM (see Table 10 on page 46). RMGR shares the BBM qualifier with other BMC products. Consider the effects on all products that share this qualifier when you make SAF resource definition changes.

### Overview of SAF usage in IRMICMD

SAF is part of z/OS and provides the interface to your security product (such as RACF, ACF2, or Top Secret). SAF tracks z/OS resources and uses security rules to determine who can access these resources and the type of access that they are assigned (such as READ or UPDATE access). A system security administrator typically is the person who manages SAF resource definitions that control access in the environment.

During initialization, IRMICMD issues calls to SAF to determine whether a user has the authority to issue all commands that are specified in the IRMICMD control statements. If SAF indicates that the user does not have authority to issue every command, IRMICMD issues message BMC76871E for each unauthorized command and the job step is terminated without issuing any commands.
Implementing security for IRMICMD

To implement security for IRMICMD, the security administrator identifies resources within the FACILITY class (this class is predefined in SAF) and specifies the user IDs that have authority to use those resources.

The valid resource (entity) names for IRMICMD are listed in Table 10 on page 46. These resource names control whether users are authorized to use IRMICMD to issue the corresponding IMS command. Resource names can also control whether a command can be issued on a specified IMS system or for a specified sharegroup.

IRMICMD first checks for a SAF resource rule containing an IMS ID or SHAREGROUP name that matches the IMS ID or SHAREGROUP name in the IRMICMD control statement:

- If a rule contains the optional `imsid` parameter (`imsid` is the one- to four-character IMS ID), the rule applies to the specified IMS system; if the command is GLOBAL, the rule also applies to all other IMS systems in the sharegroup.

- If a rule contains the optional `sharegroup` parameter (sharegroup is the one- to four-character SHAREGROUP name), the rule applies to all IMS systems in the specified sharegroup; the command is GLOBAL by default.

- If a rule does not contain the `imsid` parameter or the `sharegroup` parameter, IRMICMD checks for a rule containing a command that matches the IRMICMD command. If a rule contains the command, the access rules in that SAF rule apply to all IMS systems. Therefore, if access is denied, it is denied for all IMS systems; if access is allowed, it is allowed for all IMS systems.

**NOTE**

Because IRMICMD resources are commands, the type of access that is defined for a user does not matter as long as the access is not NONE. An access type of READ (or any higher level) indicates that the user has the authority to issue the command.

### Table 10  SAF resources for RMGR IMS Command (IRMICMD) utility (part 1 of 2)

<table>
<thead>
<tr>
<th>Resource name</th>
<th>IMS command</th>
<th>Command description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBM.IRM.CHE</td>
<td>/CHE</td>
<td>take a simple checkpoint on any IMS system</td>
</tr>
<tr>
<td>BBM.IRM.CHE.imsid</td>
<td>/CHE</td>
<td>take a simple checkpoint on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.CHE.sharegroup</td>
<td>/CHE</td>
<td>take a simple checkpoint on all IMS systems in the specified sharegroup</td>
</tr>
<tr>
<td>BBM.IRM.DBD</td>
<td>/DBD</td>
<td>dump a database on any IMS system</td>
</tr>
<tr>
<td>BBM.IRM.DBD.imsid</td>
<td>/DBD</td>
<td>dump a database on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.DBD.sharegroup</td>
<td>/DBD</td>
<td>dump a database on all IMS systems in the specified sharegroup</td>
</tr>
<tr>
<td>BBM.IRM.DBR</td>
<td>/DBR</td>
<td>recover a database or area on any IMS system</td>
</tr>
</tbody>
</table>
Figure 2 shows sample RACF control statements to define IMSICMD resources that apply to a specified IMS system (IMSP).

Figure 2  RACF resource definitions for IRMICMD that apply to any IMS system

<table>
<thead>
<tr>
<th>Resource name</th>
<th>IMS command</th>
<th>Command description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBM.IRM.DBR.imsid</td>
<td>/DBR</td>
<td>recover a database or area on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.DBR.sharegroup</td>
<td>/DBR</td>
<td>recover a database or area on all IMS systems in the specified sharegroup</td>
</tr>
<tr>
<td>BBM.IRM.STADB</td>
<td>/STA</td>
<td>start a database or area on any IMS system</td>
</tr>
<tr>
<td>BBM.IRM.STADB.imsid</td>
<td>/STA</td>
<td>start a database or area on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.STADB.sharegroup</td>
<td>/STA</td>
<td>start a database or area on all IMS systems in the specified sharegroup</td>
</tr>
<tr>
<td>BBM.IRM.STODB</td>
<td>/STO</td>
<td>stop a database or area on any IMS system</td>
</tr>
<tr>
<td>BBM.IRM.STODB.imsid</td>
<td>/STO</td>
<td>stop a database or area on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.STODB.sharegroup</td>
<td>/STO</td>
<td>stop a database or area on all IMS systems in the specified sharegroup</td>
</tr>
<tr>
<td>BBM.IRM.SWI</td>
<td>/SWI</td>
<td>switch the active log data set to the next OLDS and then take a simple checkpoint on any IMS system</td>
</tr>
<tr>
<td>BBM.IRM.SWI.imsid</td>
<td>/SWI</td>
<td>switch the active log data set to the next OLDS and then take a simple checkpoint on the specified IMS system</td>
</tr>
<tr>
<td>BBM.IRM.SWI.sharegroup</td>
<td>/SWI</td>
<td>switch the active log data set to the next OLDS and then take a simple checkpoint on all IMS systems in the specified sharegroup</td>
</tr>
</tbody>
</table>

Table 10  SAF resources for RMGR IMS Command (IRMICMD) utility (part 2 of 2)
Handling security in the RMGR environment

Figure 3 shows sample RACF control statements to define IMSICMD resources and restrict their usage on the specified IMS system.

**Figure 3  RACF resource definitions for IRMICMD that apply to a specified IMS system**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDEFINE FACILITY BBM.IRM.CHE.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.DBM.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.DBR.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.STADB.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.STODB.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.SWI.IMSP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.CHE.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.DBD.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.DBR.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.STADB.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.STODB.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.SWI.IMSP CLASS(FACILITY) ID(USER02) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>SETROPTS CLASSACT(FACILITY)</td>
<td></td>
</tr>
<tr>
<td>SETROPTS RACLIST(FACILITY) REFRESH</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.CHE.IMSP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.DBM.IMSP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.DBR.IMSP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.STADB.IMSP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.STODB.IMSP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.SWI.IMSP AUTHUSER</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4 shows sample RACF control statements to define IMSICMD resources that apply to a specified sharegroup (SHRP).

**Figure 4  RACF resource definitions for IRMICMD that apply to a specified sharegroup**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDEFINE FACILITY BBM.IRM.CHE.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.DBM.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.DBR.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.STADB.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.STODB.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>RDEFINE FACILITY BBM.IRM.SWI.SHRP UACC(NONE)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.CHE.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.DBM.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.DBR.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.STADB.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.STODB.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>PERMIT BBM.IRM.SWI.SHRP CLASS(FACILITY) ID(DBAGRP) ACCESS(READ)</td>
<td></td>
</tr>
<tr>
<td>SETROPTS CLASSACT(FACILITY)</td>
<td></td>
</tr>
<tr>
<td>SETROPTS RACLIST(FACILITY) REFRESH</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.CHE.SHRP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.DBM.SHRP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.DBR.SHRP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.STADB.SHRP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.STODB.SHRP AUTHUSER</td>
<td></td>
</tr>
<tr>
<td>RLIST FACILITY BBM.IRM.SWI.SHRP AUTHUSER</td>
<td></td>
</tr>
</tbody>
</table>
Reviewing data set concatenations

In order for the Recovery Manager functions and utilities to function properly, certain modules must be specified in the correct data set concatenation. To ensure that you are using the correct data set concatenation, perform the following steps:

1. Verify that the data set that contains the Backup and Recovery Solution for IMS or RECOVERY MANAGER for IMS product password is specified in either the BMCPSWD or STEPLIB data set concatenation.

2. Ensure that the required product authorization modules are included in the same data set concatenation (such as STEPLIB) in which the other RMGR modules are located or in the system link list.

Beginning with version 4.2.00, the installation process places the following product authorization modules into the $hlq.BBLINK library ($hlq is the high-level qualifier that was specified during installation):

- BBA9BLF0
- BBA9PWRP
- BBA9XBK0
- BLFSEC3B
- BLFSEC3S
- SECSEC3B
- SECSEC3S

You must ensure that these modules are included in the same data set concatenation as the other RMGR modules.

3. Beginning with version 4.3.00, if you selected non-merged libraries for your installation, the Installation System places additional modules that the product requires into the $hlq.ICOLIB library ($hlq is the high-level qualifier that was specified during installation).

You must also ensure that these IMS common modules are included in the same data set concatenation as the other RMGR modules.

**NOTE**

The BMCIRM CLIST provided by the Installation System expects the modules to be in one library.

For more information about merged and non-merged libraries, see the installation guide.
Starting RMGR

You can start RMGR as a started task or as a batch job. For more information, see Chapter 10, “Managing the RMGR started task or job.”

Start RMGR as a started task

To start RMGR as a started task, copy the IRMPROC member from the product sample library (hlq.DBUSAMP or hlq.IMSAMP) to SYS1.PROCLIB and rename the member. The name you give the member in SYS1.PROCLIB is the RMGR name.

Start RMGR as a batch job

To start RMGR as a batch job, edit the IRMJOB member in the sample library (hlq.DBUSAMP or hlq.IMSAMP) as needed and submit the job.

Connecting to IMS

NOTE

If you do not want RMGR to connect to IMS, you can specify the //NORMGR DD DUMMY statement in the JCL that is used to start the IMS control region. Without this statement, an association is made between the IMS system and RMGR if the IMS DBU load library is included in the IMS startup JCL. This library might be included if you are using other BMC products with that IMS system.

To connect RMGR to IMS, perform the following steps:

1 Update the JCL that is used to start the IMS control region:

   A Ensure that the BMC product load library is listed before RESLIB and other third-party IMS software libraries in the STEPLIB concatenation. This step activates the RMGR dynamic extensions to IMS that several RMGR functions require.

   B If the Backup and Recovery Solution for IMS or RECOVERY MANAGER for IMS product password is not stored in the product load library, add the data set that contains the password to the STEPLIB data set concatenation or add a BMCPSWD DD statement to identify the password data set.

   C Add the following DD statement:

       //RMGRSNGL DD DUMMY
You can connect to IMS without the RMGRSNGL statement if you are still using legacy RMGR configurations, but this method is not recommended. For more information, see “Converting to a Single-RMGR configuration” on page 263.

**WARNING**

Do not load the following IMS modules in the link pack area (LPA) or the modifiable link pack area (MLPA):

- DBFDEDB0
- DBFEMH00
- DFSDBDR0
- DFSFLGC0
- DFSRRA00
- DFSVNUCx

If you do not have a license for CHANGE RECORDING FACILITY for IMS, you can suppress the following messages that are issued at IMS startup:

BMC90480C UNABLE TO ESTABLISH LINK WITH DBRC
BMC90490C ERROR ENCOUNTERED DURING CHANGE CAPTURE FACILITY INITIALIZATION
BMC90490C ERROR START TASK DLIOCCF

To suppress these messages, add the following statement to the IMS startup JCL:

//NOCRFDUMMY

If you have a license for CHANGE RECORDING FACILITY for IMS, do not use the NOCRF DD statement because these messages indicate an initialization error.

2 If any applications in your environment require consistency between the STEPLIB concatenations of the IMS and DLI/SAS control regions, add the BMC product load library to the DLI/SAS control region in the IMS STEPLIB concatenation. This task is not required for RMGR; it is simply a reminder to update the DLI/SAS control region if necessary.

3 Recycle RMGR and IMS.

**NOTE**

When you change the IMS release (upgrade to a new release or fall back to a previous release), you should recycle RMGR. In the same way, when you change the RMGR release, you should recycle IMS.
To automate RMGR startup, you can add a step to the IMS startup procedure to execute the RMGR Startup utility. For more information, see “Using the RMGR Startup utility” on page 292.

Providing access to the ISPF interface

The IMS database administrators in your environment use the ISPF interface for the Recovery Manager functions and utilities to define groups, initiate functions, set product options, and perform other tasks. Users can execute the BMCIRM CLIST to invoke the ISPF interface. The BMCIRM CLIST provides access to the RMGR product libraries (through ISPF LIBDEF facilities) and invokes the RMGR Primary Menu. Users can execute the CLIST directly or by selecting an option from another ISPF panel (typically the ISPF primary menu). Users can also access the RMGR Primary Menu from the BMC Software IMS DBU Product Selection menu, the Backup and Recovery Solution for IMS Primary Menu, or the IMS Database Utilities - Backup and Recovery Products menu.

To install the ISPF interface for the Recovery Manager functions and utilities, perform the following steps:

1. Provide access to the BMCIRM CLIST.
   
   Perform either of the following actions:
   
   - Include hlq.DBUSAMP or hlq.IMSAMP in the common CLIST library concatenation.
   
   - Copy the BMCIRM CLIST to a common CLIST library that all RMGR users can access. If you select this option, perform the following actions:
     
     — Edit the BMCIRM CLIST and change all occurrences of the installed sample data set name (hlq.DBUSAMP or hlq.IMSAMP) to the name of the common CLIST library.
     
     — Edit members DBUPBRI1 and DBUPBVR1 of the panel library (hlq.DBUPLIB or hlq.IMPLIB) to change all occurrences of the installed sample data set name (hlq.DBUSAMP or hlq.IMSAMP) to the name of the common CLIST library.

2. Test the BMCIRM CLIST by entering one of the following TSO commands on an ISPF panel that accepts TSO commands:
   
   - If you copied the CLIST to a common CLIST library, enter
     
     EX 'common.clist.library(BMCIRM)'

   - If you included hlq.DBUSAMP or hlq.IMSAMP in the common CLIST library concatenation, enter
     
     EX 'hlq.DBUSAMP(BMCIRM)'
     
     or
     
     EX 'hlq.IMSAMP(BMCIRM)'

   - If you selected the Backup and Recovery Solution for IMS Primary Menu, enter
     
     EX 'IMSDBU(BMCIRM)'

   - If you selected the IMS Database Utilities - Backup and Recovery Products menu, enter
     
     EX 'IMSDBU(BMCIRM)'

   - If you selected the BMC Software IMS DBU Product Selection menu, enter
     
     EX 'IMSDBU(BMCIRM)'

   - If you selected the ISPF primary menu, enter
     
     EX 'common.clist.library('BMCIRM')'
If you included the RMGR sample library in a common CLIST library concatenation (and you used the default data set name for the RMGR sample library), enter

EX 'hlq.DBUSAMP(BMCIRM)' or EX 'hlq.IMSAM(BMCIRM)'

The RMGR Primary Menu is displayed.

3 If you want users to invoke the RMGR ISPF interface by selecting an option from another ISPF panel (typically the ISPF primary menu), make the following changes to the panel. Figure 5 shows an example panel dialog that contains these changes.

- To the panel body, add a line that describes the option for users to select.
- To the PROC section, add an instruction that executes the BMCIRM CLIST when the user selects the option.

Figure 5 Invoking the RMGR ISPF interface from another ISPF panel (part 1 of 2)

```
%----------------- ISPF/PDF PRIMARY OPTION MENU ------------
%OPTION ===>
+ %
% 0 +ISPF PARMS - Specify terminal and user parameters
% 1 +BROWSE - Display source data or output listings
% 2 +EDIT - Create or change source data
% 3 +UTILITIES - Perform utility functions
% 4 +FOREGROUND - Invoke language processors in foreground
% 5 +BATCH - Submit job for language processing
% 6 +COMMAND - Enter TSO command or CLIST
% 7 +DIALOG TEST - Perform dialog testing
% C +CHANGES - Display summary of changes for this release
% D +DELTA IMS - IMS Dynamic Change Facility Version 5.2
% I +RMGR - RECOVERY MANAGER <------
% Q +SDSF - Spool Display and Search Facility
% S +SMP/E - New Version of SMP
% T +TUTORIAL - Display information about ISPF/PDF
% X +EXIT - Terminate ISPF using log and list defaults
+
Enter%END+command to terminate ISPF.
%
)INIT
 .HELP = ISR00003
 &ZPRIM = YES /* ALWAYS A PRIMARY OPTION MENU */
 &ZHTOP = ISR00003 /* TUTORIAL TABLE OF CONTENTS */
 &ZHINDEX = ISR91000 /* TUTORIAL INDEX - 1ST PANEL */
)PROC
```
Installing the suspend-and-resume interface

If you want BMP programs to be handled automatically during processing of the RMGR Hold Point of Consistency (HPC) function, install the suspend-and-resume interface of AR/CTL for IMS:

1. Add the data set that contains the AR/CTL execution load modules to the RMGR STEPLIB data set concatenation.

2. Add the data set that contains the Backup and Recovery Solution for IMS or RECOVERY MANAGER for IMS product password to the BCSS AESPAUTH data set concatenation.

**NOTE**

The single-RMGR configuration does not interface with AR/CTL. If you use the AR/CTL suspend-and-resume interface, you must continue to use a legacy configuration. For more information, see “Understanding RMGR configuration” on page 245.
Setting up repository maintenance jobs

You should set up maintenance jobs to back up and reorganize the repository, to delete obsolete records, and to check the integrity of records on a regular basis. Perform the appropriate task:

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>back up the repository</td>
<td>see member IRMREPBK in hlq.DBUSAMP or hlq.IMSAMP</td>
</tr>
<tr>
<td>reorganize the repository</td>
<td>see member IRMREPRG in hlq.DBUSAMP or hlq.IMSAMP</td>
</tr>
<tr>
<td>delete obsolete records so that space allocation is not exceeded</td>
<td>see member IRMREPDL in hlq.DBUSAMP or hlq.IMSAMP</td>
</tr>
<tr>
<td>check the integrity of repository records</td>
<td>see member IRMREPCK in hlq.DBUSAMP or hlq.IMSAMP</td>
</tr>
</tbody>
</table>

For detailed information about these tasks, see Chapter 12, “Maintaining the RMGR repository.”
Configuring DATA PACKER/IMS

This chapter describes tasks for configuring the DATA PACKER/IMS product. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

Overview ................................................................. 57
DATA PACKER/IMS configuration worksheet ......................... 58
Copying required modules to RESLIB .................................. 59
Allocating and formatting $$DPICDS and $$DPITBL data sets .......... 59
Installing DATA PACKER/IMS passwords ............................ 61
Propagating reserves in a shared CPU environment .................... 62
Installing the ISPF interface ............................................ 63
Assembling and linking the DPICDS Security Exit ....................... 64

Overview

You should complete the configuration tasks that are described in this chapter after you install and customize the product libraries through the Installation System.

For information about installing and customizing the product libraries, see the installation guide.

Some configuration tasks only apply if this is the first time that you are installing the DATA PACKER/IMS product at your site. For each task that is presented in this chapter, the introduction to the task indicates whether the task applies to all installations or only to initial installations.
Table 11 is a worksheet that lists the steps you must complete to configure DATA PACKER/IMS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. (all installations) Copy required modules to RESLIB.</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Copying required modules to RESLIB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. (initial installations only) Allocate and format $$DPICDS and $$DPITBL data sets.</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Allocating and formatting $$DPICDS and $$DPITBL data sets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. (all installations) Install DATA PACKER/IMS passwords.</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Installing DATA PACKER/IMS passwords</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. (shared CPU environments only) Propagate reserves.</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Propagating reserves in a shared CPU environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. (all installations) Install the ISPF interface.</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Installing the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. (optional for all installations) Assemble and link the security exit.</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Assembling and linking the DPICDS Security Exit</td>
<td></td>
</tr>
</tbody>
</table>
Copying required modules to RESLIB

This task applies to all DATA PACKER/IMS installations.

**NOTE**

IMS should be down when you copy the modules from the STEPLIB library to your IMS control region and DLISAS region.

DATA PACKER/IMS must execute from an APF-authorized library in both your IMS control region and DLISAS region when running in an online IMS. To copy the required modules to RESLIB, edit member DPIRESLB in BMC.DPKSAMP. This job copies the required modules to RESLIB or your user library that is concatenated to RESLIB.

You can preload the following modules so that they are resident:

- DPIDAVE
- DPIEXIT
- DPIFPRTN
- DPISYSAR

When running offline IMS, RESLIB and your user library do not have to be APF-authorized data sets.

Allocating and formatting $$DPICDS and $$DPITBL data sets

**NOTE**

This task only applies if this is the first time that you are installing DATA PACKER/IMS at your site.

The DATA PACKER/IMS control data set (DPICDS) contains compression options and statistics. The DPITBL data set contains compression tables and dictionaries for Custom Huffman, Shared Table, and Custom Hardware Dictionary compression. Both of these data sets must be allocated during execution of DATA PACKER/IMS.

You will need a set of $$DPICDS and $$DPITBL data sets for each IMS system. These data sets can be dynamically allocated or can be allocated in your IMS start-up JCL. You can override them in any batch job. You should also allocate development $$DPICDS and $$DPITBL data sets for use during product trial or testing.
Allocating and formatting $$DPICDS and $$DPITBL data sets

To allocate and format the $$DPICDS and $$DPITBL data sets

1. Determine $$DPICDS and $$DPITBL names.

2. Allocate and format the $$DPICDS and $$DPITBL data sets.

Edit member DPICDSTB in BMC.DPKSAMP. DPICDSTB allocates and formats the empty $$DPICDS and $$DPITBL data sets. These data sets do not need APF authorization.

The DATA PACKER/IMS default is to write statistics to the $$DPICDS data set. Batch jobs and DLISAS need update authority to $$DPICDS data sets.

Consider the following information regarding allocation and formatting of the data sets:

- Sizing information for the DPICDS data set is as follows:
  
  — In the DPICDS, each entry is 12 bytes and each directory block is 256 bytes; therefore, there will be 21 entries per block.

  — DPICDS record sizes are shown in Table 12.

Table 12  DPICDS record sizes

<table>
<thead>
<tr>
<th>Entry type</th>
<th>Size</th>
<th>Potential number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>480 bytes</td>
<td>3 per segment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 per database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 per system</td>
</tr>
<tr>
<td>Statistics</td>
<td>976 bytes</td>
<td>1 per segment</td>
</tr>
<tr>
<td>Table</td>
<td>approximately 10 KB</td>
<td>3 per segment</td>
</tr>
<tr>
<td>Dictionary</td>
<td>approximately 64 KB</td>
<td>3 per segment</td>
</tr>
</tbody>
</table>

— Tables are written in block-size multiples. Also, approximately one half of a data block is reserved for table growth. Therefore, with a 4 KB block size, a 10 KB table requires three 4 KB blocks, and a 12 KB table requires four 4 KB blocks. The DPICDS uses a reuse algorithm to conserve space.

— Member DPICDSTB allocates and formats the DPICDS with a block size of 4096 bytes. You can alter this block size before the allocation and formatting take place, or you can use the DPICDS Reblocking utility to reblock the DPICDS after it has been formatted. For more information about the DPICDS Reblocking utility, see the DATA PACKER/IMS Reference Manual.
Sizing information for the DPITBL data set is as follows:

— In the DPITBL, each entry is 36 bytes and each directory block is 256 bytes; therefore, there will be 7 entries per block.

— Each table and dictionary is written as a load module. Member DPIINST4 allocates and formats the DPITBL with a block size of 19096, but you can alter this block size as long as you do so before the allocation and formatting take place. The block size should be at least 10 KB in order to hold one table load module. Two tables or dictionaries, one at the RUN level and another at the ARCHIVE level, can exist for segments compressed using Custom Huffman, Shared Table, or Custom Hardware Dictionary compression. The DPITBL does not contain a reuse algorithm.

— You cannot reblock the DPITBL after it has been formatted. If necessary, you can allocate a new DPITBL if you run out of space in the current DPITBL, but it must have the same block size as the current DPITBL.

3 Create dynamic allocation for $$DPICDS and $$DPITBL.

Edit member DPIFDMDA in BMC.DPKSAMP. This job creates the dynamic allocation modules for $$DPICDS and $$DPITBL and places them in RESLIB or your user library concatenated to RESLIB. The MDA modules can also be placed in IMSDALIB.

If you do not want to use dynamic allocation, you must edit your IMS start-up JCL to allocate these data sets. If you specify LSO=Y in the start-up JCL, you must also edit the DLI/SAS JCL to include $$DPICDS and $$DPITBL.

Installing DATA PACKER/IMS passwords

This task applies to all DATA PACKER/IMS installations in shared CPU environments.

Product authorization passwords enable execution of DATA PACKER/IMS on licensed CPUs. When DATA PACKER/IMS is executing in an online IMS environment, a valid product authorization password must be available in the IMS control region and in the DLISAS region. When DATA PACKER/IMS is executing in an offline (batch) environment, a valid product authorization password must be available to the batch job.
To install DATA PACKER/IMS passwords

1. Create a password module for DATA PACKER/IMS by installing one or more product authorization passwords.

For more information about product licensing requirements and creating password modules, see the *BMC Products for IMS Installation Guide*.

2. For each online IMS environment in which you want to use DATA PACKER/IMS, ensure that the password module is available in your IMS control region and in your DLISAS region.

3. For each batch job in which you want to use DATA PACKER/IMS, ensure that the password module is available in the STEPLIB (or JOBLIB) concatenation.

Propagating reserves in a shared CPU environment

This task applies to all DATA PACKER/IMS installations in shared CPU environments.

For a shared CPU environment, you can eliminate DATA PACKER/IMS reserves that are issued against the $$DPICDS and $$DPITBL data sets and propagate them as ENQs with a resource serialization package (like Computer Associates’ MIM, IBM’s GRS, etc.). No modifications to DATA PACKER/IMS are necessary.

The following examples show specifications for MIM and GRS:

- For MIM, use the following specifications for $$DPICDS and $$DPITBL:

  ```
  $$DPICDS GDIF=YES,
  SCOPE=ALL,
  EXEMPT=YES,
  ECMF=YES,
  RPTAFTER=0,
  RPTCYCLE=120,
  TRACE=NONE
  ```

- For GRS, the following levels are available:
  - TASK inside a job
  - SYSTEM inside an operating system image
  - SYSTEMS inside multiple operating system images
Installing the ISPF interface

This task applies to all DATA PACKER/IMS installations.

**NOTE**
Use SYSTEMS for $$DPICDS and $$DPITBL.

If you do not have a reserve filtering product and an error occurs during $$DPICDS or $$DPITBL processing using the ISPF interface, a dequeue will not be issued until you press F3 to end the error panel.

### Installing the ISPF interface

This task applies to all DATA PACKER/IMS installations.

**NOTE**
If your installation has security for TSO commands, you need to add DPIDMAIP to your TSO Command Table.

You can invoke the DATA PACKER/IMS ISPF interface by using the CLIST member that was created during installation. Your installed HLQ.JCL data set contains the DPIISPF member.

You can also install the interface by using the sample commands that are shown in Figure 6.

**Figure 6   ISPF/PDF Primary Option Menu**

```plaintext
%------------------- ISPF/PDF PRIMARY OPTION MENU -------------------%
%OPTION  ===> _ZCMD                                                 %
% DPI  +DP/IMS    - DATA PACKER IMS Version 2        %
% X  +EXIT        - Terminate ISPF using log and list defaults  %
%                                                                 %
% +Enter %END+command to terminate ISPF.    %
}INIT

/* Normal Initialization processing statements  */

}PROC
&ZSEL  =  TRANS( TRUNC (&ZCMD,'.'), 'PGM(DPIDMAIN) NOCHECK NEWAPPL(DPI)'
  X,'EXIT'
  '',
  '.*','?')
&ZTRAIL = .TRAIL
}END
```
Assembling and linking the DPICDS Security Exit

For more information about the CLIST options, see the DATA PACKER/IMS Reference Manual.

Assembling and linking the DPICDS Security Exit

This task applies to all DATA PACKER/IMS installations. This task is optional.

To implement the DPICDS Security Exit, edit member DPISECTY in BMC.DPKSAMP.

For more information about the DPICDS Security Exit, see the DATA PACKER/IMS Reference Manual.
Chapter 3  Configuring Database Integrity products for IMS

This chapter describes tasks for configuring DATABASE INTEGRITY PLUS and POINTER CHECKER PLUS. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

- Overview ......................................................... 66
- DATABASE INTEGRITY PLUS configuration worksheet .......................... 67
- POINTER CHECKER PLUS configuration worksheet ............................. 68
- Providing access to the ISPF interface .............................................. 69
- Configuring Database Integrity functions ........................................... 71
  - Assigning a label data set ......................................................... 72
  - Changing default global options .................................................. 74
  - Enabling database label verification .............................................. 74
  - Generating database labels .......................................................... 78
- Configuring Pointer Checker functions ............................................. 79
  - Assembling/linking the DLIGSET0 global options module ................. 79
  - Changing the default global options ............................................ 79
  - Modifying or creating execution JCL ........................................... 80
  - Performing Database Utilities Subsystem tasks ............................... 80
  - Handling PDX enqueues ............................................................. 81
Overview

You should complete the configuration tasks that are described in this chapter after you install and customize the product libraries through the Installation System.

**NOTE**

For information about installing and customizing the product libraries, see the installation guide.

Table 13 lists the products that are covered in this chapter; the three-character product code; the functions, features, utilities, and components that are included with the product; and the location of the product configuration worksheet. For more information about the functions, features, utilities, and components, see the technical documentation that supports the product.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
<th>Functions, features, utilities, and components</th>
<th>Worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATABASE INTEGRITY PLUS</td>
<td>DBI</td>
<td>Database Integrity functions</td>
<td>page 67</td>
</tr>
<tr>
<td>POINTER CHECKER PLUS</td>
<td>PCP</td>
<td>Pointer Checker functions</td>
<td>page 68</td>
</tr>
</tbody>
</table>
Table 14 is a worksheet that lists the steps you must complete to configure DATABASE INTEGRITY PLUS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>2. Configure Database Integrity functions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuring Database Integrity functions</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Assigning a label data set</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Changing default global options</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>Enabling database label verification</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>Generating database labels</td>
<td>78</td>
</tr>
</tbody>
</table>
Table 15 is a worksheet that lists the steps you must complete to configure POINTER CHECKER PLUS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>69</td>
</tr>
<tr>
<td>2. Configure Pointer Checker functions.</td>
<td></td>
</tr>
<tr>
<td>Configuring Pointer Checker functions</td>
<td>79</td>
</tr>
<tr>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>79</td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>79</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>80</td>
</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
<td>80</td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td>81</td>
</tr>
</tbody>
</table>
Providing access to the ISPF interface

This task is required for selected functions of the following products:

- DATABASE INTEGRITY PLUS
- POINTER CHECKER PLUS

You can provide access to the ISPF interface with a LIBDEF CLIST or with a TSO logon procedure.

**To provide access with a LIBDEF CLIST**

The Installation System creates the BMCDBU CLIST for accessing the ISPF interface. The CLIST uses ISPF LIBDEF facilities to invoke the BMC Software DBU Product Selection Menu, from which you can access the ISPF interfaces for the solutions and products.

**NOTE**

The BMCDBU CLIST dynamically allocates an ISPTLIB DD statement. The ISPTLIB statement is required if allocations are performed in user logon procedures.

To execute the BMCDBU CLIST and the ISPF interface, enter the following TSO command on an ISPF panel that accepts TSO commands:

```
EX 'hlq.DBUSAMP(BMCDBU)'
```

**NOTE**

If you selected merged libraries for your installation, IMSAMP replaces DBUSAMP in the TSO command.
To provide access with a TSO logon procedure

To provide access to the ISPF interface with a TSO logon procedure, perform the following steps:

1. Modify TSO logon procedures.

   Make the changes that are indicated in Table 16 to the TSO logon procedure for each user who requires access to the ISPF interface. In this table, *hlq* indicates the high-level qualifier of the data sets that contain the DBU product modules.

   **Table 16 Product libraries to add to logon procedures**

<table>
<thead>
<tr>
<th>Product library</th>
<th>Concatenated library</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>hlq</em>.DBULIB or <em>hlq</em>.IMLIB</td>
<td>ISPLLIB or STEPLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUPLIB or <em>hlq</em>.IMPLIB</td>
<td>ISPPLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUMLIB or <em>hlq</em>.IMMLIB</td>
<td>ISPMLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUSLIB or <em>hlq</em>.IMSLIB</td>
<td>ISPSLIB</td>
</tr>
<tr>
<td><em>hlq</em>.DBUTLIB or <em>hlq</em>.IMTLIB</td>
<td>ISPTLIB</td>
</tr>
</tbody>
</table>

2. Add the products and solutions to an ISPF product menu.

   Place the BMC Software DBU Product Selection Menu on the ISPF primary menu (ISR@PRIM) according to your site’s standards. Use the following modifications as an example:

   - Add a line to the panel `BODY` section that indicates solution and product selection codes and explanations of the selection choices. For example:

     ```%
     % B +BMC Database Utilities
     ```

   - Modify the menu selection validation statement that selects the solutions and products when users enter the selection codes on the menu panel. For example:

     ```
     &ZSEL = TRANS( TRUNC(&ZCMD,'.'))
     .
     .
     B,'PANEL(DBUPPRIM) NEWAPPL(DBUX)'
     .
     .
     ```
Configuring Database Integrity functions

This section describes configuration tasks for Database Integrity functions. For information about implementing and using Database Integrity functions, see the DATABASE INTEGRITY PLUS User Guide.

To verify that a job step uses the correct control blocks to access an IMS database, DATABASE INTEGRITY PLUS (DI+) creates and maintains a database label for each database. It stores these labels in a label data set.

To use the DI+ Integrity Controller to verify database labels, you must perform the tasks that are described in this section.

NOTE
If you want to use DATABASE INTEGRITY PLUS library utilities but you do not want DATABASE INTEGRITY PLUS to perform database label verification, you must set the DBIPARMS module with a label data set name of BYPASS.DBI.LABEL.PROCESS. This setting suspends database label verification.

3 Test the ISPF interface:

A Log off and log back on.

B From the panel you modified in the previous step, enter solution and product selection codes. The BMC Software DBU Product Selection Menu is displayed.
Assigning a label data set

A key-sequenced data set (KSDS) label is required if you are using IMS version 6.1 or later. Labels cannot be stored in the RECON data sets starting with IMS version 6.1. Earlier versions support labels being stored in the RECON data sets. BMC recommends that you do not store labels in the RECON data sets.

You must define a KSDS data set according to the IDCAMS control statements in member DBUKSDS of the SAMP library data set.

The label data set is integral to the design of the Integrity Controller. If it is lost or damaged, DI+ cannot prevent control block mismatch errors. If you use a KSDS for the label data set, it is your responsibility to ensure the integrity of the data set. You must include procedures to back up, recover, and maintain this data set.

To share the KSDS label across multiple CPU environments, you must register the KSDS label as a global enqueue data set with your system’s software package that handles cross system enqueues. The enqueue is a SYSTEMS level enqueue with a QNAME of BMC/DBI+ and an RNAME that matches the name given to the cluster for the KSDS label.

If you are upgrading to IMS version 5.1 or later and are using the RECON data sets to store labels, follow the instructions that are listed in Table 17 on page 73.
Table 17  Labels and upgrades to IMS version 5.1 or later

<table>
<thead>
<tr>
<th>Are labels shared?</th>
<th>To retain existing labels</th>
<th>To generate new labels</th>
</tr>
</thead>
</table>
| Labels are shared between IMS version 5.1 or later and version 4.1 or earlier (in a RECON data set or a user KSDS). | ■ Before you apply the BMC SPE, use the DI+ LBLXPORT function (use an IMS version 4.1 RESLIB) to export the labels created in earlier versions of IMS.  
■ Use the DI+ LBLDLET function (use an IMS version 4.1 RESLIB) to delete the labels.  
■ Apply the BMC SPE to DI+.  
■ Use the DI+ LBLMPORT function (use an IMS version 5.1 or later RESLIB or an IMS version 4.1 RESLIB with the BMC SPE applied to DI+) to import the labels into IMS version 5.1 or later. | ■ Before you apply the BMC SPE, use the DI+ LBLDLET function (use an IMS version 4.1 RESLIB) to delete the labels.  
■ Apply the BMC SPE to DI+. |
| Labels are not shared between IMS version 5.1 or later and version 4.1 or earlier (in either a RECON data set or a user KSDS). | ■ Before you apply the BMC SPE, use the DI+ LBLXPORT function (use an IMS version 4.1 RESLIB) to export the labels.  
■ Use the DI+ LBLMPORT function (use an IMS version 5.1 or later RESLIB) to import the labels into IMS version 5.1 or later. | No action is necessary. |

---

**NOTE**

The BMC SPE is a zap to force use of the old format. For more information, contact BMC Customer Support.

---

**WARNING**

In IMS version 6.1 and later, you cannot use a RECON data set to store labels. BMC recommends that you convert from using RECON data sets to using a KSDS for storing labels for IMS version 5.1.
Changing default global options

If you use the RECON data sets to store database labels this task is optional. If you use a KSDS to store labels this task is required.

DI+ provides several options to let you control label verification. BMC recommends default values for these options for most databases. To implement different option values at your site, you can create one or more global options modules named DBIPARMS and/or DBI@imsi (where imsi is the IMS ID of a particular IMS system). DI+ uses the values in the global options module to initialize the option values in newly created labels.

**NOTE**
You can use the DBU ISPF interface to accomplish this task.

The *DATABASE INTEGRITY PLUS User Guide* contains detailed information about the options and instructions and examples for setting them.

Enabling database label verification

To enable database label verification, you will enable BMC functions in IMS control regions and copy DI+ load modules to the IMS RESLIB.

**NOTE**
If you perform this task for DI+, you can bypass a similar task when you install the following BMC products:

- CHANGE RECORDING FACILITY
- DATABASE INTEGRITY PLUS
- Fast Path Online Restructure/EP
- MAXM Reorg *for IMS* with Online/Defrag Feature
- MAXM Reorg/EP *for IMS* with Online/Defrag Feature
- MAXM Reorg/Online *for IMS*
Overview

The technique that you use to enable BMC functions depends on the method that you use to execute DBRC:

- If you are using the standard DBRC procedure, BMC functions are enabled through a new IMS-dependent module, named DBICRYYr. In the module name, yr represents the IMS version. For example, the module name is DBICRYA1 for IMS version 10.1 and DBICRY91 for IMS version 9.1. You create a DBICRYYr module for each IMS release that you are using. The new module resides in the DBULIB or IMLIB library. You also create a new alias for the IMS DSPCRTR0 module. The alias points to the BMC-supplied DBICRT00 module, which resides in the IMS.SDFSRESL library.

You can create the new module and alias by using the usermod method or the manual method.

- If you are using the Base Primitive Environment (BPE) method of executing DBRC, BMC functions are enabled through a user exit that is defined in a DBRC configuration member. The BPE method is available only for IMS version 11 and later systems.

To create the new module and alias (usermod method)

NOTE

BMC recommends the usermod method because it ensures that the System Modification Program Extended (SMP/E) product links the appropriate modules when you apply future IMS maintenance to the DSPCRTR0 module.

The usermod performs the following tasks:

- defines the new module DBICRYYr and copies DSPCRTR0 into it
- replaces DSPCRTR0 with the BMC-supplied module DBICRT00
- copies all appropriate DI+ execution modules to the IMS RESLIB

1 Edit member DBUDBI3U of the SAMP library (from the distribution tape or ESD image).

The DBUDBI3U member contains JCL for an SMP/E-type usermod to IMS.

2 Following the instructions in the comments for both steps, modify the JCL and submit it for execution.

3 Ensure that the RESLIB that contains the DI+ execution modules is accessible during the execution of any job or system (batch or online) for which you want to verify labels.
Enabling database label verification

Because no JCL changes are required, this method ensures that DI+ performs label verification for all jobs that access IMS databases.

4 To begin using the newly-installed DI+ execution modules in the IMS, CICS, and Database Recovery Control (DBRC) online environments, stop and start your IMS and CICS systems.

5 Modify the ISPF interface BMCxxx CLIST to use the RESLIB that contains the DI+ execution modules as the DI+ load library and update the DBU LIBDEF table to use the RESLIB as DBIXLIB.

If you store the labels in the RECON data sets, you must place the RESLIB in the ISPLLIB DD statement concatenation in the TSO logon JCL.

To create the module and alias (manual method)

**NOTE**
The manual method requires concatenating the DI+ execution library in the list of libraries to be used by each batch job step. Place the DI+ execution library ahead of the IMS RESLIB library to ensure that the DI+ version of modules is used instead of the IMS version.

1 Link-edit the DBICRYvr module.

   Use the JCL in member DBICLINK of the SAMP library as a model for the link-edit job. Modify the JCL as indicated in the comments and submit it.

2 According to your site’s standards, concatenate the DI+ execution library in the list of libraries to be used for each batch job step.

   Place it ahead of the IMS RESLIB library to ensure that the DI+ version of the modules is used instead of the IMS version. You can use any one of the following methods:

   - Add the DI+ execution library to the STEPLIB DD statement in the job step JCL.
   - Add the DI+ execution library to the STEPLIB DD statement in the standard JCL procedures.
   - Add the library to the JOBLIB DD statement.
   - If the STEPLIB DD statement does not override the LNKLST concatenation, include it in your site’s LNKLST concatenation.

3 If you want DI+ to verify labels in online systems, concatenate the DI+ execution library ahead of the IMS RESLIB in the STEPLIB DD statement in the procedures that execute the IMS, CICS, and DBRC online environments.
Enabling database label verification

This enables DI+ to verify labels in the online IMS, CICS, and DBRC environments after IMS startup. The DI+ execution library must be APF authorized.

4 To begin using the newly-installed DI+ execution modules in the IMS, CICS, and DBRC online environments, stop and start the IMS, CICS, and online systems.

**WARNING**

DI+ can ensure data integrity only if DI+ verifies labels for all jobs that access IMS databases. If DI+ label verification is not active for a job step, data integrity exposures are possible.

You should also check the JCL for non-IMS utilities that invoke DBRC. You may need to add the DFSRESLBL DD statement to the JCL.

**To define the user exit through BPE**

1 Verify that your DBRC procedure specifies a BPE configuration member (BPECFxxx) as follows:

```
//IMSDBRCB PROC RGN=OM,
// BPECFG=BPECFxxx,
// DBRCINIT=xxx,
// IMSID=IMEx,
// PARM1='BPEINIT=DSPBINI0'
```

2 Edit the BPE configuration member (BPECFxxx) of the IMS procedure library (IMS.PROCLIB).

3 In the USER EXIT LIST section, add a line to define the DBRC configuration member as follows:

```
# USER EXIT LIST
#--------------------------------------------------------#
EXITMBR=(EXDRCxxx,DBRC)
```

4 Edit the DBRC configuration member (EXDRCxxx) of the IMS procedure library (IMS.PROCLIB).

5 Add a line to define the BMC DLIOBPE1 exit as follows:

```
EXITDEF(TYPE=RECONIO,EXITS=(DLIOBPE1),COMP=DBRC)
```
Generating database labels

Generating database labels is an optional task.

DI+ can automatically create the database labels as the databases are accessed, or you can run an optional batch job to create them. The DATABASE INTEGRITY PLUS User Guide contains information about specifying the JCL to generate the labels.
Configuring Pointer Checker functions

This section describes configuration tasks for Pointer Checker functions.

Assembling/linking the DLIGSET0 global options module

This task is required for Pointer Checker functions.

You must assemble/link the DLIGSET0 global options module that is used for all extended performance functions. The module is located in the installation JCL data set that you specified on the Installation System User Options panel.

For more information about the Installation System user options, see the installation guide.

You cannot use the ISPF interface to perform this task.

Changing the default global options

This task is required for Pointer Checker functions.

The internal default values for user-controlled options should provide the best performance for most databases. You can customize default values by generating a load module named prdPARMS or prd@imsi (where prd is the three-character product code and imsi is the IMS ID), or by generating a load module at the DBD level. The default values in these modules determine which options to use at execution time.

NOTE

You can accomplish this task through the DBU ISPF interface (except for the Reorg and Reorg extended performance functions) or batch JCL.

Execute the BMCDBU CLIST to access the ISPF interface.

Sample JCL is provided in member #DBGUBL of the sample library.
Modifying or creating execution JCL

This task is required for Pointer Checker functions.

The simplest and most effective way to run Pointer Checker functions is during an image copy of the database. You must concatenate the BMC load library ahead of the IMS RESLIB in your existing IMS Image Copy utility JCL. You can also modify this JCL to run IMAGE COPY PLUS. POINTER CHECKER PLUS will verify the database and complete with a return code 0 if no errors are found.

**NOTE**
If you are configuring a function which is part of a solution that includes the DBA Toolkit, you can use the toolkit to generate the JCL.

You can also add DD statements to receive hardcopy reports and dumps, to specify global options for the current job, and to specify the PDX and other work data sets. For more details about JCL requirements, see the product-specific reference manuals.

Performing Database Utilities Subsystem tasks

This task is optional for Pointer Checker functions.

This section describes the tasks for configuring the Database Utilities Subsystem (DBUSS). If you do not plan to use the DBUSS, you can skip these steps.

If you plan to use the DBUSS, perform the following steps:

1. APF authorize the library that contains the DBUSS modules that require authorization.

You must APF authorize certain DBUSS modules. You can leave these modules in the product load module library (hlq.DBULIB or hlq.IMLIB on the distribution tape or ESD image) and authorize this library, or you can copy these modules to a separate authorized library. If you provide a separate library name, the Installation System generates the JCL to load the required modules into the authorized library automatically. For information about the modules that you must APF authorize, see Table 76 on page 383. For information about providing DBUSS information to the Installation System, see the installation guide.

The Installation System can use an existing APF library or a new one. A system IPL is not necessary if you use an existing library. To create a new APF-authorized library, see your operating system programmer, or add the data set to the APF-authorized list in member IEAAPFnn of SYS1.PARMLIB and perform a system IPL.
2 Execute the DBUSS.

You can execute the DBUSS as a job or as a started task. The Installation System creates JCL to execute the DBUSS as a job. The job copies DBUSS modules to the specified APF-authorized library (if necessary) and starts the DBUSS.

You can continue to run the DBUSS as a job with JCL similar to the JCL in Figure 7, or you can create a cataloged procedure as explained in Chapter 13, “Administering and operating the DBUSS.”

**Figure 7  Sample JCL to run the DBUSS as a job**

```plaintext
//DBUSS JOB (account data),'DBU SUBSYSTEM'.
//   CLASS=A, MSGCLASS=A
//DBUSS EXEC PGM=DBUZPCCR,PARM='dbui'
//STEPLIB DD DSN=.DBU.AUTHLOAD, DISP=SHR
//SYSUDUMP DD SYSOUT=A
```

You can override the `dbui` subsystem ID with any name. The `PARM` specification is optional. If you do not specify it, the default subsystem ID is DBUZ.

**Handling PDX enqueues**

This task is optional for Pointer Checker functions.

The PDX is an optional data set that some database products for IMS can use to store DBD-level options, execution history, and statistics that are gathered during execution. For more information about the PDX, see the *IMS Database Supplemental Utilities Reference Manual*.

If you are using a PDX data set in a multiple-CPU environment, enqueue problems on the PDX directory are possible. To avoid enqueue problems, register PDX as a global enqueue with your site’s software package that handles cross-system enqueues. The enqueue is a SYSTEMS level enqueue with PDX as the QNAME and the data set name with a length of 44 bytes as the RNAME.
This chapter describes tasks for configuring the Fast Path products. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

Overview ................................................................. 84
Fast Path Analyzer/EP configuration worksheet ......................... 85
Fast Path Enhanced Online Suite configuration worksheet ............... 86
Fast Path Indexer/EP configuration worksheet .......................... 87
Fast Path Offline Suite configuration worksheet ......................... 88
Fast Path Online Analyzer/EP configuration worksheet ............... 89
Fast Path Online Image Copy/EP configuration worksheet ............ 90
Fast Path Online Reorg/EP configuration worksheet .................. 91
Fast Path Online Restructure/EP configuration worksheet .......... 92
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Fast Path Recovery Utility configuration worksheet .................. 94
Fast Path Reorg/EP configuration worksheet .......................... 95
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Installing product passwords .......................................... 97
Completing installation tasks ........................................... 97
Configuring online products ............................................ 98
  Managing the region controller module ................................ 98
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  Activating Fast Path Indexer/EP ..................................... 99
  Deactivating Fast Path Indexer/EP ................................... 101
  Enabling online Extend functionality ................................ 102
Completing optional configuration tasks ................................ 103
  Managing the repository .............................................. 103
  Accessing the ISPF interface ......................................... 105
  Implementing security ................................................ 108
Installing the Fast Path Indexer/EP Sample Application ................ 117
Configuring Fast Path Online Restructure/EP ......................... 118
  APF authorizing BMC load libraries ................................ 118
  Enabling BMC functions in IMS control regions ................... 119
You should complete the configuration tasks that are described in this chapter after you install and customize the product libraries through the Installation System.

**NOTE**
For information about installing and customizing the product libraries, see the installation guide.

Table 18 lists the products that are covered in this chapter; the three-character product code; and the location of the product configuration worksheet. For information about the functions, features, utilities, and components of the products, see the technical documentation that supports the product.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
<th>Worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Path Analyzer/EP</td>
<td>PFA</td>
<td>page 85</td>
</tr>
<tr>
<td>Fast Path Enhanced Online Suite</td>
<td>N/A</td>
<td>page 86</td>
</tr>
<tr>
<td>Fast Path Indexer/EP</td>
<td>PFX</td>
<td>page 87</td>
</tr>
<tr>
<td>Fast Path Offline Suite</td>
<td>N/A</td>
<td>page 88</td>
</tr>
<tr>
<td>Fast Path Online Analyzer/EP</td>
<td>PFO</td>
<td>page 89</td>
</tr>
<tr>
<td>Fast Path Online Image Copy/EP</td>
<td>PFI</td>
<td>page 90</td>
</tr>
<tr>
<td>Fast Path Online Reorg/EP</td>
<td>PFL</td>
<td>page 91</td>
</tr>
<tr>
<td>Fast Path Online Restructure/EP</td>
<td>PFC</td>
<td>page 92</td>
</tr>
<tr>
<td>Fast Path Online Suite</td>
<td>N/A</td>
<td>page 93</td>
</tr>
<tr>
<td>Fast Path Recovery Utility</td>
<td>FRU</td>
<td>page 94</td>
</tr>
<tr>
<td>Fast Path Reorg/EP</td>
<td>PFR</td>
<td>page 95</td>
</tr>
<tr>
<td>Fast Path Restart Control Facility</td>
<td>RCF</td>
<td>page 96</td>
</tr>
</tbody>
</table>
Some configuration tasks only apply if this is the first time that you are installing a BMC Fast Path product at your site, and some configuration tasks are optional depending on which products you are installing, your usage requirements, and other BMC products for IMS that may be installed at your site. For each task that is presented in this chapter, the introduction to the task indicates the situations to which the task applies.

**Fast Path Analyzer/EP configuration worksheet**

Table 19 is a worksheet that lists the steps you must complete to configure Fast Path Analyzer/EP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install product passwords.</td>
<td>97</td>
</tr>
<tr>
<td>Installing product passwords</td>
<td></td>
</tr>
<tr>
<td>2. Complete installation tasks.</td>
<td>97</td>
</tr>
<tr>
<td>Completing installation tasks</td>
<td></td>
</tr>
<tr>
<td>3. Manage the repository.</td>
<td>103</td>
</tr>
<tr>
<td>Managing the repository</td>
<td></td>
</tr>
<tr>
<td>4. Access the ISPF interface.</td>
<td>105</td>
</tr>
<tr>
<td>Accessing the ISPF interface</td>
<td></td>
</tr>
<tr>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td>5. Implement security.</td>
<td>108</td>
</tr>
<tr>
<td>Implementing security</td>
<td></td>
</tr>
<tr>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
</tbody>
</table>
Fast Path Enhanced Online Suite configuration worksheet

Table 20 is a worksheet that lists the steps you must complete to configure the Fast Path Enhanced Online Suite.

Table 20 Configuring Fast Path Enhanced Online Suite worksheet

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Install product passwords.</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Complete installation tasks.</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Ensure region controller module compatibility.</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Managing the region controller module</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Access the ISPF interface.</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Accessing the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td>5.</td>
<td>Implement security.</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing security</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
<tr>
<td>6.</td>
<td>(optional) Configure components for console-enablement.</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td></td>
</tr>
</tbody>
</table>
Fast Path Indexer/EP configuration worksheet

Table 21 is a worksheet that lists the steps you must complete to configure Fast Path Indexer/EP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Done</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install product passwords.</td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td>2. Complete installation tasks.</td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td>3. Ensure region controller module compatibility.</td>
<td>Managing the region controller module</td>
<td>98</td>
</tr>
<tr>
<td>5. Access the ISPF interface.</td>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td>6. Implement security.</td>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
<tr>
<td>7. Install the sample application.</td>
<td>Installing the Fast Path Indexer/EP Sample Application</td>
<td>117</td>
</tr>
</tbody>
</table>
Fast Path Offline Suite configuration worksheet

Table 22 is a worksheet that lists the steps you must complete to configure the Fast Path Offline Suite.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>3. Access the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>4. Implement security.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>5. <em>(optional)</em> Configure components for console-enablement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
Table 23 is a worksheet that lists the steps you must complete to configure Fast Path Online Analyzer/EP.

Table 23  Configuring Fast Path Online Analyzer/EP worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>3. Ensure region controller module compatibility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managing the region controller module</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>4. Access the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>5. Implement security.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
</tbody>
</table>
Fast Path Online Image Copy/EP configuration worksheet

Table 24 is a worksheet that lists the steps you must complete to configure Fast Path Online Image Copy/EP.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>3. Ensure region controller module compatibility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managing the region controller module</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>4. Access the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>5. Implement security.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
</tbody>
</table>
Fast Path Online Reorg/EP configuration worksheet

Table 25 is a worksheet that lists the steps you must complete to configure Fast Path Online Reorg/EP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td>3. Ensure region controller module compatibility.</td>
<td></td>
</tr>
<tr>
<td>Managing the region controller module</td>
<td>98</td>
</tr>
<tr>
<td>4. Enable online Extend functionality.</td>
<td></td>
</tr>
<tr>
<td>Enabling online Extend functionality</td>
<td>102</td>
</tr>
<tr>
<td>5. Access the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td>6. Implement security.</td>
<td></td>
</tr>
<tr>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
</tbody>
</table>
Fast Path Online Restructure/EP configuration worksheet

Table 26 is a worksheet that lists the steps you must complete to configure the Fast Path Online Restructure/EP product.

Table 26 Configuring Fast Path Online Restructure/EP worksheet

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install product passwords.</td>
<td>97</td>
</tr>
<tr>
<td>Installing product passwords</td>
<td></td>
</tr>
<tr>
<td>2. Ensure region controller module compatibility.</td>
<td>98</td>
</tr>
<tr>
<td>Managing the region controller module</td>
<td></td>
</tr>
<tr>
<td>3. APF authorize BMC load libraries.</td>
<td>118</td>
</tr>
<tr>
<td>APF authorizing BMC load libraries</td>
<td></td>
</tr>
<tr>
<td>4. Enable BMC functions in IMS control regions.</td>
<td>119</td>
</tr>
<tr>
<td>Enabling BMC functions in IMS control regions</td>
<td></td>
</tr>
<tr>
<td>5. If you are using the product with CICS/DBCTL, install global user exits.</td>
<td>121</td>
</tr>
<tr>
<td>Installing global user exits in a CICS/DBCTL environment</td>
<td></td>
</tr>
<tr>
<td>6. Enable dynamic startup of IFP regions.</td>
<td>123</td>
</tr>
<tr>
<td>Enabling dynamic startup of IFP regions</td>
<td></td>
</tr>
<tr>
<td>7. Authorize IFP jobs to be scheduled.</td>
<td>124</td>
</tr>
<tr>
<td>Authorizing IFP jobs to be scheduled</td>
<td></td>
</tr>
<tr>
<td>8. Provide access to the SYS1.CSSLIB library.</td>
<td>126</td>
</tr>
<tr>
<td>Providing access to the SYS1.CSSLIB library</td>
<td></td>
</tr>
<tr>
<td>9. Install BMC usermods for the IBM SDEP Scan and Delete utilities.</td>
<td>127</td>
</tr>
<tr>
<td>Installing BMC usermods for the IBM SDEP Scan and Delete utilities</td>
<td></td>
</tr>
<tr>
<td>10. Add BMC load libraries to IMS regions.</td>
<td>128</td>
</tr>
<tr>
<td>Adding BMC load libraries to IMS regions</td>
<td></td>
</tr>
<tr>
<td>11. Evaluate the value of the XCF MAXMEMBER parameter.</td>
<td>129</td>
</tr>
<tr>
<td>Evaluate the value of the XCF MAXMEMBER parameter</td>
<td></td>
</tr>
</tbody>
</table>
Table 27 is a worksheet that lists the steps you must complete to configure the Fast Path Online Suite.

### Table 27  Configuring Fast Path Online Suite worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>3. Ensure region controller module compatibility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managing the region controller module</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>4. Access the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessing the ISPF interface</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Using LIBDEF to execute a CLIST</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Adding Fast Path/EP libraries to the TSO logon procedure</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>5. Implement security.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing security</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Implementing external security</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Implementing internal security</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Displaying the security definition</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
**Fast Path Recovery Utility configuration worksheet**

Table 28 is a worksheet that lists the steps you must complete to configure the Fast Path Recovery Utility.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Install product passwords.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installing product passwords</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2. Complete installation tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completing installation tasks</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>3. Complete configuration tasks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuring the Fast Path Recovery Utility</td>
<td>130</td>
</tr>
</tbody>
</table>
Table 29 is a worksheet that lists the steps you must complete to configure Fast Path Reorg/EP.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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Table 30 is a worksheet that lists the steps you must complete to configure the Fast Path Restart Control Facility.

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<thead>
<tr>
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<td>1. Install product passwords.</td>
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</table>
Installing product passwords

BMC provides sample JCL to install passwords that authorize use of Fast Path products. The following tasks are optional for initial and maintenance installations of Fast Path products:

- Use SAMP library member PFPPSWD to add, replace, or delete temporary and permanent passwords.

- Use SAMP library member PFCPYPSD to copy existing security modules. This JCL searches for a permanent password and, if a permanent password is not found, searches for a temporary password.

For information about applying passwords to authorize use of licensed products, see the installation guide.

Completing installation tasks

This task applies to initial installations of many Fast Path products.

To complete installation tasks

1. (initial installation) Create the VSAM data set that is required to enable use of the repository facility that stores analysis statistics and dynamic message modifications.

   A. Edit and submit SAMP library member #PFPIEPR to create the repository data set.

   B. Edit and submit SAMP library member #PFPMDA to create the DFSMDA member for the repository.

2. (initial installation of Fast Path Indexer/EP only) Edit and submit SAMP library member PFXLBALC to allocate the online PFXLIB data sets. This member includes a JCL step that creates DFSMDA modules for dynamic allocation of the PFXLIB data sets.
Configuring online products

The configuration tasks that are presented in this section pertain to Fast Path/EP products that deliver online functionality. Some of the tasks are optional depending on which products you are installing, your usage requirements, and other BMC products for IMS that may be installed at your site.

Managing the region controller module

Module BMCRRC00 (and its alias DFSRRC00) is a customized version of the IMS DFSRRC00 region controller module. BMCRRC00 provides a front-end to the IMS DFSRRC00 module that gives control to the Fast Path/EP Online products, enables Fast Path/EP online processing, and enables the region controller to accept control statement input. Other BMC products can share module BMCRRC00.

To manage the region controller module

1  APF authorize the library that contains module BMCRRC00.

   If you selected merged libraries for your installation, the library name has a qualifier of IMLIB. If you selected separate libraries for your installation, the library name has a qualifier of DBULIB.

2  Insert the library that contains module BMCRRC00 before IMS RESLIB library in the STEPLIB concatenation for the interactive Fast Path programs (IFP) dependent region.

Enabling the Fast Path/EP common control block

If you are installing any Fast Path/EP online product and both of the following conditions exist, you must enable the Fast Path/EP common control block (CCB):

- You have an IMS version 11.1 environment.
- In this environment, 64-bit buffering is enabled.

**NOTE**

The Fast Path/EP library must be included in the IMS control region STEPLIB.
To enable the Fast Path/EP CCB

**NOTE**
The Fast Path Online products require a common control block (CCB) for operation in a 64-bit buffering environment for IMS 11.1 or later. Only one CCB is required per logical partition (LPAR). During the first IMS initialization on the LPAR after Fast Path/EP is installed, the CCB is created. The CCB will be shared with all subsequent IMS systems that are started on the LPAR.

1. Set up the IMS control region to handle initialization and usage of a Fast Path/EP online product.

   The applicable APF-authorized load libraries are IMLIB (if you chose the merged installation option) or ICOLIB and PFPLIB (if you chose the non-merged installation option). Insert the libraries ahead of any other APF-authorized STEPLIB library in the IMS control region if that library contains the IMS version of module DFSMVRC0. Also insert it ahead of any sharing partners’ libraries in the STEPLIB concatenation. If you are executing IMS with LSO=S, you must also take this action for the DLISAS region STEPLIB.

   By installing the BMC version of DFSMVRC0 as a front-end to the IBM version of DFSMVRC0, you enable the operating system to load the Fast Path/EP dynamic usermods first when starting an IMS system. The BMC version of DFSMVRC0 then correctly loads the IMS copy of the load module.

   When the BMC version of DFSMVRC0 is properly installed, message BMC128013I is issued in the IMS control region to indicate that control region initialization is complete.

2. Restart the IMS control region.

**Activating Fast Path Indexer/EP**

This task is required for the Fast Path Indexer/EP product.

**NOTE**
If you have completed step 1 in “To enable the Fast Path/EP CCB” on page 99, skip step 1 in the following procedure and complete step 2, step 3, and step 4 of the procedure.
To activate the Fast Path Indexer/EP product

1 Set up the IMS control region to handle initialization and utilization of Fast Path Indexer/EP.

When you execute the product download, the ICO image file is included. The ICO image file contains common modules for BMC products for IMS. If you selected merged libraries for your installation, the common modules were copied to IMLIB. If you selected separate libraries for your installation, the common modules were copied to ICOLIB.

Place the applicable APF-authorized load libraries (IMLIB or ICOLIB and PFPLIB) ahead of any other IMS control region APF-authorized STEPLIB library that contains the IMS version of module DFSMVRC0, and also in any sharing partners’ STEPLIB. If you are executing IMS with LSO=S, you must also do this for the DLISAS region STEPLIB.

By installing the BMC version of DFSMVRC0 as a front-end to the IBM version of DFSMVRC0, you enable the operating system to load the Fast Path/EP dynamic usermods first when starting an IMS system. The BMC version of DFSMVRC0 then correctly loads the IMS copy of the load module.

**WARNING**

The IMLIB/ICOLIB and PFPLIB libraries should not be copied to the LINKLIST. The dynamic hooks for Fast Path Indexer/EP will not be installed. Fast Path Indexer/EP requires that the IMLIB/ICOLIB and PFPLIB libraries be concatenated in the IMS control region STEPLIB in front of the IMS RESLIB library. If you are executing IMS with LSO=S, you must also do this for the DLISAS region STEPLIB.

If you are running IMS 10.1, when the BMC version of DFSMVRC0 is properly installed, messages BMC123128I and BMC123194I will be issued in the IMS control region to indicate that Fast Path Indexer/EP initialization is complete.

If you are running an earlier version of IMS, only message BMC123128I is issued.

2 To eliminate unnecessary respecifying of JCL for applications that use Fast Path Indexer/EP, add an APF-authorized PFP load library to the STEPLIB in the IMS control region and in the DLISAS region.

3 Include the two PFXLIB definition data sets (PFXLIBA and PFXLIBB) in the IMS control region and in the DLISAS region.

The PFXLIB data sets were created during initial installation of the product. For information about allocating the PFXLIB data sets, see step 2 on page 97.

Perform either of the following actions to include the PFXLIB data sets in the IMS control region and in the DLISAS region:
Deactivating Fast Path Indexer/EP

You can deactivate the Fast Path Indexer/EP product without uninstalling it by including the DD statement that is shown below in your IMS control region JCL procedure. If you are executing with IMS option LSO=S, you must also include this DD statement in the DLISAS region JCL:

//PFXLIBA DD DSN=BMC.PFX.PFXLIBA,DISP=SHR
//PFXLIBB DD DSN=BMC.PFX.PFXLIBB,DISP=SHR

**WARNING**

If you are executing with IMS option LSO=S, failure to add this DD statement to the IMS control region JCL and the DLISAS region JCL will produce unpredictable results and affect the stability of these address spaces.

**NOTE**

Deactivating Fast Path Indexer/EP may cause out-of-sync conditions with indexes since the source database can still be updated and its associated index(es) will not be updated. When you reactivate Fast Path Indexer/EP, you should either rebuild or resynchronize your indexes.
Enabling online Extend functionality

If you are installing the Fast Path Online Reorg/EP product and both of the following conditions are true, this task is required:

- You are running in a block-level sharing environment.
- You want to enable IOVF extend and SDEP extend functionality during an online reorganization of a DEDB.

The patented Extend feature of the Fast Path Online Reorg/EP product enables you to extend the IOVF and SDEP portions of a DEDB online. However, if the DEDB utilizes block-level sharing and you want to use the Extend feature, then you must install the BMC common modules DFSMVRC0 and BMCXRRA0 in an APF-authorized library in front of the IMS RESLIB library in the IMS control region STEPLIB and also in the sharing partners’ STEPLIB. By implementing this load sequence, you allow use of the Extend feature in a block-level sharing environment.

---

**NOTE**
The Fast Path/EP library must also be in the IMS control region STEPLIB.

---

**To enable the Extend feature online in a block-level sharing environment**

---

**NOTE**
If you completed step 1 on page 99, skip step 1 of the following procedure and complete step 2 on page 103.

---

1. Set up the IMS control region to handle initialization and utilization of Fast Path Online Reorg/EP.

When you execute the product download, the ICO image file is included. The ICO image file contains common modules for BMC products for IMS. If you selected merged libraries for your installation, the common modules were copied to IMLIB. If you selected separate libraries for your installation, the common modules were copied to ICOLIB.

Place the applicable APF-authorized load libraries (IMLIB or ICOLIB and PFPLIB) ahead of any other IMS control region APF-authorized STEPLIB library that contains the IMS version of module DFSMVRC0, and also in any sharing partners’ STEPLIB. If you are executing IMS with LSO=S, you must also do this for the DLISAS region STEPLIB.
By installing the BMC version of DFSMVRC0 as a front-end to the IBM version of DFSMVRC0, you enable the operating system to load the Fast Path/EP dynamic usermods first when starting an IMS system. The BMC version of DFSMVRC0 then correctly loads the IMS copy of the load module.

When the BMC version of DFSMVRC0 is properly installed, message BMC128013I will be issued in the IMS control region to indicate that control region initialization is complete.

2 Restart the IMS control region.

### Completing optional configuration tasks

The configuration tasks that are presented in this section are optional depending on your usage requirements and other BMC products for IMS that are installed at your site.

### Managing the repository

This section discusses how to register PFPEPR in order to use the Fast Path Analyzer/EP statistics repository, and how to enable or disable dynamic allocation of the repository.

#### Registering PFPEPR for a multiple-CPU environment

To use the Fast Path Analyzer/EP statistics repository facility in a multiple-CPU environment, you must register the PFPEPR DD name with your cross-system enqueue package by specifying PFPEPR as the QNAME. This prevents the possibility of enqueue problems and controls possible contention with EPR.

In a multiple-CPU environment, you can eliminate reserves that are issued against the PFPEPR repository data sets and propagate them as ENQs with a resource serialization package (like the Computer Associates MIM product or the IBM GRS product).

The following examples are for MIM and GRS.
Managing the repository

- For MIM, use the following specifications for PFPEPR:

  | PFPEPR | GDIF=YES, |
  |        | SCOPE=ALL, |
  |        | EXEMPT=YES, |
  |        | ECMF=YES, |
  |        | RPTAFTER=0, |
  |        | RPTCYCLE=120, |
  |        | TRACE=NONE |

- For GRS, the following levels are available:
  - TASK inside a job
  - SYSTEM inside an operating system image
  - SYSTEMS inside multiple operating system images

  **NOTE**
  Use SYSTEMS for PFPEPR.

### Enabling dynamic allocation of the repository

To enable (turn on) dynamic allocation of the repository data set, use the sample JCL that is provided in member #PFPMDA of the PFPSAMP library. Then, place the dynamic allocation member in one of your STEPLIB data sets.

Consider the following items when using the DFSMDA member to dynamically allocate the repository:

- Fast Path Analyzer/EP statistics will be added to the repository for each job that runs Fast Path Analyzer/EP, including jobs that are run for the reorganization, reload, and change functions.

- You should schedule additional repository maintenance, such as deleting entries, to manage the size of the repository catalog.

  **NOTE**
  If the PFPEPR DD statement is not specified in the JCL and the REPOSITORY DSNAME keyword is not specified on the OPTIONS command, the DFSMDA member will be used to dynamically allocate the repository catalog data set name. However, specifying the PFPEPR DD statement or the REPOSITORY DSNAME overrides dynamic allocation of the DFSMDA member.
Disabling dynamic allocation of the repository

If you need to disable (turn off) dynamic allocation of the Fast Path/EP statistics repository because of performance issues or because statistics are not needed for specific databases, include the following DD statement in the JCL where analysis is invoked:

```//PFPEPR DD DUMMY```

Accessing the ISPF interface

This section describes the procedures for accessing the ISPF interface for the Fast Path/EP products.

You can use the Fast Path/EP ISPF interface to perform the following tasks:

- set repository options for gathering analysis statistics
- set global options
- access Fast Path/EP messages
- display or set operating environment options
- process passwords (product authorization)

You can use either of the following methods to invoke the ISPF interface:

- use LIBDEF and execute a CLIST
  
  For more information, see “Using LIBDEF to execute a CLIST” on page 105.

- add Fast Path/EP libraries to the TSO logon procedure
  
  For more information, see “Adding Fast Path/EP libraries to the TSO logon procedure” on page 106.

Using LIBDEF to execute a CLIST

To use LIBDEF to execute a CLIST that invokes the ISPF interface, perform the following steps:
1 Ensure that you have run the installation job $C64INIT, or run PFPSAMP member #PFPLIBD.

2 Enter the following TSO command from an ISPF panel that accepts TSO commands, where yourname is the high-level qualifier from the initial installation:

   EX 'yourname.INSTALL(BMCPFP)'

For more information about the CLIST, see CLIST BMCPFP that was created from the installation and placed in your HLQ JCL data set.

### Adding Fast Path/EP libraries to the TSO logon procedure

If you choose to add the Fast Path/EP libraries to your TSO logon procedure, you can use either of the following methods to access the Fast Path/EP ISPF interface panels:

- add an option to an ISPF product menu
- use direct panel access to the Fast Path Analyzer/EP Primary Menu

To use the TSO logon method to install the Fast Path/EP ISPF interface, perform the following steps:

1 Modify the TSO logon procedures.

For each user who requires access to the ISPF interface, make the changes that are listed in Table 31 to the TSO logon procedure. The variable yourname is the high-level qualifier from the initial installation.

### Table 31 Libraries needed to modify the TSO logon procedures

<table>
<thead>
<tr>
<th>If you selected merged libraries for your installation, add these libraries...</th>
<th>If you selected separate libraries for your installation, add these libraries...</th>
<th>To these lists of concatenated libraries...</th>
</tr>
</thead>
<tbody>
<tr>
<td>yourname.IMLIB</td>
<td>yourname.PFPLIB</td>
<td>ISPLLIB</td>
</tr>
<tr>
<td>yourname.BBLINK</td>
<td>yourname.BBLINK</td>
<td>ISPMLIB</td>
</tr>
<tr>
<td>yourname.IMMLIB</td>
<td>yourname.PFPMLIB</td>
<td>ISPMLIB</td>
</tr>
<tr>
<td>yourname.BBMLIB</td>
<td>yourname.BBMLIB</td>
<td>ISPPLIB</td>
</tr>
<tr>
<td>yourname.IMPLIB</td>
<td>yourname.PFPLIB</td>
<td>ISPPLIB</td>
</tr>
<tr>
<td>yourname.BBPLIB</td>
<td>yourname.BBPLIB</td>
<td>ISPTLIB</td>
</tr>
<tr>
<td>yourname.IMSLIB</td>
<td>yourname.PFPSLIB</td>
<td>ISPSLIB</td>
</tr>
<tr>
<td>yourname.BBTLIB</td>
<td>yourname.BBTLIB</td>
<td>ISPTLIB</td>
</tr>
</tbody>
</table>
2 Add an option to an ISPF product menu for selecting Fast Path/EP products.

You should place the option for selecting the Fast Path/EP Primary Menu on an ISPF primary menu (for example, ISR@PRIM) according to the installation standards in effect at your site.

A Add a line to the panel body section (for example, ISR@PRIM) and include the selection code for Fast Path/EP and an explanation for the selection. For example:

```
% F +BMC SOFTWARE FAST PATH/EP SERIES
```

B Add a line to the menu selection validation statement that selects Fast Path/EP when you enter the selection code on the menu panel that you modified in 2A. For example:

```
&ZSEL = TRANS( TRUNC(&ZCMD,'.'),
   F,'PGM(PFMXPRIM) PARM(PFM,PFMPPRIM)+
   NEWAPPL(PFMX) PASSLIB'
```

3 (optional) Enable direct primary panel access.

To access the Fast Path Analyzer/EP Primary Menu without first accessing the Fast Path/EP Primary Menu, complete the following steps:

A Add a line to the panel body section (for example, ISR@PRIM) for the Fast Path/EP product being installed and include the product selection code and an explanation for the selection. For example:

```
% PFA +FAST PATH ANALYZER/EP
```

B Add a line to the menu selection validation statement for the Fast Path/EP product being installed that selects the product when you enter the selection code on the menu panel that you modified in 3A. For example:

```
&ZSEL = TRANS( TRUNC(&ZCMD,'.'),
   
```

*NOTE*

To access the Fast Path Analyzer/EP Primary Menu without first accessing the Fast Path/EP Primary Menu, skip step 2 on page 107 and continue with step 3 on page 107.
Implementing security

Fast Path/EP components, especially repository members, often require security in addition to the security that the system security manager provides. The system security manager is typically a product that is compatible with the Resource Access Control Facility (RACF). Use of Fast Path/EP product security is not required, but BMC recommends that you use it. Fast Path/EP products provide the following facilities for implementing security:

- **external security**

  Fast Path/EP external security requires an operating system security manager that is compatible with RACF. Fast Path/EP external security uses the operating system RACROUTE interface to control access to functions and components. You can use Fast Path/EP external security to control read and update access to the repository and to control whether enhanced processing participates in application execution.

- **internal security**

  Fast Path/EP internal security uses two components—the security file and the security module—to secure the Fast Path/EP ISPF interface and the VSAM repository data set against unauthorized updates. When Fast Path/EP internal security is implemented, you can restrict update access only; you cannot restrict ISPF read access.

4. *(optional)* Test the ISPF interface.

Log off TSO and log back on. From the panel that you modified in **step 2** on page 107 or **step 3**, enter the Fast Path/EP selection code to test the Fast Path/EP ISPF interface. The Fast Path/EP Primary Menu or the Fast Path Analyzer/EP Primary Menu is displayed.
You can use Fast Path/EP external security or Fast Path/EP internal security, but you cannot use both. Fast Path/EP products determine which facility you are using by performing the following sequence of tests:

1. Fast Path/EP products determine whether Fast Path/EP security is active. If security is inactive, Fast Path/EP products allow access to the product component; however, the system security manager can still deny access at the data set level.

2. If security is active, Fast Path/EP products check for the presence of external security components. If the external security components are present, Fast Path/EP products use external security.

3. If the external security components are not present, Fast Path/EP products check for the presence of internal security components. If the internal security components are present, Fast Path/EP products use internal security.

4. If the internal security components are not present, Fast Path/EP products assume that any user with access to the online panels and the VSAM repository can update Fast Path/EP components. Use of Fast Path/EP products and functions during application execution is also unrestricted at this level.

**Implementing external security**

If you implement Fast Path/EP external security, Fast Path/EP products permit only authorized users to access Fast Path/EP product components and functions. When a user attempts to access a Fast Path/EP product component or function, Fast Path/EP external security issues a RACROUTE call to determine the access authority of the user ID that is associated with the ISPF session or application program. Fast Path/EP external security retains the results of the RACROUTE calls for use as long as the current Fast Path/EP ISPF interface session is active or the application is executing. This eliminates the need for repetitive RACROUTE calls while processing display and/or update requests.

The Fast Path/EP RACROUTE requests specify a default resource class name of PFM0, as defined in the PFMXSC06 CSECT in the Fast Path/EP execution library. To facilitate maintenance, Fast Path/EP products use only one resource class name.

The RACROUTE requests also specify an entity name that is associated with a specific function of the Fast Path/EP product. RACROUTE entity names are associated with specific access levels, and they limit access to specific members of the VSAM repository, specific functions of the Fast Path/EP ISPF interface, or participation of Fast Path/EP products in the application execution. The permitted access levels are read and update, depending on the type of operation being performed against the VSAM repository. The RACROUTE entity names and descriptions that are defined within the Fast Path/EP products are listed in Table 32 on page 112.
If the return code from the RACROUTE call indicates that the user is not authorized for the function, Fast Path/EP performs no additional security processing and denies the request for access.

Fast Path/EP products use the PFMXSC06 CSECT to control Fast Path/EP external security processing. The PFMXSC06 CSECT contains a switch to activate Fast Path/EP external security and fields to define the resource class name.

To activate Fast Path/EP external security

1. Modify, assemble, and link-edit the PFMXSC06 CSECT.

   The source for the PFMXSC06 CSECT is in member $PFMXSC6 of the PFPSAMP library. A sample of this CSECT is shown in Figure 8.

   Figure 8 Sample of PFMXSC06 CSECT

   PFMXSC06 CSECT
   DC C’N’ RACF USAGE SWITCH
   DC CL3’ ’ RESERVED
   DC F’4’ LEN OF GENERAL RESOURCE CLASS NAME
   DC CL8’PFM0’ GENERAL RESOURCE CLASS NAME
   DC CL30’ ’ RESERVED
   END

   To modify, assemble, and link-edit the PFMXSC06 CSECT, perform the following steps:

   A. Edit the PFMXSC06 source.

      ■ Change the RACF usage switch to Y to activate Fast Path/EP external security. The usage switch is set to N initially.

      ■ Set the resource class name. The default is PFM0; you can modify it. You can specify up to eight characters for the class name. If the class name is not at least four characters, modify the length and the name.

   B. Assemble and link-edit the PFMXSC06 CSECT.

   C. Place the link-edited, modified PFMXSC06 CSECT into the library that contains the Fast Path/EP execution modules. The PFPSAMP member #PFMSECR contains sample JCL for the assemble and link-edit job.

2. Define Fast Path/EP product resources to the system security manager.
Fast Path/EP external security is designed to work with RACF-compatible system security managers. Because the implementation and usage of system security managers is often unique to the installation, the following procedure provides general guidelines and examples and is based on RACF as the system security manager. The system security administrator at your site is probably the person who will define Fast Path/EP product resources to the system security manager.

**NOTE**
For performance reasons, consider making the PFM0 resource class name a system-level RACLST class.

To define Fast Path/EP product resources to the system security manager, perform the following steps:

A Define the necessary resource class to RACF. The following example shows this definition:

```
PFM0  ICHERCDE CLASS=PFM0,ID=200,
      MAXLNTH=8,FIRST=ALPHANUM,
      OTHER=ANY,OPER=NO,POSIT=19,
      RACLIST=ALLOWED
```

RACLST is allowed (but not used) by Fast Path/EP external security.

B Add the resource class name to the RACF Router table. The following example shows addition of the resource class name to the table:

```
ICHRFRTB CLASS=PFM0,ACTION=RACF
```

C Activate the resource class with the RACF SETROPTS command. The default resource class name referenced in the RACROUTE macro is PFM0. The following example shows the default class name that is used with the RACF SETROPTS command:

```
SETROPTS CLASSACT(PFM0)
```

D Add the resource entity names to RACF. Table 32 lists the resource entity names that you can define and the requested access levels, with a complete description of each. The following example shows addition of the resource entity names to the access list definition:

```
RDEFINE PFM0 PFMGBL UACC(READ)
OWNER(U12345)
```
Define the user access list to RACF. Table 32 lists the resource entity names that you can define for the user access authority classes. The following example shows the user access list definition, where PFMGBL is the entity name:

```
PERMIT PFMGBL CLASS(PFM0) ID(UID1 UID2 UID3 UID4)
       ACCESS(UPDATE)
```

### Individual security entities

Table 32 lists the individual security entities that Fast Path/EP products use in the RACROUTE calls that the products issue when you implement Fast Path/EP external security. If you use Fast Path/EP internal security, you can define these entities in the Fast Path/EP internal security file, in addition to the composite security entities that are described in Table 33 on page 114.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFMCPU</td>
<td>Controls access to the BMC Product Authorization panel (option D on the Fast Path/EP Primary Menu) and the panels it accesses. UPDATE access is required to view these panels and update items with these panels.</td>
</tr>
<tr>
<td>PFMGBL</td>
<td>Controls access to the Fast Path/EP global options. READ access is required to display the global options. UPDATE access is required to update the global options.</td>
</tr>
<tr>
<td>PFMLBF</td>
<td>Controls access to the Fast Path/EP Operating Environment panel (option A on the Fast Path/EP Primary Menu) and the panels it accesses. READ access is required to view these panels and update most items. UPDATE access is required to update the LIBDEF table and LIBDEF variables.</td>
</tr>
<tr>
<td>PFMSEC</td>
<td>Controls access to the Set Security Control panel (option C on the Fast Path/EP Primary Menu). UPDATE access is required to access this panel. This panel is used to control Fast Path/EP internal security.</td>
</tr>
<tr>
<td>PFARPT</td>
<td>Controls Fast Path Analyzer/EP report display. UPDATE access is required to delete reports.</td>
</tr>
<tr>
<td>PFAALO</td>
<td>Controls Fast Path/EP dynamic allocation skeletons. UPDATE access is required to add or delete dynamic allocation skeletons.</td>
</tr>
</tbody>
</table>

### Implementing internal security

If Fast Path/EP external security is not activated, Fast Path/EP products invoke internal security processing. Fast Path/EP internal security is similar to the Security facility that is used with BMC database products for IMS.
Fast Path/EP internal security consists of the following components:

- **internal security file**

  The internal security file is a sequential data set that contains records to define the TSO user IDs of authorized users and their corresponding levels of authorization.

- **internal security module**

  The internal security module is a load module in the Fast Path/EP execution library. It contains the data set name of the internal security file.

---

**NOTE**

If the internal security file does not contain any records, Fast Path/EP internal security is not invoked. Any user who can access the Fast Path/EP ISPF interface can update all Fast Path/EP components.

---

**To implement Fast Path/EP internal security**

1. Create the internal security file.

   A. Allocate the internal security file.

      Use the data set allocate function (ISPF option 3.2) to allocate the file. Define a record length of at least 80 bytes and a fixed-block (FB) record format. Use the RACF-compatible system security manager to secure access to the internal security file.

   B. Add authorization records to the internal security file.

      The internal security file can contain only authorization records and comments. Authorization records begin with a valid TSO user ID or generic user ID in column 1. Comments contain an asterisk (*) in column 1. Figure 9 on page 113 shows sample authorization records.

---

**Figure 9  Sample internal security file records**

<table>
<thead>
<tr>
<th>* THIS IS A SAMPLE SECURITY FILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>*USER ID  AUTHORIZATION</td>
</tr>
<tr>
<td>ENT*     (PFMALL,PFMSEC)</td>
</tr>
<tr>
<td>R*       (PFMALL)</td>
</tr>
<tr>
<td>BA*      (PFMSEC,PFMALL)</td>
</tr>
<tr>
<td>NOP      (PFMALL)</td>
</tr>
<tr>
<td>NTK      (PFMSEC,PFAALO)</td>
</tr>
<tr>
<td>*</td>
</tr>
<tr>
<td>* THIS USER ID IS COMMENTED OUT</td>
</tr>
<tr>
<td>*HGF     (PFMSEC)</td>
</tr>
</tbody>
</table>

---
A generic user ID begins with an alphabetic or national (@, #, $) character, can contain additional alphanumeric and national characters, and ends with an asterisk. Use a generic user ID to authorize any user ID that begins with those characters. For example, if you specify GG*, user IDs GG1, GGU2, GGHL1 (and so on) are authorized.

2 Create the internal security module.

Use the JCL in PFPSAMP member #PFMXSC1 to create the internal security module. This JCL executes program PFMXSC01, which creates the internal security module in the Fast Path/EP execution library. Make all the changes to the JCL indicated in the #PFMXSC1 member.

To create the internal security module, complete the following steps:

A Modify the STEPLIB DD statement to define the Fast Path/EP execution library to contain the internal security module.

B Modify the CNTLDSN DD statement to define the data set name of the internal security file. Program PFMXSC01 checks for valid organization of the security file.

C Submit the modified JCL for execution.

D When the job completes, check the job output for the following message:

```
SECURITY MODULE HAS BEEN INITIALIZED
```

Composite security entities

Table 33 lists the composite security entities that Fast Path/EP products use to secure the Fast Path/EP ISPF interface and the repository against unauthorized updates. These composite security entities include several individual security entities. You can implement Fast Path/EP internal security by using the composite entities listed in Table 33. Use of composite security entities is valid for Fast Path/EP internal security only.

Table 33 Fast Path/EP composite security entities

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFMALL</td>
<td>Authorizes this user ID to use the functions of the Fast Path/EP ISPF interface that are controlled with the PFMJC0, PFMLBE, PFMCPU, and PFMGBL entities. PFMALL does not authorize the user ID to update the name of the internal security file (entity PFMSEC).</td>
</tr>
<tr>
<td>PFAALL</td>
<td>Authorizes this user ID to use all Fast Path Analyzer/EP Series ISPF interface functions and to update all Fast Path/EP Series components. PFAALL does not authorize the user ID to update the name of the internal security file.</td>
</tr>
</tbody>
</table>
Implementing security

Chapter 4 Configuring Fast Path products

Displaying the security definition

When you have implemented Fast Path/EP external or internal security, you can display the security definition. If you have chosen internal security, you can change the security file data set name and the load library name.

To display the security definition


The Set Security Control panel (Figure 10 on page 115) is displayed.

NOTE

To return to the Fast Path/EP Primary Menu without updating the security module, enter the END command.

Figure 10  Set Security Control panel

2. Type or verify values in the following fields:

- **Security File Data Set**

  The name of the current security file that the Fast Path/EP products found when they searched the STEPLIB, JOBLIB, and LNKLST concatenation. This data set contains the user IDs and authorization levels that are defined for Fast Path/EP internal security.

- **Loadlib for Security module**

  The data set name of the load library that will contain the security module.
3 (optional) You can change the name of the internal security file or place the internal security module in a different load library by performing one of the following actions:

- Repeat step 2 on page 114. When the job completes, check the job output for the following message:

```
SECURITY MODULE HAS BEEN MODIFIED
```

- Use the Set Security Control panel if an internal security module exists and your user ID is authorized (with the PFMSEC entity in the internal security file).

4 When the security file has been created, use ISPF Edit to display and modify the records in the internal security file as needed:

- **External Security Definition**

  The current status of the usage switch or the resource class name. To change the displayed values, see step 1 on page 110.

- **RACF Switch On**

  Indicates whether external security is active.

- **RACF Class Len**

  The length of the general resource class name.

- **RACF Class Name**

  Indicates the general resource class name to be used by the Fast Path/EP product when requesting authorization from the external security software. The default resource class name is PFM0.
Installing the Fast Path Indexer/EP Sample Application

The Fast Path Indexer/EP Sample Application (PFX-SAMP) is provided with the Fast Path Indexer/EP product. PFX-SAMP can perform the following tasks:

- verify that Fast Path Indexer/EP is installed correctly on your system
- demonstrate the features and functions of the product
- provide an immediate testing mechanism

Detailed installation instructions are available in Appendix B of the *Fast Path Indexer/EP User Guide*.

As with any IMS application, DBD, PSB, and MFS control blocks must be generated and installed in the IMS control region.

Your systems programmer will need to include application and database definitions in your IMS definition. Application and database definition information is located in member PFXSTG1 of the IVPSRC data set.

The database administrator will use the following data sets to create the PFX sample application:

- **IVPSRC**
  
The IVPSRC data set contains source to create the DFSMDAS, DBD, PSB, MFS, and program source.

- **PFPIVP2**
  
The PFPIVP2 data set contains the IDCAMS REPRO data sets that are used to create the source database.
Configuring Fast Path Online Restructure/EP

The Fast Path Online Restructure/EP product provides an efficient and effective solution for making structural changes to a DEDB without taking the areas offline. This topic explains how to configure Fast Path Online Restructure/EP.

APF authorizing BMC load libraries

The load modules for Fast Path Online Restructure/EP and affiliated BMC products require APF authorization. The easiest way to obtain this authorization is to APF authorize the BMC product load library or libraries.

The name of the load library or libraries is `highLevelQualifier.loadLibQualifier`. The `highLevelQualifier` portion of the name was specified during installation of the products. The `loadLibQualifier` portion of the name depends on an option that was selected during installation as follows:

- If the Merged option was selected during installation, a single library with the qualifier IMLIB contains all product modules. APF authorize this library.
- If the Not Merged option was selected during installation, multiple libraries contain product modules as listed in Table 34. APF authorize each of these libraries. Also ensure that the indicated version of these libraries is installed to support Fast Path Online Restructure/EP.

<table>
<thead>
<tr>
<th>Load library qualifier (Not Merged option)</th>
<th>Usage</th>
<th>Contents</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBULIB</td>
<td>required</td>
<td>load modules for MAXM Reorg products for IMS</td>
<td>4.7.00 or later</td>
</tr>
<tr>
<td>DLALIB</td>
<td>optional but recommended</td>
<td>load modules for DELTA IMS products</td>
<td>6.5.02 or later</td>
</tr>
<tr>
<td>PFPLIB</td>
<td>required</td>
<td>load modules Fast Path/EP products</td>
<td>3.9.01 or later</td>
</tr>
<tr>
<td>ICOLIB</td>
<td>required</td>
<td>common load modules for BMC products for IMS</td>
<td>not applicable</td>
</tr>
</tbody>
</table>
Enabling BMC functions in IMS control regions

For Fast Path Online Restructure/EP (and certain other BMC products for IMS), you must enable BMC functions in IMS control regions.

**NOTE**

Perform this task once for the following BMC products:

- CHANGE RECORDING FACILITY
- DATABASE INTEGRITY PLUS
- Fast Path Online Restructure/EP
- MAXM Reorg *for IMS* with Online/Defrag Feature
- MAXM Reorg/EP *for IMS* with Online/Defrag Feature
- MAXM Reorg/Online *for IMS*

If any of these products is already installed, you do not need to perform this task again.

**Overview**

The technique that you use to enable BMC functions depends on the method that you use to execute DBRC:

- If you are using the standard DBRC procedure, BMC functions are enabled through a new IMS-dependent module, named DBICRY_{vr}. In the module name, _vr_ represents the IMS version. For example, the module name is DBICRYA1 for IMS version 10.1 and DBICRY91 for IMS version 9.1. You create a DBICRY_{vr} module for each IMS release that you are using. The new module resides in the DBULIB or IMLIB library. You also create a new alias for the IMS DSPCRTR0 module. The alias points to the BMC-supplied DBICRT00 module, which resides in the IMS.SDFSRESL library.

You can create the new module and alias by using the usermod method or the manual method.

- If you are using the Base Primitive Environment (BPE) method of executing DBRC, BMC functions are enabled through a user exit that is defined in a DBRC configuration member. The BPE method is available only for IMS version 11 and later systems.

**To create the new module and alias (usermod method)**

**NOTE**

BMC recommends the usermod method because it ensures that the System Modification Program Extended (SMP/E) product links the appropriate modules when you apply future IMS maintenance to the DSPCRTR0 module.
Enabling BMC functions in IMS control regions

1 Edit member DBUDBI3U of the DBUSAMP or IMSAMP library.

DBUDBI3U contains JCL for an SMPE-type usermod to IMS.

2 Following the instructions in the comments for both steps, modify the JCL and submit it for execution.

**To create the module and alias (manual method)**

1 Edit member CRFCLINK of the DBUSAMP or IMSAMP library.

CRFCLINK contains sample JCL for creating and link-editing module DBICRYvr and for creating an alias for module DSPCRTR0 within the DBULIB or IMLIB load library.

2 Choose the DBICRYvr link-edit step for your IMS release.

For example, choose step DBICRYA1 for IMS version 10.1.

3 Following the instructions in the comments, modify the JCL and submit it for execution.

**To define the user exit through BPE**

1 Verify that your DBRC procedure specifies a BPE configuration member (BPECFxxx) as follows:

```plaintext
//IMSDBRCB PROC RGN=OM, 
// BPECFG=BPECFxxx, 
// DBRCINIT=xxx, 
// IMSID=IMSx, 
// PARM1='BPEINIT=DSPBINI0'
```

2 Edit the BPE configuration member (BPECFxxx) of the IMS procedure library (IMS.PROCLIB).

3 In the USER EXIT LIST section, add a line to define the DBRC configuration member as follows:

```plaintext
# USER EXIT LIST 
#---------------------------------------------------------# 
EXITMBR=(EXDRC.xxx, DBRC) 
```

4 Edit the DBRC configuration member (EXDRC.xxx) of the IMS procedure library (IMS.PROCLIB).
Add a line to define the BMC DLIOBPE1 exit as follows:

```cics
EXITDEF(TYPE=RECONIO,EXITS=(DLIOBPE1),COMP=DBRC)
```

## Installing global user exits in a CICS/DBCTL environment

To use Fast Path Online Restructure/EP in a CICS/DBCTL environment, you must modify your CICS/DBCTL system to ensure that CICS transactions are successful during the restructure. BMC provides two CICS global user exits to detect CICS transactions that fail when Fast Path Online Restructure/EP executes a `/DBR` command or swaps database names. The exits place transactions in a WAIT state until the database is restored to active status.

**NOTE**
Perform the following tasks once for the following BMC products for IMS:

- CHANGE RECORDING FACILITY
- Fast Path Online Restructure/EP
- MAXM Reorg/Online for IMS

If any of these products is already installed, you do not need to perform this task again.

The exits support CICS versions 3.3.0 and 4.1.0 and CICS/TS versions 1.1, 1.2, and 1.3. If you have a different version of CICS, contact BMC Customer Support.

### To install the CICS global user exits

1. Copy the following BMC modules from the DBULIB or IMLIB library into a CICS DFHRPL library:

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLIXPRE</td>
<td>global user exit that executes at CICS exit point XDLIPRE</td>
</tr>
<tr>
<td>DLIXPOST</td>
<td>global user exit that executes at CICS exit point XDLIPOST</td>
</tr>
<tr>
<td>DLIXSTA</td>
<td>module that enables both global user exits</td>
</tr>
<tr>
<td>DLIXSTO</td>
<td>module that disables both global user exits</td>
</tr>
</tbody>
</table>

All modules are linked with AMODE31 and RMODE24.
2 Use the resource definition online (RDO) CEDA transaction to define modules DLIXPRE and DLIXPOST to a group that is installed during CICS startup with the following PROGRAM parameters:

- Language=assembler
- Datalocation=any
- EXECKey=cics

3 Use CEDA to define modules DLIXSTA and DLIXSTO to a group that is installed during CICS startup with the following PROGRAM parameters:

- Language=assembler
- Datalocation=any
- EXECKey=user

4 Define transaction codes for modules DLIXSTA and DLIXSTO so that the user exits can be enabled and disabled while CICS is running.

You can specify any TRANIDs (for example, STAX and STOX). Use the following parameters when creating the TRANSACTION entries:

- TASKDATAKey=user
- TASKDataloc=any
- PRIority=254

5 To enable the exits automatically during CICS startup, create a program list table (PLT) program initialization (PI) program entry for DLIXSTA, and reassemble and relink the PLT that was used during CICS initialization.

The following example shows a PLT for DLIXSTA:

```
DFHPLT TYPE=INITIAL,SUFFIX=nn
DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
DFHPLT TYPE=ENTRY,PROGRAM=DFHDBCON
DFHPLT TYPE=ENTRY,PROGRAM=DLIXSTA
DFHPLT TYPE=FINAL
```
Enabling dynamic startup of IFP regions

NOTE
Module DLIXSTA issues the following message to the CICS message log:

BMC900001 XDLIPRE AND XDLIPOST GLOBAL USER EXITS ARE ENABLED

If an error occurs during execution of module DLIXSTA, the module issues the following message:

BMC900001 ENABLE EXIT exit FAILED. EIB RC = eib rc

In this message, exit is XDLIPRE or XDLIPOST, and eib rc is the enable EIB and return code.

6 If you are already using CICS global user exits at exit points XDLIPRE or XDLIPOST, consider the order in which the programs are invoked.

When more than one program is associated with an exit point, CICS invokes the programs serially in the order that they were enabled. Ensure that the programs are invoked in the intended order.

Enabling dynamic startup of IFP regions

Fast Path Online Restructure/EP uses dynamically started tasks to run BMC interactive Fast Path (IFP) external address spaces (regions) from Prepare and Restructure functions. These tasks require access to module PC$XAINI for successful execution. Use one of the following options to ensure that the module is available to the tasks:

- Authorize Fast Path Online Restructure/EP to add module PC$XAINI to the link pack area (LPA) dynamically.

  BMC recommends this option for ease of implementation.

- Create a new started task procedure, and ensure that module PC$XAINI is available in the STEPLIB of the started task.

To authorize Fast Path Online Restructure/EP to add the module to the LPA

Contact your system security group or specialist to allow authorization for Fast Path Online Restructure/EP to add module PC$XAINI to the LPA dynamically. The steps to allow authorization depend on your organization’s security package. For example, the following RACF FACILITY class resource must be defined with UPDATE authority in a RACF environment:

CSVDYLPA.ADD.PC$XAINI
To create a new started task procedure to provide access to the module

If Fast Path Online Restructure/EP is not authorized to add module PC$XAINI to the LPA dynamically, module PC$XAINI must be available in the STEPLIB of the started task.

**NOTE**

By default, Fast Path Online Restructure/EP uses member IEESYSAS of the system procedure library (PROCLIB). However, the IEESYSAS procedure normally does not contain a STEPLIB DD statement. Editing this procedure to add a STEPLIB DD statement usually is not appropriate because many different processes in the environment are using the procedure. Therefore, you create a new procedure member in a system PROCLIB, and users modify their Fast Path Online Restructure/EP jobs to use the new member instead of IEESYSAS.

1. Create a new member in a system PROCLIB by making a copy of member IEESYSAS.

   Member IEESYSAS is usually found in the SYS1.PROCLIB library. The name of the new member can be any unique procedure name that conforms to your organization’s standards for procedure names.

2. In the new PROCLIB member, add a STEPLIB DD statement that includes the APF-authorized library containing module PC$XAINI.

   If you chose the Merged installation option, the IMLIB library contains the member. If you chose the Not Merged option, the PFPLIB library contains the member.

   To use the newly created PROCLIB member, Fast Path Online Restructure/EP Prepare and Restructure jobs must specify the member name as the value of the IFP_PROCNAME keyword in the PFPOPTS data set. For more information, see “Specifying PFPOPTS options” on page 125.

### Authorizing IFP jobs to be scheduled

Fast Path Online Restructure/EP uses dynamically started tasks to run IFP regions from Prepare and Restructure functions. The default is to use the same job name for IFP regions as is used for the Prepare and Restructure job. Fast Path Online Restructure/EP provides an option that specifies the job name for IFP regions.

Your organization might have security access facility (SAF) rules for started tasks. These rules might be based on job names and allow only authorized job names to run as started tasks. If your organization has implemented rules for started tasks, contact your system security group or specialist to define an authorized job name for IFP region jobs to be scheduled.
To use the authorized job name, Fast Path Online Restructure/EP Prepare and Restructure jobs must specify the authorized job name as the value of the IFP_JOBNAME keyword in the PFPOPTS data set. For more information, see “Specifying PFPOPTS options” on page 125

Specifying PFPOPTS options

Specifying PFPOPTS options

Fast Path Online Restructure/EP uses dynamically started tasks to run IFP regions from Prepare and Restructure functions. BMC provides the following default values for starting an IFP task:

- The task uses member IEESYSAS of the system procedure library (PROCLIB).
- The task has the same job name as the Fast Path Online Restructure/EP job.
- The task uses the same accounting (ACCT) information as the Fast Path Online Restructure/EP job.
- The Fast Path Online Restructure/EP job starts up to four IFP regions.

To modify the default option values to start these tasks, specify the appropriate keyword in the PFPOPTS data set. The following example shows all keywords that you can use:

```//PFPOPTS DD *
OPTIONS
  IFP_PROCNAME=newName,
  IFP_JOBNAME=authorizedName,
  IFP_ACCOUNT=accountInformation,
  IFP_LIMIT=limit
END
/*
```

For more information about specifying the PFPOPTS statement and the OPTIONS command and keywords, see the Fast Path/EP Series Reference Manual.

To specify PFPOPTS options

1. In the JCL to execute a Fast Path Online Restructure/EP Prepare and Restructure function, add a PFPOPTS DD statement or identify an external data set (or PDS member).

   The statement can define an in-stream data set or identify an external data set.
Providing access to the SYS1.CSSLIB library

2 In the PFPOPTS data set, specify the OPTIONS command.

3 Specify one or more keywords for the OPTIONS command as follows:

- If Fast Path Online Restructure/EP is not authorized to add module PC$XAINI to the LPA dynamically, specify the IFP_PROCNAME keyword to identify the name of a procedure that provides access to this module. For more information, see “Enabling dynamic startup of IFP regions” on page 123.

- If tasks are not authorized to be started with the job name of the Fast Path Online Restructure/EP job, specify the IFP_JOBNAME keyword to identify the authorized job name. For more information, see “Authorizing IFP jobs to be scheduled” on page 124.

- If you want to use ACCT information that is different from the ACCT information for the Fast Path Online Restructure/EP job, specify the IFP_ACCOUNT keyword.

- If you want to allow the Fast Path Online Restructure/EP job to attach more or less than 4 concurrent IFP regions, specify the IFP_LIMIT keyword. The value can be an integer from 1 through 256.

4 To indicate the end of options in the PFPOPTS data set, you can specify the END command.

Providing access to the SYS1.CSSLIB library

Fast Path Online Restructure/EP requires access to the z/OS name service table that is contained in the SYS1.CSSLIB library. You can provide access to the library by using one of the following techniques:

- Add the SYS1.CSSLIB library to the system LNKLST. BMC recommends this technique for ease of implementation and maintenance.

**NOTE**

Perform this task once for the following BMC products:

- CHANGE RECORDING FACILITY
- Fast Path Online Restructure/EP
- FAST REORG FACILITY/EP
- MAXM Reorg/EP for IMS
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/Online for IMS

If any of these products is already installed, you do not need to perform this task again.
Installing BMC usermods for the IBM SDEP Scan and Delete utilities

Fast Path Online Restructure/EP provides usermods for the following IBM modules:

- module DBFUMSC0, which is executed during SDEP Scan utility processing
- module DBFUMDL0, which is executed during SDEP Delete utility processing

Fast Path Online Restructure/EP uses the IBM Data Capture facility and does not detect SDEP segments that are deleted with the IBM SDEP Delete utility. The BMC usermods prevent the IBM SDEP Scan and Delete utilities from processing when the Restructure function is running, thereby preventing duplicate processing of SDEPs in the shadow areas.

**NOTE**

Installing the usermods is optional but recommended. If the usermods are not installed, duplicate processing could occur for SDEPs in shadow areas. Most application programs cannot handle duplicate SDEP segment data in their processing.

**To install BMC usermods**

1. Edit members PCIUUDL0 and PCIUUSC0 of the PFPSAMP or IMSAMP library.

2. Modify the usermods in each of these members to apply to your installed version of IMS as follows:

   A. Edit the IMS FMID to reflect the appropriate value for your IMS version:

<table>
<thead>
<tr>
<th>IMS version</th>
<th>FMID</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>HMK9900</td>
</tr>
<tr>
<td>10.1</td>
<td>HMK1010</td>
</tr>
<tr>
<td>11.1</td>
<td>HMK1100</td>
</tr>
</tbody>
</table>

   B. Query SMP/E to identify the last RMID for IBM modules DBFUMDL0 and DBFUMSC0, and add a PRE (SYSMODID) for any PTF that is specified in the RMID.
Adding BMC load libraries to IMS regions

For execution of Fast Path Online Restructure/EP and affiliated BMC products, certain BMC load modules must be loaded in IMS control, DLISAS, and DBRC regions. If the BMC load library or libraries have not already been added to IMS region STEPLIB concatenations in the required order, add the library or libraries as indicated in this topic.

**To add BMC load libraries to IMS regions**

1. Add BMC load libraries to the IMS control region in the following order:

<table>
<thead>
<tr>
<th>Library</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICOLIB or IMLIB</td>
<td>To use the BMC version of module DFSMVRC0, this library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>DBULIB or IMLIB</td>
<td>To use the BMC version of module DSPCRTR0, this library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>DLALIB or IMLIB</td>
<td>To use DELTA IMS product functions, this library must be listed before the IMS.SDFSRESL library.</td>
</tr>
</tbody>
</table>
Evaluate the value of the XCF MAXMEMBER parameter

When using data-sharing IMS systems with the coupling system (XCF), evaluate the existing value of the XCF MAXMEMBER parameter. This parameter controls the maximum number of XCF group members that can be created. The value must be large enough to process a Restructure job that restructures a large number of areas. Fast Path Online Restructure/EP creates the following XCF group members:

- one for each IMS system
- one for each Restructure job
- one for each Fast Path area
- one for each IMS Fast Path (IFP); the default number of IFPs for a Fast Path Online Restructure/EP job is 4

### Library Purpose

<table>
<thead>
<tr>
<th>Library</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFPLIB or IMLIB</td>
<td>To use Fast Path Indexer/EP and Fast Path Online Extend or Reorg functions, this library must be listed before the IMS.SDFSRESL library. (These functions are not needed for Fast Path Online Restructure/EP.)</td>
</tr>
<tr>
<td>IMS.SDFSRESL</td>
<td>This library contains IMS load modules.</td>
</tr>
</tbody>
</table>

2 In the DLISAS region, verify that load libraries are concatenated in the following order:

<table>
<thead>
<tr>
<th>Library</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICOLIB or IMLIB</td>
<td>To use the BMC version of module DFSMVRC0, this library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>DLALIB or IMLIB</td>
<td>To use DELTA IMS product functions, this library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>PFPLIB or IMLIB</td>
<td>To use Fast Path Indexer/EP and Fast Path Online Extend or Reorg functions, this library must be listed before the IMS.SDFSRESL library. (These functions are not needed for Fast Path Online Restructure/EP.)</td>
</tr>
<tr>
<td>IMS.SDFSRESL</td>
<td>This library contains IMS load modules.</td>
</tr>
</tbody>
</table>

3 In the DBRC region, verify that load libraries are concatenated in the following order:

<table>
<thead>
<tr>
<th>Library</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICOLIB or IMLIB</td>
<td>This library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>DBULIB or IMLIB</td>
<td>This library must be listed before the IMS.SDFSRESL library.</td>
</tr>
<tr>
<td>IMS.SDFSRESL</td>
<td>This library contains IMS load modules.</td>
</tr>
</tbody>
</table>
For example, if the Restructure job is restructuring 700 areas, the MAXMEMBER value must be a minimum of 706.

If the MAXMEMBER value is not large enough, you might receive the following message:

BMC115102C XCF function IXCJOIN in error. Return code \text{xx}
Reason code \text{xx}

\text{TIP}
To view the XCF MAXMEMBER value, issue the following command:

/D XCF,COUPLE

In the output, search for MAXMEMBER.

\section*{Configuring the Fast Path Recovery Utility}

The procedures that are presented in this section apply to the Fast Path Recovery Utility. To configure the Fast Path Recovery Utility, perform the following steps:

1 \textit{(recommended)} APF authorize the FRU load library.

The FRU load modules must reside in an APF-authorized library when FRU is processing block level shared (BLS) databases. You can either APF authorize the new FRU load library or copy the FRU load modules to an existing APF-authorized library.

2 \textit{(required)} Review the FRU maintenance procedures.

The TSSAFR1x module is extremely sensitive to changes in the log record formats. Each time that you install FRU or apply maintenance for FRU or IMS PUT levels, you must reassemble TSSAFR1x, TSSAFR7, TSSAFR8, and TSSAFR9. You can use any of several methods to accomplish this task:

- You can edit and submit members FR1XASM and FR7XASM of the sample library. The name of the sample library is FPSSAMP (if you selected separate libraries for the installation) or IMSAMP (if you selected merged libraries for the installation).

- You can use the $C30DOPT customization job and run the FRU steps to reassemble and link the modules.

For more information, review the maintenance procedures in the \emph{Fast Path Recovery Utility User Reference}. 
3 (required) Authorize Fast Path Recovery Utility on your CPUs.

All product trials require a temporary password. Once your company licenses this product, you will receive a password to change the status of the product from trial to permanent.

4 (optional) Test FRU maintenance.

For a testing scenario, see the Fast Path Recovery Utility User Reference.

Configuring the Fast Path Restart Control Facility

The procedures that are presented in this section apply to the Fast Path Restart Control Facility (RCF). To configure RCF, you must perform initial setup steps for each z/OS environment and for each IMS system in which RCF is executed. After this initial setup, you must perform a step when you apply IMS or RCF maintenance.

NOTE

The name of the sample library depends on an option that you chose during product installation:

- If you chose to create separate product libraries, the sample library is named FPSSAMP.
- If you chose to create merged product libraries, the sample library is named IMSAMP.

Initial setup for each z/OS environment

Perform the following initial setup steps once for each z/OS environment in which RCF is executed. When you install RCF maintenance, you do not need to perform these steps again unless otherwise indicated in the release notes.

1 (required) APF authorize the RCF load library.

The RCF load modules must reside in an APF-authorized library. You can either APF authorize the new RCF load library or copy the RCF load modules to an existing APF-authorized library.

2 (required) Move the TSSUMPF module into the system LINKLIST load library that contains the Message Processing Facility (MPF) routines in your environment.
To perform this task, tailor and execute the JCL in one of the following members of the sample library:

- The TSSMPFCP member contains JCL to copy the module by using the COPYMOD mode of the IEBCOPY utility.
- The TSSMPFLK member contains JCL to link-edit the module.

3 (required) Identify the TSSUMPF module to MPF.

Add the following control statement to the current MPFLSTxx member in the SYS1.PARMLIB data set:

```
DFS810A,SUP(NO),USEREXIT(TSSUMPF)
```

For a sample, see member MPFLSTxx of the sample library.

4 (required) Activate the TSSUMPF module by entering the following commands on the z/OS console:

- Enter the following command to refresh the system LINKLIST lookaside list:
  ```
  F LLA,REFRESH
  ```

- Enter the following command to activate the MPFLSTxx member that contains the control statement for the TSSUMPF module:
  ```
  T MPF=xx
  ```

5 (required) To enable RCF execution on your CPUs, install product authorization passwords.

All product trials require a temporary password. When your company licenses the product, you will receive a password to change the status of the product from trial to permanent status.
Initial setup for each IMS system

Perform the following initial setup steps once for each IMS system in which RCF is executed. When you install RCF maintenance, you do not need to perform most of these steps (except step 1) again unless otherwise indicated in the release notes.

1 *(required)* Link-edit the TSSRRA30 module with modules from the IMS RESLIB.

---

**NOTE**

You must perform this step when any of the following events occurs:

- You install a new program update tape (PUT) level for IMS.
- You apply IMS maintenance to the DFSRRA30 module.
- You install a new RCF maintenance level.

If you are running multiple release levels of IMS, you must link-edit TSSRRA30 for each release level and keep them in separate libraries.

The TSSRA3LK member of the sample library contains JCL that you can tailor and execute to link-edit the TSSRRA30 module with the current DFSRRA30 modules in the IMS RESLIB.

For more information, review the maintenance procedures in the *Fast Path Restart Control Facility Reference Manual*.

2 *(required)* Generate the RCFALLOC module.

The RCFALLOC module provides information about your IMS system data sets. To assemble and link-edit this module, tailor and execute the JCL in the #RCFJCL member of the sample library.

For more information about the keywords in this member, see the *Fast Path Restart Control Facility Reference Manual*.

3 *(required)* Tailor skeleton JCL members.

---

**NOTE**

This step is required if you use the automatic Fast Recovery invocation feature of RCF (TFRU=Y) or the JCLCOPY feature.

To prevent future maintenance from regressing your changes, first copy the members that are listed in Table 35 from the sample library to a separate JCL PDS library. Then tailor the JCL members to your organization’s standards. If you are not using LINKLIST, ensure that the STEPLIB DD statement in the TSSRCF2 job step in the RCFFRU member specifies the APF-authorized load library.
4 (required) Tailor the IMS control region JCL procedure.

Using the JCL in the #RCFPROC member of the sample library as a guideline, tailor your IMS system procedure as follows:

A (required) Add the TRCF and TFRU parameters to the PROC statement.

B (required) Add the RCF job step to the system procedure. Ensure that the following statements are included as required:

- (required) The STEPLIB DD statement specifies the APF-authorized execution library and the RESLIB data set for the IMS system. If the dynamic allocation (DFSMDA) modules for the RECON and WADS data sets are not kept in RESLIB, the DFSMDA load library must also be concatenated.

<table>
<thead>
<tr>
<th>Member</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCFBBO</td>
<td>perform batch back-out JCL</td>
</tr>
<tr>
<td>RCFDDBDR0</td>
<td>perform MSDB recovery JCL</td>
</tr>
<tr>
<td>RCFFRU</td>
<td>copy RCF JCL</td>
</tr>
<tr>
<td>RCFULTR0</td>
<td>close log JCL</td>
</tr>
</tbody>
</table>

Table 35  Fast Path Restart Control Facility skeleton JCL members

NOTE

All data sets in the STEPLIB concatenation must be APF authorized.

- (required for IMS systems that have main storage databases) The xxxxDUMP DD statement specifies the IMS MSDBDUMP data set for the IMS system.

- (required for IMS systems that have main storage databases) The BKUPCP1 and BKUPCP2 DD statements specify the data sets containing backups of the IMS MSDBCP1/MSDBC3 and MSDBCP2/MSDBC4 data sets, respectively.

NOTE

If your site does not currently back up the MSDB checkpoint data sets, create these backup data sets before starting IMS with the tailored system procedure.

- (required) The FRUPGMLD DD statement specifies the load library containing the FRU programs (if TFRU=Y is being used) and the RESLIB data set for the IMS system. If the dynamic allocation (DFSMDA) modules for the RECON and WADS data sets are not kept in RESLIB, the DFSMDA load library must also be concatenated in this statement.
- *(required if you use TFRU=Y or the JCLCOPY feature)* The RCFJCL DD statement specifies the library containing the RCFFRU, RCFDBDR0, RCFULTR0, and RCFBBO skeleton JCL members.

- *(required if you use the JCLCOPY feature)* The JCLCOPY DD statement specifies the library into which JCL images are to be stored.

**C** *(required for IMS systems that have main storage databases)* Add the MSDB-related data set backup job steps. Ensure that the names of the data sets that will contain backups of the MSDBCP1/MSDBCP3 and MSDBCP2/MSDBCP4 data sets match the data set names that are specified on the BKUPCP1 and BKUPCP2 DD statements in the RCF job step.
Initial setup for each IMS system
Configuring MAXM products for IMS

This chapter describes tasks for configuring MAXM and other database reorganization products for IMS. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

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- FAST REORG FACILITY for IMS configuration worksheet ............................. 142
- FAST REORG FACILITY / EP for IMS configuration worksheet ....................... 143
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Overview

You should complete the configuration tasks that are described in this chapter after you install and customize the product libraries through the Installation System.

**NOTE**

For information about installing and customizing the product libraries, see the installation guide.

Table 36 lists each product that is covered in this chapter; the three-character product code; the functions, features, utilities, and components that are included with the product; and the location of the product configuration worksheet. For more information about the functions, features, utilities, and components, see the technical documentation that supports the product.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
<th>Function, feature, or utility</th>
<th>Worksheet</th>
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</thead>
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<td>MAXM Reorg for IMS</td>
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<td>■ Prefix Resolution and Update function</td>
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<td>■ Reload function</td>
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<td>■ Reorg function</td>
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<td>■ Unload function</td>
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<td>MAXM Reorg for IMS with Online/Defrag Feature</td>
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<td>■ Index Build function</td>
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<td>■ Unload function</td>
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<td>Product</td>
<td>Product code</td>
<td>Function, feature, or utility</td>
<td>Worksheet</td>
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<td>MAXM Reorg/EP for IMS</td>
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<td>■ Image Copy function under Reorg</td>
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<td>■ Reload extended performance function</td>
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<td>■ Image Copy function under Reorg</td>
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<td>■ Index Build extended performance function</td>
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<td>■ Online/Defrag function</td>
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<td>■ Prefix Resolution and Update function</td>
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<td>■ Reload extended performance function</td>
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<td>■ Reorg extended performance function</td>
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<td></td>
<td>■ SNAPSHOT UPGRADE FEATURE</td>
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<td></td>
<td>■ Unload extended performance function</td>
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<td></td>
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<td>■ Unload extended performance function</td>
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<td>MAXM Reorg/Online for IMS</td>
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<td>■ Cross-System Image Manager</td>
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<td>■ DBA Toolkit</td>
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<td></td>
<td>■ Image Copy function under Reorg</td>
<td></td>
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<td>■ Index Build extended performance function</td>
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<td>■ Online Reorg function</td>
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<td>■ Online/Defrag function</td>
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<td>■ Reload extended performance function</td>
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<td>■ Reorg extended performance function</td>
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<td></td>
<td>■ SNAPSHOT UPGRADE FEATURE</td>
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<td></td>
<td>■ Unload extended performance function</td>
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<td>PREFIX RESOLUTION PLUS</td>
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<tr>
<td>SECONDARY INDEX UTILITY/EP</td>
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</tr>
<tr>
<td>UNLOAD PLUS for IMS</td>
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<tr>
<td>UNLOAD PLUS/EP for IMS</td>
<td>HUL</td>
<td>Unload extended performance function</td>
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</tr>
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</table>
CHANGE RECORDING FACILITY for IMS configuration worksheet

Table 37 is a worksheet that lists the steps you must complete to configure CHANGE RECORDING FACILITY for IMS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
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</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
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</tr>
<tr>
<td></td>
<td>2. Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>3. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Provide access to the ISPF interface.</td>
<td></td>
</tr>
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<td></td>
<td>Providing access to the ISPF interface</td>
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<td></td>
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<td></td>
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<td>Enabling BMC functions in IMS control regions</td>
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<td>Preparing the IMS control region</td>
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</tbody>
</table>
Table 38 is a worksheet that lists the steps you must complete to configure FAST REORG FACILITY for IMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
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<tr>
<td>Obtaining APF authorization</td>
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</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
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<tr>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
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<tr>
<td>3. Configure the Reorg function.</td>
<td></td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
FAST REORG FACILITY/EP for IMS configuration worksheet

Table 39 is a worksheet that lists the steps you must complete to configure FAST REORG FACILITY/EP for IMS.

Table 39 Configuring FAST REORG FACILITY/EP worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>3. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
LOADPLUS for IMS configuration worksheet

Table 40 is a worksheet that lists the steps you must complete to configure LOADPLUS for IMS.

Table 40 Configuring LOADPLUS for IMS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Configure the Reload function.</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
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</table>
LOADPLUS/EP for IMS configuration worksheet

Table 41 is a worksheet that lists the steps you must complete to configure LOADPLUS/EP for IMS.

Table 41 Configuring LOADPLUS/EP for IMS worksheet

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>3. Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
MAXM Database Advisor for IMS configuration worksheet

Table 42 is a worksheet that lists the steps you must complete to configure MAXM Database Advisor for IMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
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<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>3. Provide access to the ISPF interface through a LIBDEF CLIST or through a TSO logon procedure.</td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td>4. Configure components for console-enablement.</td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
**MAXM Reorg for IMS configuration worksheet**

**Table 43** is a worksheet that lists the steps you must complete to configure MAXM Reorg for IMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>160</td>
</tr>
<tr>
<td>-</td>
<td>Obtaining APF authorization</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. <strong>(optional)</strong></td>
<td>If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>164</td>
</tr>
<tr>
<td>-</td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>3.</td>
<td>Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td>-</td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td>4.</td>
<td>Configure the Index Build, Prefix Resolution and Update, Reload, Reorg, and Unload functions.</td>
<td>168</td>
</tr>
<tr>
<td>-</td>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td>-</td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>-</td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td>-</td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td>5. <strong>(optional)</strong></td>
<td>Configure components for console-enablement.</td>
<td>197</td>
</tr>
<tr>
<td>-</td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
Table 44 is a worksheet that lists the steps you must complete to configure MAXM Reorg for IMS with Online/Defrag Feature.

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>160</td>
</tr>
<tr>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>164</td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>3. Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td>4. Configure the Index Build, Prefix Resolution and Update, Reload, Reorg, and Unload functions.</td>
<td>168</td>
</tr>
<tr>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td>5. Configure the Online/Defrag function.</td>
<td>179</td>
</tr>
<tr>
<td>Assembling/linking the DLIPARM global option module</td>
<td>179</td>
</tr>
<tr>
<td>Downloading the MAXM load library to an APF-authorized library</td>
<td>179</td>
</tr>
<tr>
<td>Enabling BMC functions in IMS control regions</td>
<td>180</td>
</tr>
<tr>
<td>Including the BMC load library in IMS online systems</td>
<td>180</td>
</tr>
<tr>
<td>Establishing BMP-PSB databases</td>
<td>180</td>
</tr>
<tr>
<td>Recycling IMS systems</td>
<td>181</td>
</tr>
<tr>
<td>Modifying DBUHSRxx sample JCL members</td>
<td>181</td>
</tr>
<tr>
<td>6. (optional) Configure components for console-enablement.</td>
<td>197</td>
</tr>
<tr>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
MAXM Reorg/EP for IMS configuration worksheet

Table 45 is a worksheet that lists the steps you must complete to configure MAXM Reorg/EP for IMS.

### Table 45  Configuring MAXM Reorg/EP for IMS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
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<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>3. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Provide access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Implementing snapshot technology</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
Table 46 is a worksheet that lists the steps you must complete to configure MAXM Reorg/EP for IMS with Online/Defrag Feature.

### Table 46 Configuring MAXM Reorg/EP for IMS with Online/Defrag Feature worksheet (part 1 of 2)

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>3. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Implementing snapshot technology</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
<td>172</td>
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</table>
Table 46  Configuring MAXM Reorg/EP for IMS with Online/Defrag Feature worksheet (part 2 of 2)

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<tbody>
<tr>
<td></td>
<td>6. Configure the Online/Defrag function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIPARM global option module</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Downloading the MAXM load library to an APF-authorized library</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Enabling BMC functions in IMS control regions</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Including the BMC load library in IMS online systems</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Establishing BMP-PSB databases</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Recycling IMS systems</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>Modifying DBUHSRxx sample JCL members</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>7. (optional) Configure components for console-enablement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
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</table>
### MAXM Reorg/EP Express for IMS configuration worksheet

Table 47 is a worksheet that lists the steps you must complete to configure MAXM Reorg/EP Express for IMS.

#### Table 47 Configuring MAXM Reorg/EP Express for IMS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
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<tbody>
<tr>
<td>1.</td>
<td>Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
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<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2.</td>
<td>Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td>3. (optional)</td>
<td>If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>4.</td>
<td>Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Configuring components for console-enablement</td>
<td>197</td>
</tr>
</tbody>
</table>
Table 48 is a worksheet that lists the steps you must complete to configure MAXM Reorg/Online for IMS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. Include the SYS1.CSSLIB library in the system LNKLST concatenation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Including SYS1.CSSLIB in the LNKLST</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>3. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Provide access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Implementing snapshot technology</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>6. Configure the Online Reorg function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Registering the Online Reorg function as a global enqueue</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Enabling BMC functions in IMS control regions</td>
<td>173</td>
</tr>
<tr>
<td></td>
<td>Preparing the IMS control region</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>Reassembling/linking the DLIGSET0 module</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>Implementing snapshot technology</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>Implementing the Online Reorg function on a CICS/DBCTL environment</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
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</tr>
</tbody>
</table>
### Configuring MAXM Reorg/Online for IMS worksheet (part 2 of 2)

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<thead>
<tr>
<th>Step</th>
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<tbody>
<tr>
<td>7. Configure the Online/Defrag function.</td>
<td></td>
</tr>
<tr>
<td>Assembling/linking the DLIPARM global option module</td>
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</tr>
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<td>Downloading the MAXM load library to an APF-authorized library</td>
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<td>Enabling BMC functions in IMS control regions</td>
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<td>Including the BMC load library in IMS online systems</td>
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<td>Establishing BMP-PSB databases</td>
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<td>Recycling IMS systems</td>
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<td>Modifying DBUHSRxx sample JCL members</td>
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<td>8. (optional) Configure components for console-enablement.</td>
<td></td>
</tr>
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<td>Configuring components for console-enablement</td>
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</tbody>
</table>
Table 49 is a worksheet that lists the steps you must complete to configure PREFIX RESOLUTION PLUS.

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<tr>
<th>Done</th>
<th>Step</th>
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<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
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</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. (optional) If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>3. Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
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<td>4. Configure the Prefix Resolution and Update function.</td>
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</tr>
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<td></td>
<td>Providing access to the BMC Work File Generator</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
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<td>Modifying or creating execution JCL</td>
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</tr>
</tbody>
</table>
Table 50 is a worksheet that lists the steps you must complete to configure SECONDARY INDEX UTILITY.

### Table 50  Configuring SECONDARY INDEX UTILITY worksheet

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td>3. Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td>4. Configure the Index Build function.</td>
<td></td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
Table 51 is a worksheet that lists the steps you must complete to configure SECONDARY INDEX UTILITY/EP.

Table 51  Configuring SECONDARY INDEX UTILITY/EP worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>3. Provide access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Configure the Index Build extended performance function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Configuring the Cross-System Image Manager</td>
<td>172</td>
</tr>
</tbody>
</table>
UNLOAD PLUS for IMS configuration worksheet

Table 52 is a worksheet that lists the steps you must complete to configure UNLOAD PLUS for IMS.

Table 52 Configuring UNLOAD PLUS for IMS worksheet

<table>
<thead>
<tr>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td>160</td>
</tr>
<tr>
<td>Obtaining APF authorization</td>
<td></td>
</tr>
<tr>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td>164</td>
</tr>
<tr>
<td>Handling PDX enqueues</td>
<td></td>
</tr>
<tr>
<td>3. Provide access to the ISPF interface.</td>
<td>164</td>
</tr>
<tr>
<td>Providing access to the ISPF interface</td>
<td></td>
</tr>
<tr>
<td>4. Configure the Unload function.</td>
<td>167</td>
</tr>
<tr>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td></td>
</tr>
<tr>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
UNLOAD PLUS/EP for IMS configuration worksheet

Table 53 is a worksheet that lists the steps you must complete to configure UNLOAD PLUS/EP for IMS.

Table 53  Configuring UNLOAD PLUS/EP for IMS worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Obtain APF authorization through an APF-authorized library or through the DBUSS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtaining APF authorization</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Performing Database Utilities Subsystem tasks</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>2. <em>(optional)</em> If you are using a PDX data set in a multiple-CPU environment, register PDX as a global enqueue in order to avoid enqueue problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling PDX enqueues</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>3. Provide access to the ISPF interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Providing access to the ISPF interface</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>4. Configure the Unload function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembling/linking the DLIGSET0 global options module</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Changing the default global options</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Handling the DFSPR000 module</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Modifying or creating execution JCL</td>
<td>170</td>
</tr>
</tbody>
</table>
Obtaining APF authorization

This task applies to multiple MAXM and database reorganization products.

Many BMC database products for IMS require APF authorization. All products can obtain the necessary authorization if the product load module libraries are authorized (hlq.DBULIB or hlq.IMLIB from the distribution tape or ESD image). If the product load module libraries are not authorized, some products can obtain authorization by using the Database Utilities Subsystem (DBUSS). The DBUSS also provides other services for some Database Utilities products. For more information about the DBUSS, see Chapter 13, “Administering and operating the DBUSS.”

BMC recommends that you APF authorize the product load module libraries. This task is required for some products, and it is the easiest (and most trouble-free) way to obtain authorization for other products and for the DBUSS itself.

Table 54 lists each product that is covered in this chapter, states their APF-authorization requirements, and states whether authorization can be obtained through the DBUSS. Determine whether the products you are installing require authorization and if so, whether you can use the DBUSS for this purpose.

Table 54  APF-authorization requirements of database products for IMS (part 1 of 2)

<table>
<thead>
<tr>
<th>Solution or product</th>
<th>Auth required?</th>
<th>Auth with DBUSS?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE RECORDING FACILITY for IMS</td>
<td>yes</td>
<td>no</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
<tr>
<td>FAST REORG FACILITY</td>
<td>no</td>
<td>N/A</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>FAST REORG FACILITY/EP</td>
<td>yes</td>
<td>yes</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
<tr>
<td>LOADPLUS for IMS</td>
<td>no</td>
<td>N/A</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>LOADPLUS/EP for IMS</td>
<td>yes</td>
<td>yes</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Database Advisor for IMS</td>
<td>yes</td>
<td>partial</td>
<td>The Database Management console requires authorization.</td>
</tr>
<tr>
<td>MAXM Reorg for IMS</td>
<td>yes</td>
<td>no</td>
<td>The Database Management console requires authorization.</td>
</tr>
<tr>
<td>MAXM Reorg for IMS with Online/Defrag Feature</td>
<td>yes</td>
<td>no</td>
<td>The Online/Defrag feature and the Database Management console require authorization.</td>
</tr>
<tr>
<td>MAXM Reorg/EP for IMS</td>
<td>yes</td>
<td>partial</td>
<td>All functions require authorization, but most functions can obtain it through the DBUSS. Authorization for the Database Management console cannot be obtained through the DBUSS.</td>
</tr>
</tbody>
</table>
You should APF authorize the product load module library (hlq.DBUMLIB or hlq.IMMLIB on the distribution tape or ESD image) if any of the following conditions is true:

- One or more products that you are installing require APF authorization and the DBUSS cannot be used to obtain this authorization or you do not want to use the DBUSS for this purpose.

- You want to use the DBUSS (to obtain authorization or for other purposes), but you do not want to maintain the DBUSS modules in a separate APF-authorized library.

The cataloged procedures for the BMCP subsystem, the BCSS/CPC subsystem, the ADV server address space, and the UIM Server address space require the STEPLIB to be APF authorized. In addition to the product load module library, the BMCP load library (hlq.BPS.LOAD) and the UIM load library (hlq.UIM.LOAD) must be APF authorized.
Performing Database Utilities Subsystem tasks

This task applies to multiple MAXM and database reorganization products.

This section describes the tasks for configuring the Database Utilities Subsystem (DBUSS). If you do not plan to use the DBUSS for APF authorization or other purposes, you can skip these steps.

To determine whether you can use the DBUSS to APF authorize the solutions and products that you are installing, see “Obtaining APF authorization” on page 160.

If you plan to use the DBUSS, perform the following steps:

1. APF authorize the library that contains the DBUSS modules that require authorization.

You must APF authorize certain DBUSS modules. You can leave these modules in the product load module library (hlq:DBULIB or hlq.IMLIB on the distribution tape or ESD image) and authorize this library, or you can copy these modules to a separate authorized library. If you provide a separate library name, the Installation System generates the JCL to load the required modules into the authorized library automatically. For information about the modules that you must APF authorize, see Table 76 on page 383.

The Installation System can use an existing APF library or a new one. A system IPL is not necessary if you use an existing library. To create a new APF-authorized library, see your operating system programmer, or add the data set to the APF-authorized list in member IEAAPFnn of SYS1.PARMLIB and perform a system IPL.
2 Execute the DBUSS.

You can execute the DBUSS as a job or as a started task. The Installation System creates JCL to execute the DBUSS as a job. The job copies DBUSS modules to the specified APF-authorized library (if necessary) and starts the DBUSS.

You can continue to run the DBUSS as a job with JCL similar to the JCL in Figure 11, or you can create a cataloged procedure as explained in Chapter 13, “Administering and operating the DBUSS.”

Figure 11  Sample JCL to run the DBUSS as a job

```
//DBUSS JOB (account data),'DBU SUBSYSTEM'.
//                                CLASS=A,MSGCLASS=A
//DBUSS EXEC PGM=DBUZPCCR,PARM='dbui'
//STEPLIB DD DSN=.DBU.AUTHLOAD,DISP=SHR
//SYSUDUMP DD SYSOUT=A
```

You can override the dbui subsystem ID with any name. The PARM specification is optional. If you do not specify it, the default subsystem ID is DBUZ.

**Including SYS1.CSSLIB in the LNKLST**

This task applies to multiple MAXM and database reorganization products.

Ensure that you include the SYS1.CSSLIB library in the system LNKLST concatenation if you are installing any of the following solutions or products:

- CHANGE RECORDING FACILITY for IMS
- FAST REORG FACILITY/EP
- MAXM Reorg/EP for IMS
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/EP Express for IMS
- MAXM Reorg/Online for IMS
Handling PDX enqueues

This task applies to multiple MAXM and database reorganization products.

The PDX is an optional data set that some database products for IMS can use to store DBD-level options, execution history, and statistics that are gathered during execution. For more information about the PDX, see the *IMS Database Supplemental Utilities Reference Manual*.

If you are using a PDX data set in a multiple-CPU environment, enqueue problems on the PDX directory are possible. To avoid enqueue problems, register PDX as a global enqueue with your site’s software package that handles cross-system enqueues. The enqueue is a SYSTEMS level enqueue with PDX as the QNAME and the data set name with a length of 44 bytes as the RNAME.

Providing access to the ISPF interface

This task applies to multiple MAXM and database reorganization products.

The following sections describe how to install the ISPF interface for database products for IMS. Most database products for IMS provide an ISPF interface. The following products do not provide an ISPF interface:

- FAST REORG FACILITY
- FAST REORG FACILITY/EP
- SECONDARY INDEX UTILITY

You can provide access to the ISPF interface with a LIBDEF CLIST or with a TSO logon procedure. For more information, see “To provide access with a LIBDEF CLIST” on page 165 and “To provide access with a TSO logon procedure” on page 165.
To provide access with a LIBDEF CLIST

The Installation System creates the BMCDBU CLIST for accessing the ISPF interface. The CLIST uses ISPF LIBDEF facilities to invoke the BMC Software DBU Product Selection Menu, from which you can access the ISPF interfaces for the solutions and products.

**NOTE**
The BMCDBU CLIST dynamically allocates an ISPTLIB DD statement. The ISPTLIB statement is required if allocations are performed in user logon procedures.

To execute the BMCDBU CLIST and the ISPF interface, enter the following TSO command on an ISPF panel that accepts TSO commands:

```
EX 'hlq.DBUSAMP(BMCDBU)'
```

**NOTE**
If you selected merged libraries for your installation, IMSAMP replaces DBUSAMP in the TSO command.

To provide access with a TSO logon procedure

To provide access to the ISPF interface with a TSO logon procedure, perform the following steps:

1. Modify TSO logon procedures.

   Make the changes that are indicated in Table 55 to the TSO logon procedure for each user who requires access to the ISPF interface. In this table, *hlq* indicates the high-level qualifier of the data sets that contain the DBU product modules.

<table>
<thead>
<tr>
<th>Product library</th>
<th>Concatenated library</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>hlq.DBUULIB</code> or <code>hlq.IMLIB</code></td>
<td>ISPLLIB or STEPLIB</td>
</tr>
<tr>
<td><code>hlq.DBUPLIB</code> or <code>hlq.IMPLIB</code></td>
<td>ISPLLIB</td>
</tr>
<tr>
<td><code>hlq.DBUMLIB</code> or <code>hlq.IMMLIB</code></td>
<td>ISPMLIB</td>
</tr>
<tr>
<td><code>hlq.DBUSLIB</code> or <code>hlq.IMSLIB</code></td>
<td>ISPSLIB</td>
</tr>
<tr>
<td><code>hlq.DBUTLIB</code> or <code>hlq.IMTLIB</code></td>
<td>ISPTLIB</td>
</tr>
</tbody>
</table>
2 Add the products and solutions to an ISPF product menu.

Place the BMC Software DBU Product Selection Menu on the ISPF primary menu (ISR@PRIM) according to your site’s standards. Use the following modifications as an example:

- Add a line to the panel BODY section that indicates solution and product selection codes and explanations of the selection choices. For example:

```plaintext
% B +BMC Database Utilities
```

- Modify the menu selection validation statement that selects the solutions and products when users enter the selection codes on the menu panel. For example:

```
&ZSEL = TRANS( TRUNC(&ZCMD,'.')
.
.
B,'PANEL(DBUPPRIM) NEWAPPL(DBUX)'
.
.
```

3 Test the ISPF interface:

A Log off and log back on.

B From the panel you modified in the previous step, enter solution and product selection codes. The BMC Software DBU Product Selection Menu is displayed.
Configuring the Index Build, Prefix Resolution and Update, Reload, Reorg, and Unload functions

This section describes configuration tasks for the following functions:

- Index Build function
- Index Build extended performance function
- Prefix Resolution and Update function
- Reload function
- Reload extended performance function
- Reorg function
- Reorg extended performance function
- Unload function
- Unload extended performance function

Assembling/linking the DLIGSET0 global options module

This configuration task applies to all extended performance functions.

You must assemble/link the DLIGSET0 global options module that is used for all extended performance functions. The module is located in the installation JCL data set that you specified on the Installation System User Options panel.

For more information about the Installation System user options, see the installation guide.

You cannot use the ISPF interface to perform this task.
Implementing snapshot technology

This configuration task only applies to the Unload extended performance function that is included in the following BMC database products for IMS:

- MAXM Reorg/EP for IMS
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/Online for IMS

When included in the solutions that are listed above, the Unload extended performance function provides the snapshot technology of the BMC SNAPSHOT UPGRADE FEATURE (SUF) at no additional cost. SUF enables the use of the snapshot feature in the Unload extended performance function API. SUF provides a subset of the functions and features of the BMC EXTENDED BUFFER MANAGER (XBM) for IMS product.

When you install a solution that includes the Unload extended performance function, the Installation System will also install XBM during the installation session. You must configure and implement the SUF component of XBM to use it with the Unload extended performance function.

For information about configuring, implementing, and using XBM and SUF, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

Providing access to the BMC Work File Generator

This configuration task applies only to the Prefix Resolution and Update function.

The IMS Work File Generator (DFSDSEH0) is link-edited in DFSURGS0. The DFSURGS0 module is located in the installation JCL data set that you specified on the Installation System User Options panel. For more information about the Installation System user options, see the installation guide.

To provide access to the BMC Work File Generator, you must link-edit the IMS DFSURGS0 program into the Prefix Resolution and Update function executable library. Member PRPESMP1 in the sample library contains sample JCL for this task.
Changing the default global options

This configuration task applies to all functions that are covered in this section.

The internal default values for user-controlled options should provide the best performance for most databases. You can customize default values by generating a load module named prdPARMS or prd@imsi (where prd is the three-character product code and imsi is the IMS ID), or by generating a load module at the DBD level. The default values in these modules determine which options to use at execution time.

**NOTE**
You can accomplish this task through the DBU ISPF interface (except for the Reorg and Reorg extended performance functions) or batch JCL.

Execute the BMCDBU CLIST to access the ISPF interface.

Sample JCL is provided in member #DBUGLBL of the sample library.

Handling the DFSPR000 module

This configuration task applies only to the following functions:

- Reload function
- Reload extended performance function
- Unload function
- Unload extended performance function

**NOTE**
For this task, *Unload function* includes the Unload extended performance function and *Reload function* includes the Reload extended performance function.

**WARNING**
If you place the Unload and Reload function modules into the IMS RESLIB library or in a library that is ahead of RESLIB in the LNKLST concatenation, *special handling is required for the DFSPR000 module.*
The Unload and Reload functions supply a substitute for the DFSPR000 module. The substitute module was developed to handle the specialized processing of the API in the Unload function and the Load Program Interface (LPI) in the Reload function. The substitute module is distributed in the BMC load library.

There is no problem when you use the order of the libraries in the STEPLIB concatenation to control whether the IMS-supplied module or the BMC–supplied module is invoked. If you install the BMC–supplied module in RESLIB or in a library that is concatenated ahead of RESLIB in the LNKLST concatenation, the BMC–supplied DFSPR000 module will always be invoked, causing errors with other applications that use the IMS–supplied module.

If you install the Unload or Reload function into the IMS RESLIB library or the LNKLST concatenation, do not place the BMC–supplied DFSPR000 module in that library. Instead, place the BMC–supplied DFSPR000 module in a user library and include only the user library in the JCL for application programs that use the API or initial load programs that use the LPI.

**Modifying or creating execution JCL**

This configuration task applies to all functions that are covered in this section.

You must modify the necessary JCL for all of the functions, but the procedure differs depending on the function that you are configuring. Table 56 on page 171 lists the functions and provides instructions for modifying the execution JCL.
### Table 56  JCL modification instructions

<table>
<thead>
<tr>
<th>Function</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Build</td>
<td>You cannot use your existing IMS HISAM Unload/Reload Utility JCL. See #SIUBLD (for the Index Build function) or #SIUBLDA (for the extended performance function) in the sample library and follow the instructions in the JCL. You must have a CPUID authorized password in the STEPLIB concatenation to execute the Index Build function. If you do not, the product will abend (control is not passed to the IMS utility because the JCL is not compatible).</td>
</tr>
<tr>
<td>Index Build extended performance</td>
<td>You cannot use your existing IMS HISAM Unload/Reload Utility JCL. See #SIUBLD (for the Index Build function) or #SIUBLDA (for the extended performance function) in the sample library and follow the instructions in the JCL. You must have a CPUID authorized password in the STEPLIB concatenation to execute the Index Build function. If you do not, the product will abend (control is not passed to the IMS utility because the JCL is not compatible).</td>
</tr>
<tr>
<td>Prefix Resolution and Update</td>
<td>You can modify your existing IMS Prefix Resolution utility JCL and IMS Prefix Update utility JCL as follows:</td>
</tr>
<tr>
<td></td>
<td>- Add or modify the STEPLIB DD statement to concatenate the BMC load libraries ahead of the IMS RESLIB.</td>
</tr>
<tr>
<td></td>
<td>- Add an IMS DD statement pointing to the DBD library.</td>
</tr>
<tr>
<td></td>
<td>- Add a DFSURCDS DD statement defining the control data set produced by the IMS Prereorganization utility.</td>
</tr>
<tr>
<td></td>
<td>- For the Prefix Update function, remove any IEFRDER statements (the function does not log the changes during processing).</td>
</tr>
<tr>
<td></td>
<td>- If you are running DBRC with the Prefix Update function, take an image copy of each updated database data set when the function is finished.</td>
</tr>
<tr>
<td>Unload</td>
<td>You can use your existing IMS HD Unload utility JCL by adding or modifying the STEPLIB DD statement to concatenate the BMC load library ahead of the IMS RESLIB. You must have a CPUID authorized password in the STEPLIB concatenation in order to execute the functions. If you do not, control is passed to the equivalent IMS utility. No further JCL changes are required.</td>
</tr>
<tr>
<td>Reload</td>
<td>You can replace certain IMS modules in the RESLIB with Reload function modules instead of modifying the reload JCL. Member BMCLDP3U of the sample library contains sample JCL for an SMP/E-type usermode to IMS.</td>
</tr>
<tr>
<td>Unload extended performance</td>
<td>You can use your existing IMS HD Unload utility JCL by adding or modifying the STEPLIB DD statement to concatenate the BMC load library ahead of the IMS RESLIB. You must have a CPUID authorized password in the STEPLIB concatenation in order to execute the functions. If you do not, control is passed to the equivalent IMS utility. No further JCL changes are required.</td>
</tr>
<tr>
<td>Reload extended performance</td>
<td>You can use your existing IMS HD Unload utility JCL by adding or modifying the STEPLIB DD statement to concatenate the BMC load library ahead of the IMS RESLIB. You must have a CPUID authorized password in the STEPLIB concatenation in order to execute the functions. If you do not, control is passed to the equivalent IMS utility. No further JCL changes are required.</td>
</tr>
<tr>
<td>Reorg</td>
<td>You must have a CPUID-authorized password in the STEPLIB concatenation. If you do not, the product abends (control is not passed to the IMS utility because the JCL is not compatible with those utilities).</td>
</tr>
<tr>
<td>Reorg extended performance</td>
<td>You must have a CPUID-authorized password in the STEPLIB concatenation. If you do not, the product abends (control is not passed to the IMS utility because the JCL is not compatible with those utilities).</td>
</tr>
</tbody>
</table>

---

**NOTE**

If you are configuring a function which is part of a solution that includes the DBA Toolkit, you can use the toolkit to generate the JCL.

You can also add DD statements to receive hardcopy reports and dumps, to specify global options for the current job, and to specify the PDX and other work data sets. For more details about JCL requirements, see the product-specific reference manuals.
Configuring the Cross-System Image Manager

This configuration task applies to the Index Build extended performance function.

The Index Build extended performance function uses facilities provided by the Cross-System Image Manager (XIM) to exploit the sysplex environment. The facilities that XIM provides include, but are not limited to, the communication among multiple instances of utility programs and the distribution and execution of utility program processes across all images in a sysplex. By using XIM, the Index Build extended performance function can realize improved workload distribution and reduced elapsed time.

For configuration tasks that apply to XIM, see “Configuring XIM” on page 181.

Configuring the Online Reorg function

This section describes configuration tasks for the Online Reorg function.

**NOTE**
The Online Reorg function can execute in an environment that spans multiple operating system images and multiple IMS environments, with the sharing IMS systems being updaters or readers. The configuration tasks are the same regardless of the number of IMS systems. You must perform the configuration tasks for all IMS systems.

Registering the Online Reorg function as a global enqueue

This configuration task is required if you use software to serialize resources as part of your installation process.

Register the Online Reorg function as a global enqueue with your software package that handles cross-system enqueues. The enqueue is a SYSTEMS level enqueue with the QNAME @BMCCRG0. There is no corresponding RNAME.

Registering the Online Reorg function as a global enqueue prevents batch IMS jobs from running during a database reorganization.

**NOTE**
If your site uses GRS as part of the installation process, you may not need to complete this step, depending on how GRS is implemented. Ask your systems programmer for confirmation.
Enabling BMC functions in IMS control regions

If you plan to use the Database Integrity function, perform the procedures that are described in “Configuring Database Integrity functions” on page 71 and bypass this task.

If you do not plan to use the Database Integrity function, enable BMC functions in IMS control regions as described in this task.

**NOTE**
Perform this task once for the following BMC products:

- CHANGE RECORDING FACILITY
- DATABASE INTEGRITY PLUS
- Fast Path Online Restructure/EP
- MAXM Reorg for IMS with Online/Defrag Feature
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/Online for IMS

If any of these products is already installed, you do not need to perform this task again.

**Overview**

The technique that you use to enable BMC functions depends on the method that you use to execute DBRC:

- If you are using the standard DBRC procedure, BMC functions are enabled through a new IMS-dependent module, named DBICRYvr. In the module name, vr represents the IMS version. For example, the module name is DBICRYA1 for IMS version 10.1 and DBICRY91 for IMS version 9.1. You create a DBICRYvr module for each IMS release that you are using. The new module resides in the DBULIB or IMLIB library. You also create a new alias for the IMS DSPCRTR0 module. The alias points to the BMC-supplied DBICRT00 module, which resides in the IMS.SDFSRESL library.

You can create the new module and alias by using the usermod method or the manual method.

- If you are using the Base Primitive Environment (BPE) method of executing DBRC, BMC functions are enabled through a user exit that is defined in a DBRC configuration member. The BPE method is available only for IMS version 11 and later systems.
Enabling BMC functions in IMS control regions

To create the new module and alias (usermod method)

**NOTE**

BMC recommends the usermod method because it ensures that the System Modification Program Extended (SMP/E) product links the appropriate modules when you apply future IMS maintenance to the DSPCRTR0 module.

1. Edit member DBUDBI3U of the DBUSAMP or IMSAMP library.

   DBUDBI3U contains JCL for an SMPE-type usermod to IMS.

2. Following the instructions in the comments for both steps, modify the JCL and submit it for execution.

To create the module and alias (manual method)

1. Edit member CRFCLINK of the DBUSAMP or IMSAMP library.

   CRFCLINK contains sample JCL for creating and link-editing module DBICRY<vr> and for creating an alias for module DSPCRTR0 within the DBULIB or IMLIB load library.

2. Choose the DBICRY<vr> link-edit step for your IMS release.

   For example, choose step DBICRYA1 for IMS version 10.1.

3. Following the instructions in the comments, modify the JCL and submit it for execution.

To define the user exit through BPE

1. Verify that your DBRC procedure specifies a BPE configuration member (BPECF<xxx>) as follows:

   ```bash
   //IMSDBRCB PROC RGN=0M,
   // BPECFG=BPECF<xxx>,
   // DBRCINIT=<xxx>,
   // IMSID=IMS<x>,
   // PARM1='BPEINIT=DSPBINIO'
   ```

2. Edit the BPE configuration member (BPECF<xxx>) of the IMS procedure library (IMS.PROCLIB).

3. In the USER EXIT LIST section, add a line to define the DBRC configuration member as follows:
Preparing the IMS control region

Modify the following procedures and JCL so that the BMC load library occurs before all other libraries:

- DL/I batch procedures and jobs

  You do not need to modify the DL/I batch procedures and jobs if you used the usermod method in “Enabling BMC functions in IMS control regions” on page 173 and you copied the appropriate DATABASE INTEGRITY PLUS execution modules to the IMS RESLIB.

- DBRC region

- all IMS control regions and DBCTL regions that share RECON data sets

  CICS local DL/I is not supported. Do not attempt to use the Online Reorg function if RECON data sets are shared with CICS local DL/I.

Reassembling/linking the DLIGSET0 module

You must perform one of the following actions:

- Assemble/link the DLIGSET0 global options module. The module is located in the installation JCL data set that you specified on the Installation System User Options panel.

  For more information about the Installation System user options, see the installation guide.
Modify #DBUGLBL of the SAMP library to create an environment set-up member (DLIGSET0). You can change any of the fields. The changes that you can make are documented in the member.

**NOTE**
If you are running IMS version 5.1 and you have applied IBM PTF PN61796 (which allows you to use 8 GB OSAM databases), you can change the **OSAMMAX** keyword default to 8 GB.

After you modify the module, you must assemble it. Sample JCL to create the environment set-up member is in #DLUGLBL of the SAMP library.

**WARNING**
If you have previously assembled your own installation default module (DLIGSET0), you must reassemble it each time you install from a new tape.

---

**Implementing snapshot technology**

The Online Reorg function provides the snapshot technology of the BMC SNAPSHOT UPGRADE FEATURE (SUF) at no additional cost. SUF enables the use of the snapshot feature in the Online Reorg function API. SUF provides a subset of the functions and features of the BMC EXTENDED BUFFER MANAGER (XBM) for IMS product.

When you select to install a solution that includes the Online Reorg function, the Installation System will also install XBM during the installation session. You must configure and implement the SUF component of XBM to use it with the Online Reorg function.

For information about configuring, implementing, and using XBM and SUF, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.
Implementing the Online Reorg function on a CICS/DBCTL environment

To use the Online Reorg function in a CICS/DBCTL environment, you must modify your CICS/DBCTL system to ensure that CICS transactions are successful during the reorganization. BMC provides two CICS global user exits that detect CICS transactions that fail when the Online Reorg function executes a /DBR or swaps database names. The transactions are placed in a WAIT state until the database is restored to active status.

Follow these steps to install the CICS global user exits:

1. Copy the following BMC modules into a CICS DFHRPL library:

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLIXPRE</td>
<td>global user exit that executes at CICS exit point XDLIPRE</td>
</tr>
<tr>
<td>DLIXPOST</td>
<td>global user exit that executes at CICS exit point XDLIPOST</td>
</tr>
<tr>
<td>DLIXSTA</td>
<td>module that enables both global user exits</td>
</tr>
<tr>
<td>DLIXSTO</td>
<td>module that disables both global user exits</td>
</tr>
</tbody>
</table>

All modules are linked AMODE31, RMODE24.

2. Use RDO (CEDA) to define DLIXPRE and DLIXPOST to a group that is installed during CICS startup with the following PROGRAM parameters:

```
Language=assembler
DataLocation=any
EXECKey=cics
```

Use RDO (CEDA) to define DLIXSTA and DLIXSTO to a group that is installed during CICS startup with the following PROGRAM parameters:

```
Language=assembler
DataLocation=any
EXECKey=user
```
3 Define transaction codes for DLIXSTA and DLIXSTO so that the user exits can be enabled and disabled while CICS is running. You can specify any TRANIDs (for example, STAX and STOX).

Use the following parameters when creating the TRANSACTION entries:

| TASKDATAKey=user |
| TASKDataloc=any |
| PRIority=254 |

4 To automatically enable the exits during CICS startup, create a program list table (PLT) program initialization (PI) program entry for DLIXSTA and reassemble/link the PLT that was used during CICS initialization.

Following is a sample PLT:

```plaintext
DFHPLT TYPE=INITIAL,SUFFIX=nn
DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
DFHPLT TYPE=ENTRY,PROGRAM=DFHDBCON
DFHPLT TYPE=ENTRY,PROGRAM=DLIXSTA
DFHPLT TYPE=FINAL
```

DLIXSTA issues the following message to the CICS message log:

```
BMC90000I XDLIPRE AND XDLIPOST GLOBAL USER EXITS ARE ENABLED
```

If there is an error during execution of DLIXSTA, the following message is issued:

```
BMC90000I ENABLE EXIT exit FAILED. EIB RC = eib rc
```

*exit* is XDLIPRE or XDLIPOST, and *eib rc* is the enable EIB return code.

5 If you are already using CICS global user exits at exit points XDLIPRE or XDLIPOST, consider the order in which the programs are invoked. When more than one program is associated with an exit point, CICS invokes the programs serially in the order that they were enabled. BMC user exits support CICS versions 3.3.0 and 4.1.0 and CICS/TS versions 1.1, 1.2, and 1.3. If you have a different version of CICS, contact BMC Customer Support.
Configuring the Cross-System Image Manager

The Online Reorg function uses facilities provided by the Cross-System Image Manager (XIM) to exploit the sysplex environment. The facilities that XIM provides include, but are not limited to, the communication among multiple instances of utility programs and the distribution and execution of utility program processes across all images in a sysplex. By using XIM, the Online Reorg function can realize improved workload distribution and reduced elapsed time.

For configuration tasks that apply to XIM, see “Configuring XIM” on page 181.

Configuring the Online/Defrag function

This section describes configuration tasks for the Online/Defrag function.

Assembling/linking the DLIPARM global option module

Assemble/link the DLIMPARM global options module. The module is located in the installation JCL data set that you specified on the Installation System User Options panel.

For more information about the Installation System user options, see the installation guide.

Downloading the MAXM load library to an APF-authorized library

Download the MAXM load library to an APF-authorized library in your environment.

For more information about APF authorization, see “Obtaining APF authorization” on page 160.
Enabling BMC functions in IMS control regions

If you plan to use the Database Integrity function, perform the procedures that are described in “Configuring Database Integrity functions” on page 71.

If you do not plan to use the Database Integrity function, perform the procedure that is described in “Enabling BMC functions in IMS control regions” on page 173.

Including the BMC load library in IMS online systems

Include the BMC load library as follows in the IMS online systems that will use the Online/Defrag function:

- in the STEPLIB, ahead of your IMS RESLIB
- in the startup JCL.PROC for all IMS systems which share the same RECON data sets

**NOTE**

Although the Online/Defrag function requires DBRC to be active, you are not required to register the databases to DBRC to use the function.

Establishing BMP-PSB databases

You must have a BMP-PSB for each database that you plan to reorganize with the Online/Defrag function. When you execute the function, the Online/Defrag job uses a BMP to coordinate the reorganization; a BMP PSB is required. The PSB must be defined in the IMS definition that is used by the online control region in which the Online/Defrag job runs. Two PCBs are required for each DBD. Both PCBs must be sensitive to all segments, and both PCBs must be named. PROCOPT=A is required. The PSBs must have the structure that is shown in Figure 12.

**Figure 12** Required PSB structure (part 1 of 2)

```
PCB TYPE=DB, NAME=dbname, PROCOPT=A, PCBNAME=anyname1, LIST=YES
SENSEG NAME=rootseg
SENSEG NAME=depseg1
  .
  . (all segments)
  .
PCB TYPE=DB, NAME=dbname, PROCOPT=A, PCBNAME=anyname2, LIST=YES
SENSEG NAME=rootseg
SENSEG NAME=depseg1
  .
```
Recycling IMS systems

After all STAGE 1 GENS and so on are complete, you must recycle all IMS systems that contain the new load library.

Modifying DBUHSRxx sample JCL members

Modify the DBUHSRxx sample JCL members in your sample library to run different MODES of the Online/Defrag function. For more information, see the MAXM Reorg Solutions for IMS Reference Manual.

Configuring XIM

This section describes tasks for configuring the Cross-System Image Manager (XIM).

Overview of XIM

XIM provides the facilities to BMC utility products to exploit the sysplex environment. These facilities include, but are not limited to, the communication among multiple instances of utility programs and the distribution and execution of utility program processes across all images in a sysplex. XIM allows the utility products that use it to realize improved workload distribution and reduced elapsed time.

---

**NOTE**

XIM is required to reorganize or copy multiple databases simultaneously.
The following BMC database products for IMS use XIM:

- CHANGE RECORDING FACILITY for IMS
- MAXM Reorg/Online for IMS

For information about using XIM with database products for IMS, see the product-specific reference manuals. For more information about XIM, see the Cross-System Image Manager (XIM) User Guide.

### Copying the initiator and started task procedures

The installation process constructs the XIM started task procedure and the XIM initiator procedure in the `hlq.JCL` data set (`hlq` is the high-level qualifier that you choose when installing XIM). The default XIM started task procedure name is XIMBMC. The default XIM initiator procedure name is the name you entered as the value for the INIT_PROC option or the default of XIMBMCI. You must copy these two procedures into a procedure library that is recognized by your job entry subsystem (JES).

You must specify the SUFFIX parameter (within the XIM started task procedure) that XIM receives as part of the XIM parameter options member name. The SUFFIX parameter identifies the last one to five characters of a partitioned data set (PDS) member that begins with the character string XIM (XIMxxxxx). The default SUFFIX name is PARM.

**NOTE**

You do not need to specify a valid subsystem identification (SSID) parameter within the XIM initiator procedure. XIM generates this value internally.

The installation process constructs a default parameter options member named XIMPARMS in the `hlq.XXSAMP` data set. This member contains the default parameter settings for the XIM started task procedure. A PDS data set is required to contain these default parameter settings. Do not use a sequential file. All XIM images must reference the same PDS member for startup parameters.
Controlling access to the XIM subsystems

If your site uses Resource Access Control Facility (RACF) or CA-Top Secret security, you can authorize the procedures for the XIM subsystem as started tasks in the started procedures table. If your site uses CA-ACF2 security, you can authorize the procedures for the XIM subsystem as started tasks under the started task control.

To authorize XIM subsystem procedures using RACF or CA-Top Secret

Authorize the procedures for the following subsystems as started tasks in the started procedures table:

- XIM performance subsystem
- XIM extended job entry subsystem

If you are running RACF version 2.1 or higher, you can use the STARTED class to add or modify RACF security definitions for started procedures without having to IPL the system.

The STARTED class allows you to modify the security definitions dynamically through the RDEFINE, RALTER, and RLIST commands. For more information about using the STARTED class, see the operating system documentation from IBM.

To authorize XIM subsystem procedures using CA-ACF2

Authorize the procedures for the following subsystems as started tasks under the started task control:

- XIM performance subsystem
- XIM extended job entry subsystem

For more information, see the appropriate CA-ACF2 publication.
Setting global or operating system image level parameters

XIM provides parameters for establishing the scope of XIM processing in a sysplex environment. You can set all parameters at a global level and some at the operating system image level. When parameters are not set at the global level, XIM default values apply. When values are not set at the operating system image level, the values that are set (or defaulted) at the global level apply.

You can set the following parameters at the global level:

- DUMPLIMIT_TCB
- DUMPLIMIT_SRBC
- DUMPLIMIT_API
- INITIATORS
- INIT_PROC
- SYSALLDA
- XCF_GROUP
- XIM_GROUP

Figure 13 shows a sample parameter list that you might provide for XIM. This sample provides values for the global level and provides additional values for two operating system images. The global values apply to all operating system images in the sysplex if you start all instances of XIM with the same PDS member as input. The operating system image values apply only to the operating system image identified by the system name.

**Figure 13  Sample XIM parameter list**

```
XCF_GROUP=XCFBMC Global Parameters
INIT_PROC=XIMBMCI
INITIATORS=1
SYSALLDA=SYSALLDA
DO SYSA SYSA Operating System Image Parameters
  INIT_PROC=XIMIA
  INITIATORS=0
END
DO SYSB SYSB Operating System Image Parameters
  INITIATORS=4
END
```
## Parameter specifications

Table 57 lists XIM parameters and describes syntax and valid values.

### Table 57  XIM parameters (part 1 of 3)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DUMPLIMIT_TCB, DUMPLIMIT_SR, DUMPLIMIT_AP | The DUMPLIMIT_TCB, DUMPLIMIT_SR, and DUMPLIMIT_AP parameters are valid at the global level and at the operating system image level and define the three types that XIM uses to categorize an unexpected system abend.  
Each type is given a limit count of 0-100 which may be initialized to the parameter value at XIM startup time. The count is decremented when the associated type of abend occurs. If an abend occurs and the count is already zero, a system dump is bypassed. These parameters prevent multiple dumps from being generated when they are not needed.  
You can modify the counter with the DUMPLIMITS,n,n,n console modify command to change the limits for each type (you must enter a new value for each type). Also, you can issue the DUMPLIMITS command without any following operands to display the current values. For more information, see the [Cross-System Image Manager (XIM) User Guide](#).  
The default value for each parameter is 3. |
| INITIATORS         | The INITIATORS parameter has the following syntax:  
INITIATORS=xxx  
xxx is the number of initiators to start.  
Valid values are 0 through 256. The default value is 16.  
To prevent XIM initiators from starting on the operating system image, specify INITIATORS=0 for that particular operating system image.  
The INITIATORS parameter is valid at the global level and at the operating system image level. The following definitions apply to the INITIATORS parameter:  
When specified at the global level, the INITIATORS parameter indicates the number of XIM initiators that can be started for each operating system image in the sysplex without exceeding the desired work load capacity of the image.  
When specified at the operating system image level, the INITIATORS parameter indicates the number of XIM initiators that can be started for the operating system image without exceeding the desired work load capacity of the image. |
### Table 57  XIM parameters (part 2 of 3)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| INIT_PROC | The INIT_PROC parameter has the following syntax:  
  INIT_PROC=procname  
  *procname* is the procedure name.  
  The value can be any valid PDS member name. The default value is XIMBMCI.  
  The INIT_PROC parameter is valid at the global level and at the operating system image level. The parameter identifies a procedure name that initializes an XIM initiator. |
| SYSALLDA | The SYSALLDA parameter has the following syntax:  
  SYSALLDA=sysallda  
  *sysallda* is the operating system unit name for all direct access storage devices (DASDs).  
  The standard name allows you to allocate a data set on any or all DASDs in your environment. If your systems programmer or DASD administrator has specified a different unit name than the default value of sysallda, you can use the SYSALLDA parameter in your XIM started task procedure to specify the equivalent unit name for your environment. |
| XCF_GROUP | The XCF_GROUP parameter has the following syntax:  
  XCF_GROUP=groupname  
  *groupname* is the eight-character XCF group name; if you use less than eight characters, pad to the right with blanks.  
  Valid characters are A to Z, 0 to 9, and special characters ($, #, and @). To avoid using reserved names, do not begin group names with the letters A through I or the character string SYS. The default value is XCFBMC.  
  The XCF_GROUP parameter is valid only at the global level. The parameter allows multiple XIM subsystems to connect or communicate with each other through the XCF coupling facility or through a Channel to Channel Adapter (CTCA). XIM uses the XCF group name to locate and connect to other instances of itself within the sysplex. |
Setting global or operating system image level parameters

Chapter 5 Configuring MAXM products for IMS

Default options syntax

Use the following syntax rules when creating or modifying the startup parameter list:

- Use columns 1 through 71.
- Use one parameter per statement.
- Do not continue a parameter onto a second line.
- Do not use duplicate parameters.
- Anything following a parameter and its value is considered a comment.
- An asterisk (*) must precede a comment line.
- The equal sign (=) is the required delimiter.
- Spaces to the left and right of the equal sign are permitted.
- Blank lines (columns 1 through 71) and lines beginning with an asterisk are ignored.

Table 57  XIM parameters (part 3 of 3)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| XIM_GROUP | The XIM_GROUP parameter has the following syntax:  

XIM_GROUP=groupname

`groupname` is the eight-character XIM group name; if you use less than eight characters, pad to the right with blanks.

Valid characters are A to Z, 0 to 9, and special characters ($, #, and @). To avoid using reserved names, do not begin group names with the letters A through I or the character string SYS. The default value is XIMBMCU.

The XIM_GROUP parameter is valid only at the global level. The parameter allows the BMC utility products to connect to the XIM subsystem. You should not change the XIM_GROUP name because it must be identical to the XIM_GROUP name that is used by the BMC utility product. |
Default option descriptions

Figure 14 shows the sample global parameter list that is provided for XIM in the hlq.DATA(XIMPARMS) data set. This sample provides values for the global level. The global values apply to all operating system images in the sysplex if you start all instances of XIM with the same PDS member as input.

Figure 14  Default XIM parameter list

```
XCF_GROUP=XCFBMC
XIM_GROUP=XIMBMCU
INIT_PROC=XIMBMCI
INITIATORS=16
END
```

Sample JCL procedures

Figure 15 shows a sample JCL procedure.

Figure 15  XIM procedure

```
*********************************************************
//*-----------------------------------------------------*
//*        XIM PROCEDURE                                  *
//*-----------------------------------------------------*
//DBUXIM00 PROC
//XIMMAIN  EXEC PGM=XIMMAIN,
//         ACCT=5410,TIME=1439,REGION=0M,
//         PARM='SUFFIX=DBU00'
//*         *--- ---------------------------*
//*         * STEPLIB MUST BE APF-AUTHORIZED,           *
//*         *-----------------------------------*
//STEPLIB  DD DISP=SHR,DSN=BMCXIM.V1R3.DIST.LOAD
//*         *----------------------------------*
//*   * XIMPARM LIBRARY MUST CONTAIN XIM|SUFFIX.       *
//*         *----------------------------------*
//XIMPARM DD DISP=SHR,DSN=your.PROCLIB
//XIMPRINT DD SYSOUT=*,HOLD=YES
*********************************************************
//*******************************************************
//*        XIM INITIATOR PROCEDURE                     *
//*******************************************************
//DBUXIMJS PROC SSID=XJS0
//XJSINI2  EXEC PGM=IEFIIC,
//         PARM='&SSID',
//         DPRTY=12,
//         ACCT=6010
//SYSUDUMP DD SYSOUT=*
Setting XIMCHECK parameters

XIMCHECK is a utility that aids in the installation process. XIMCHECK takes a single product distribution library (defined by the SYSLIB DD statement) and searches all LINKLIST data sets and the link pack area (LPA) for the modules contained in the distribution library. It searches any number of product level data sets (such as distribution data sets residing on the current system or LINKLIST data sets or LPA libraries on other systems). For any modules that it finds, XIMCHECK determines which module is at the highest maintenance level and produces a list of which modules must be copied to specific locations to bring the system to the maintenance level that is required for the distributed product to work.

XIMCHECK can generate a job stream to accomplish the necessary copy operations and produce an extensive cross reference of the modules that reside in SYSLIB and another location.

Parameter specifications

XIMCHECK accepts parameters to control its behavior. Table 58 lists the parameters.

<table>
<thead>
<tr>
<th>Table 58</th>
<th>XIMCHECK parameters (part 1 of 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>ALLPDSUPGRADE</td>
<td>If you specify the ALLPDSUPGRADE parameter, XIM will upgrade all product level data sets. The default is for XIM to only upgrade the LINKLIST data sets.</td>
</tr>
<tr>
<td>CHECK/NOCHECK</td>
<td>The CHECK operand indicates whether module regression checking is to occur. The default is NOCHECK. If you do not specify the CHECK parameter, XIM only generates the cross reference reports. XIM will not produce a job stream, and it will not perform regression checking.</td>
</tr>
<tr>
<td>JCLLIB(ddname)</td>
<td>Use the JCLLIB parameter to specify that XIM is to produce a job stream, and to specify an optional DDNAME to which you want XIM to write the job stream. The default is JCLLIB.</td>
</tr>
<tr>
<td>NOLINKLIST</td>
<td>If you specify the NOLINKLIST parameter, XIM will not process data sets in LINKLIST and the link pack area. XIM will only process product level data sets that are represented by the PDS parameter.</td>
</tr>
<tr>
<td>PDS(ddname)</td>
<td>Use the PDS parameter to specify that XIM is to check product library data sets, and to specify an optional DDNAME prefix for those data sets. XIM will match the members of these data sets with the members from the SYSLIB data sets. There is no default, but if you only specify PDS the default prefix will also be PDS.</td>
</tr>
<tr>
<td>PREFIX(prefix1,[prefix2],[…])</td>
<td>XIMCHECK processes all members of the SYSLIB data set by default. Use the PREFIX parameter to limit checking to only those members that match the prefix qualifications.</td>
</tr>
</tbody>
</table>
Setting XIMCHECK parameters

Table 58  XIMCHECK parameters (part 2 of 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPORT(ddname)</td>
<td>Use the REPORT parameter to specify an optional DDNAME to use for the report that is produced if you specify the XREF parameter. The default DDNAME is REPORT. If you specify the REPORT parameter without also specifying the XREF parameter, the REPORT parameter is ignored.</td>
</tr>
<tr>
<td>SYSLIB(ddname)</td>
<td>Use the SYSLIB parameter to specify an alternate DDNAME for SYSLIB. SYSLIB should represent the distribution data set from the product tape and must be a single data set. The default DDNAME is SYSLIB.</td>
</tr>
<tr>
<td>SYSPRINT(ddname)</td>
<td>Use the SYSPRINT parameter to specify an alternate DDNAME for SYSPRINT. The default DDNAME is SYSPRINT.</td>
</tr>
<tr>
<td>XREF/NOXREF</td>
<td>If you specify the XREF parameter, XIM will produce a detailed report that indicates which level of modules exist in which data sets. The default is NOXREF.</td>
</tr>
</tbody>
</table>

Return codes

XIMCHECK issues the following return codes:

X'00'  No action is necessary because the modules found in existing data sets can be used with the product.
X'08'  Some modules in the specified SYSLIB should be installed in the LINKLIST. The names of the modules to be included or excluded are printed in the process log.
X'0C'  All modules in the specified SYSLIB should be installed.
X'80'  The specified SYSLIB DDNAME was not found.

Sample XIMCHECK JCL

Figure 16 shows sample JCL that you can use to execute XIMCHECK. Sample XIM JCL is also in your sample library.

Figure 16  Sample XIM JCL

```plaintext
//anyname JOB (...) /*
//CHECK EXEC PGM=XIMCHECK,PARM='XREF,CHECK,JCLLIB,PDS,NOLINKLIST'
// STEPLIB DD DISP=SHR,DSN=an.xim.product.dataset
// SYSPRINT DD SYSOUT=* // REPORT DD SYSOUT=* // JCLLIB DD SYSOUT=* // SYSUDUMP DD SYSOUT=* // SYSLIB DD DISP=SHR,DSN=new.xim.product.dataset //PDS001 DD DISP=SHR,DSN=some.xim.product.dataset //PDS002 DD DISP=SHR,DSN=another.xim.product.dataset
```
Starting XIM

You should start XIM on each operating system image that will process work for a BMC utility product. Issue the following command to start XIM:

```
s ximstc
```

*ximstc* is the name of the XIM started task procedure (the default name is XIMBMC).
Configuring Application Accelerator

This chapter describes tasks for configuring the BMC Application Accelerator for IMS product. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

BMC Application Accelerator for IMS configuration worksheet ........................................ 193
Configuring components .......................................................... 194
Managing access authority for BMP jobs .................................................. 194

BMC Application Accelerator for IMS configuration worksheet

Table 59 is a worksheet that lists the steps you must complete to configure BMC Application Accelerator for IMS.

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Configure components.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuring components</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>2. Manage access authority for BMP jobs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managing access authority for BMP jobs</td>
<td>194</td>
</tr>
</tbody>
</table>
Configuring components

Whether you need to configure Application Accelerator components depends on whether you are using the product in trial mode or production mode:

- For trial mode, no components require configuration. For information about setting up the product for use with your IMS applications, see the *BMC Application Accelerator for IMS User Guide*.

- For production mode, you must configure the following components:
  - Cross Product Connectivity (CPC) subsystem and its related servers
  - BMC Primary Subsystem (BMCP)
  - Database Management Console

For more information, see Chapter 7, “Configuring components for console-enablement.”

Managing access authority for BMP jobs

For Application Accelerator to participate in the execution of IMS batch message processing (BMP) jobs, it needs access authority to the following data sets:

- IMS RECON data sets
- IMS subsystem’s MODSTAT or OLCSTAT data set
- IMS subsystem’s ACBLIBA, ACBLIBB, and ACBLIB libraries
- All libraries in IMS subsystem’s STEPLIB concatenation
- IMS database data sets (only if Application Accelerator is optimizing the job step)

BMP jobs that execute without Application Accelerator run under the IMS control region, which already has the required authority to access these data sets. When Application Accelerator participates in the execution, by default the security access facility (SAF) grants the access that is defined for the user ID that submitted the job. This user ID typically does not have access authority to the required data sets.

Instead of defining SAF rules that allow access to each data set for each user ID that will submit a BMP job, you can define a single SAF resource that allows Application Accelerator to access the required data sets.
During initialization, Application Accelerator attempts to retrieve the resource profile, based on the job step values for the operating system ID, the IMS ID, and the program specification block (PSB) name:

- If a resource definition is not found, Application Accelerator continues with the default access authority for the job step.
- If a resource definition is found, Application Accelerator extracts the Installation Data value from the resource definition and uses that value only to access the required data sets. For all other access, the job uses the default authority of the user ID that submitted the job. If Application Accelerator cannot access a required data set because of insufficient authority, the product switches to IGNORE mode and issues a message.

**To define a SAF resource rule for Application Accelerator**

1. Identify a user ID that has access to the required libraries and other data sets in the online IMS subsystem.

   You can use the information in message IEF695I to identify a user ID, as shown in the following example:

   ```
   IEF695I START MXOAIMS WITH JOBNAME MXOAIMS IS ASSIGNED TO USER STCUSER, GROUP STCGROUP
   ```

2. Define a resource rule as follows:

   - Specify CLASS = FACILITY.
   - Specify PROFILE = BBM.SDBA.*.imsid.psbname.AAOR.

   You can specify the operating system ID, IMS ID, and PSB name as generic values by using wildcard characters (* and %).

   - In the installation data field, specify the previously identified user ID.

3. Define the SAF profile as shown in the following example:

   ```
   RDEFINE FACILITY BBM.SDBA.*.*.*.AAOR DATA('userid')
   SETROPTS CLASSACT(FACILITY)
   SETROPTS RACLIST(FACILITY) REFRESH
   RLIST FACILITY BBM.SDBA.*.MXOA.*.AAOR
   ```

   You can specify the operating system ID, IMS ID, and PSB name values as specific or generic values.
Chapter 7 Configuring components for console-enablement

This chapter describes tasks for configuring components for product functions and features that use the Database Management Console. Configuring refers to tasks that you perform outside of the Installation System to complete product implementation.

This chapter presents the following topics:

- Overview ................................................................. 198
  - Components for console-enablement .......................... 198
  - UIM and console architecture ................................. 199
- Components for console-enabled functions configuration worksheet .......................... 201
- Configuring components for console-enabled functions .................................. 202
  - Loading the HFS PDSE ................................................. 202
  - Naming and securing started tasks ............................. 203
  - Considering additional ACF2 security requirements ...... 205
  - Configuring and starting subsystems and servers ........ 206
- Configuring the console .............................................. 209
  - Installing the console ............................................... 209
  - Updating the console .............................................. 210
  - Uninstalling the console .......................................... 211
- Launching and exiting the console .................................. 211
- Setting up connections .............................................. 214
  - Overview of the Enterprise List and personal connections .................. 214
  - Using the Add Host Connection command ..................... 215
- Implementing access controls ...................................... 218
  - Overview ................................................................. 218
  - Implementing access controls ................................... 219
  - Planning your access control policy ............................ 219
  - Creating SAF resources ............................................ 220
  - Creating access rules for SAF resources ..................... 228
  - Assigning an IMSPLEX or IMS system name to be used by SAF .......... 229
  - Protecting your access controls ............................... 230
  - Special considerations ........................................... 232
Overview

The following BMC database products for IMS offer functions and features that use the Database Management console:

- Backup and Recovery Solution for IMS
- BMC Application Accelerator for IMS
- BMC Fast Path Enhanced Online Suite
- BMC Fast Path Offline Suite
- BMC Fast Path Online Suite
- MAXM Database Advisor for IMS
- MAXM Reorg for IMS
- MAXM Reorg for IMS with Online/Defrag Feature
- MAXM Reorg/EP for IMS
- MAXM Reorg/EP for IMS with Online/Defrag Feature
- MAXM Reorg/EP Express for IMS
- MAXM Reorg/Online for IMS
- POINTER CHECKER PLUS

The following product functions and features use components for console enablement:

- Database Advisor
- Recover Advisor
- RECON Advisor
- DBA Toolkit
- Application Accelerator

Components for console-enablement

The following components support console-enabled functions and features:

- BMCP subsystem

The BMCP subsystem establishes supervisory services for many BMC products.
UIM and console architecture

**NOTE**

- The STEPLIB libraries must be APF authorized for the BMCP subsystem.
- The STEPLIB libraries must be APF authorized for the BCSS/CPC subsystem unless they are in the LINKLIST. Libraries in the LINKLIST are already APF authorized.

- BCSS/CPC subsystem

  The BCSS/CPC subsystem manages APF–authorized functions and performs processing for intercepted operating system requests.

- ADV server and repositories

  The ADV server and repositories provide the technology for communication among clients (the TSO user address space and the various console-enabled functions and features).

- UIM Server

  The UIM Server resides on the mainframe and handles communication between the console and the various console-enabled functions and features.

- console

  The console is the graphical user interface (GUI). The console runs on a client workstation under the Microsoft Windows operating system and communicates with the UIM Server through TCP/IP technology.

To ensure that the required components are available and properly configured, use the “Components for console-enabled functions configuration worksheet” on page 201.

**UIM and console architecture**

The console and User Interface Middleware (UIM) Server provide a graphic user interface for BMC products. The UIM server is a Transmission Control Protocol/Internet Protocol (TCP/IP) application that facilitates communication between the console and the mainframe. All communication between the console and the mainframe uses the UIM server.

The UIM server is an SMP/E installable component and is installed on the mainframe by using the Installation System. Once the UIM server is installed, configured, and running, the console is downloaded and installed from the UIM to users’ Windows-based systems.
Figure 17 describes the UIM server and the console architecture in a sample environment.

**Figure 17  UIM server and console architecture**

**NOTE**

Depending on the console-enabled products that you have installed on the mainframe, the UIM server can be installed on one system in a sysplex or on every system in a sysplex.
Components for console-enabled functions configuration worksheet

Table 60 is a worksheet that lists the steps you must complete to configure the components for console-enabled functions and features.

Table 60  Configuring components for console-enabled functions worksheet

<table>
<thead>
<tr>
<th>Done</th>
<th>Step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Load the HFS PDSE.</td>
<td>202</td>
</tr>
<tr>
<td></td>
<td>Loading the HFS PDSE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Name and secure started tasks.</td>
<td>203</td>
</tr>
<tr>
<td></td>
<td>Naming and securing started tasks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Configure and start subsystems and servers.</td>
<td>206</td>
</tr>
<tr>
<td></td>
<td>Configuring and starting subsystems and servers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Configure the console.</td>
<td>209</td>
</tr>
<tr>
<td></td>
<td>Configuring the console</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Set up connections.</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>Setting up connections</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. If you want to control users’ ability to access product components</td>
<td>218</td>
</tr>
<tr>
<td></td>
<td>and use product functions, implement access controls.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementing access controls</td>
<td></td>
</tr>
</tbody>
</table>
Configuring components for console-enabled functions

This section describes configuration tasks for the components that support console-enabled functions and features.

For information about using the Advisors and the DBA Toolkit, see the *Database Products for IMS Advisors and Toolkit User Guide*. For more information about using Application Accelerator, see the *BMC Application Accelerator for IMS User Guide*.

Loading the HFS PDSE

You must load the BMC HFS PDSE after customizing the products in the Installation System.

To load the HFS PDSE, submit the $C41LHFS job that was generated during installation. The job is located in the installation JCL data set that you specified on the Installation System User Options panel. For more information about the Installation System user options, see the installation guide.

NOTE

Ensure that the STEPLIB is APF-authorized before you submit the $C41LHFS job. If you have already defined the HFS PDSE in a previous installation, you do not need to submit the $C41LHFS job.
Naming and securing started tasks

Depending upon your current environment, the installation of the components that support console-enabled functions created three or four started tasks. You must name and establish appropriate RACF security for each of these address spaces.

Table 61 lists suggested names and provides security requirements for each subsystem and server that is part of the installation of the components.

Table 61  Subsystem and server suggested names and security requirements (part 1 of 2)

<table>
<thead>
<tr>
<th>Subsystem/ server</th>
<th>Default name</th>
<th>Suggested name</th>
<th>Suggested name requirements</th>
<th>Security requirements</th>
</tr>
</thead>
</table>
| BMCP subsystem          | BMCP         | BMCP           | none                        | requires a valid started task name
The BMCP subsystem establishes supervisory services. |
| BCSS/CPC subsystem      | CPCx          | MXAP           | • cannot be more than four characters
• should use the same name for the ADV server
The BCSS/CPC subsystem name is generated during installation. | requires a valid started task name |
Table 61  Subsystem and server suggested names and security requirements (part 2 of 2)

<table>
<thead>
<tr>
<th>Subsystem/ server</th>
<th>Default name</th>
<th>Suggested name</th>
<th>Suggested name requirements</th>
<th>Security requirements</th>
</tr>
</thead>
</table>
| ADV server        | CPCxADV      | MXAPADV        | should use the four-character BCSS/CPC subsystem name followed by ADV. The ADV server name is generated during installation. | ■ requires a valid started task name  
■ requires authority to create and alter repository data sets and to issue operator commands  
■ for the Database Advisor function, requires CONTROL access to the RECONs; for the Recovery Advisor function, requires READ access to the RECONs; for the RECON Reorg utility, requires DELETE/DEFINE access to the RECONs  
■ requires READ access to IMS system data sets  
■ optionally, can have READ access to IMS databases |
| UIM Server        | UIMx         | MXAPUIM        | should use the four-character BCSS/CPC subsystem name followed by UIM. The UIM Server name is generated during installation. | ■ requires a valid started task name  
■ requires authority to READ and UPDATE UIM HFS data sets  
■ requires an Open MVS (OMVS) segment to access UNIX system services. |
To use RACF security for the UIM Server, ask your security administrator to perform the following steps:

1. Issue the following command to create an OMVS segment:

   ```bash
   ALU userid omvs(uid(EMP) home('/home/userid') program('/bin/sh'))
   ```

   The command variables are defined as follows:
   - `userid` is a RACF user ID.
   - `EMP` is a unique number, such as an employee ID.

2. Associate your started task procedure names to a user ID.

   The following example shows how to associate the BCSS/CPC subsystem (MXAP), the ADV server (MXAPADV), and the UIM Server (MXAPUIM) with the same RACF user ID.

   ```bash
   RDEF STARTED MXAP*..** OWNER(SYS1) STDATA(USER(userid) TRUSTED(YES)) SETR RACLSTARTED REFRESH
   ```

   In the example, the MXAP variable is the started task procedure name for the BCSS/CPC subsystem.

### Considering additional ACF2 security requirements

If you use ACF2 as your security package, you must consider additional security requirements.

#### Logon ID for scheduled tasks

Scheduled tasks for certain functions (such as the repository backup task and data collection tasks) run as started tasks in the operating system. If the CPCJOBNM parameter of the GROUP command in the CPCINI file is not set to N, the system uses the job name of the ADV started task as the job name of the scheduled tasks. This arrangement allows the scheduled tasks to run with the ACF2 logon ID that you assigned to the ADV started task.
If you specify the PROCNAME parameter of the GROUP command (defining your own procedure), and the CPCJOBNM parameter is set to N, the system does not use the job name of the ADV started task as the job name of the scheduled tasks. In this case, you must define an ACF2 logon ID with the same name as the procedure name. The scheduled tasks will use this defined logon ID.

**Logon ID for batch processes**

Certain scheduled tasks in the console can require batch submission to an internal reader. You must define an additional ACF2 logon ID to use for these batch submissions.

In ACF2, define the ID with the same access as the ADV server but not as a started task. Assign RESTRICT and JOB privileges to the ID.

In the console, define the ID as follows:

1. In the Navigation window, right-click the sysplex object and choose **Configuration -> Maintain Parameters**.
2. In the Job Control branch of the Maintain Parameters window, select **User Variable**.
3. In the User Variable table, add the variable **ACF2ID** with the new batch logon ID as the value.
4. Save the new user variable.

**Configuring and starting subsystems and servers**

To configure the subsystems and servers, you must copy the required started task procedures to your system procedure library and then start the subsystems and servers.

To configure and start the subsystems and servers, perform the following steps:

1. Copy the following started task procedures from the data set that you specified in the **UIM Customized Parm Library** field on the UIM Server Middleware Options panel (for more information, see the installation guide):
   - BMCP subsystem started task procedure
     
     The default started task procedure name for the BMCP subsystem is BMCP. You must use the default procedure name for BMCP.
ADV server started task procedure

The default started task procedure name for the ADV server is CPCxADV (CPCx is the BCSSID). You must use the default procedure name for the ADV server.

The Installation System customizes the ADV server started task procedure name for you. The started task procedure name for the ADV server matches the name that you selected for the BCSS/CPC subsystem.

Execute the started tasks for the ADV server from a JES2 procedure library that is shared by all operating system images in your environment.

CPCINI and CPCTRC DD statements must point to the following members:

- CPCxINI
- CPCxTRC

The CPCINI DD statement must be specified in the ADV server started task procedure. The default CPCxINI sample member contains sufficient keywords for normal operations.

**WARNING**

Do not change the COMPONID=ADV parameter on the EXEC statement in the started task procedure. The value of the COMPONID parameter must be the literal ADV for scheduled tasks to work.

UIM Server started task procedure

The default started task procedure name for the UIM Server is UIMx. The suggested name for console-enabled database products for IMS is MXAPUIM.

BCSS/CPC subsystem started task procedure

The default started task procedure name for the BCSS/CPC subsystem is CPCx. The suggested name for the console-enabled database products for IMS is MXAP.
Configuring and starting subsystems and servers

**NOTICE**
The variable $x$ must be the same value for CPC$x$, CPC$x$ADV, and UIM$x$ (procedure name for the UIM Server).

If you are an existing BMC customer, you may already have the BMCP subsystem started task procedure in your system procedure library.

To determine whether you have a BMCP started task procedure, issue one of the following commands:

`'hlq.DBUSAMP(CPCLBCSS)'`
`'hlq.IMSAMP(CPCLBCSS)'`

2 Start the following subsystems and servers:

- BMCP subsystem (issue the `S BMCP` command)
- BCSS/CPC subsystem and the ADV server (issue the `S MXAP` command)

**NOTE**
During the installation process, you entered CPC information that was used to tailor JCL to generate and start the ADV server and to allocate the ADV repository. For more information, see the installation guide.

For information about a possible CPC initialization failure, see the installation guide.

**WARNING**
When you start the ADV server for the first time or if you are migrating to MAXM Database Advisor for IMS version 2.0.00, a delay occurs before initialization is completed. This delay can be as long as 20 minutes. During the delay, all repository data sets are allocated and initialized.

- UIM Server (issue the `S MXAPUIM` command)

3 Verify that the UIM Server is running by reviewing the JESMSGLG SYSOUT file for the following messages:

- BMC340290I UIM Server, Level V.R.MM MM,DD,YY, initialization complete!
- BMC340122I Ready for MVS Operator Commands

**NOTE**
You can use the console to verify that the subsystems and servers are properly configured. For more information, see “Configuring the console.”
Configuring the console

After the UIM server is installed and running, you can install, configure, and update the console. The UIM server downloads the required code to the console computer. Depending on your user privileges on that computer, you can install the console as follows:

- If you have administrator rights, you can install one instance of the console to be shared by all users of that computer. Tracing and logging are fully supported in this case. The default installation location is `C:\Program Files\BMC Software\Database Management Console`.

- If you do not have administrator rights, you can install a single instance of the console for your use. However, tracing and logging might not work. The default installation location is `C:\Documents and Settings\user\My Documents\BMC Software\Database Management Console`.

Installing the console

Use the following procedure to install the console on a personal computer.

**Before you begin**

You will need:

- The name of the host computer on which the UIM server is running
- The UIM server’s port number
- Access to a supported web browser

If you do not know the host name and port number, consult your system administrator.

**To install the console**

1. From your web browser, enter the URL for the UIM server on the mainframe.

   For example, enter `http://uimServerHostName:uimPortNumber/dna/index.html`, replacing the variables with your information.

2. On the resulting web page, click **Install Local Client**.
Based on the browser that you are using, either open the file from its current location, or save the file to your hard drive and then run the program:

- If you are using Internet Explorer, perform the following steps:
  
  A. In the File Download dialog box, select Run this program from its current location, and click OK.
  
  B. If the Security Warning dialog box is displayed, click Yes.

- If you are using Mozilla Firefox or a similar browser, perform the following steps:
  
  A. In the Save As dialog box, select a location in which to save the installation file, and click Save.

  The .exe file is downloaded.

  B. Browse to the saved file, and double-click it.

4 Enter the requested information in the BMC Database Management Wizard.

5 On the last page of the wizard, select Launch the Database Management Console.

6 Click Finish.

The BMC Database Management Console starts.

---

### Updating the console

When you launch the console, the files on your personal computer (local client) are compared to the file residing on the UIM server. If a change in the installed products has occurred, the console is updated automatically.

---

**NOTE**

If the program that installs the console on the UIM server is updated, you must enter the URL for the UIM server on the mainframe to update the console. For more information, see “Installing the console” on page 209.
Uninstalling the console

Use the following procedure if you need to remove the console from your personal computer.

**To uninstall the console**

1. In Microsoft Windows, open the Control Panel.
   
   For more information, see the documentation for your version of Windows.

2. In the Control Panel window, click *Add/Remove Programs*.

3. Select and uninstall *BMC Database Management Console (user)*.

   The value of *user* is Admin if the console was installed by an administrator; otherwise, the value is the relevant user name.

Launching and exiting the console

The console uses z/OS authentication. When you launch the console, you must provide a valid SAF user ID and password. The security administrator for your site manages the SAF account information for users.

**To launch the console**

1. From the Start menu, select *All Programs => BMC Software => Database Management Console*.

   The login dialog box *(Figure 18 on page 212)* is displayed.
Launching and exiting the console

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Figure 18  BMC Database Management Console login dialog box

2  From the **Host** box, select your UIM host name.

**TIP**

You can manage the host list by clicking the button to the right of the **Host** box. For more information, see “Managing UIM server clients” on page 213.

3  Enter the user ID and password that is valid on the selected host (z/OS) system.

4  *(optional)* Enter your group and account information.

5  Click **OK**.

To exit the console

1  From the **File** menu, select Exit.

2  On the Quit? dialog box, click **Yes**.

3  Click **Yes**.
Managing UIM server clients

When you launch the console, you can manage your UIM server clients from the login dialog box.

To manage the UIM server clients

1. From the Start menu, select All Programs => BMC Software => Database Management Console.

   The BMC Database Management Console login dialog box (Figure 18 on page 212) is displayed.

2. Click the (More) button to the right of the Host box.

   The Manage UIM Server Clients dialog box is displayed (Figure 19).

   Figure 19  Manage UIM Server Clients dialog box

3. Take the appropriate actions to manage your host list:
   - To add a host, click Add button and complete the fields in the Details area.
   - To edit a host, select it in the host list, click Edit and change the fields in the Details area as needed.
   - To delete a host, select it in the host list, and click Delete.
   - To define a host to display as the default host when logging into the console, click the check box next to the host name.
Setting up connections

When you launch the console, you must define at least one host connection. After defining a host connection, you can work with resources on that host. The connection definition remains available whenever you start the console and log on. The names of all defined connections are listed in the Connections folder on the Main tab of the Navigation window.

Overview of the Enterprise List and personal connections

Host connections for individual users are managed separately from host connections for the entire enterprise. This separation makes it easier to isolate activities in different environments (such as testing systems versus production systems or application systems versus other application systems).

The console uses a shared Enterprise List of connections. This list resides on the UIM server. Users who have the appropriate security authority can add, delete, and edit connection information in the Enterprise List. When any user launches the console, the Enterprise List identifies the host connections that are defined.

Each user has a personal list of connections. You can define a connection in your personal list manually by entering connection information (such as the host name and port number). You can also add connections to your personal list by selecting predefined connections from the Enterprise List. After you define a host connection in your personal list, that connection definition remains available whenever you start the console and log on.

Managing the Enterprise List

If you have the appropriate authority, use the following procedure to add, edit, or delete connections in the shared Enterprise List on the UIM server.

To manage the Enterprise List

1. On the Main tab of the Navigation window, right-click the Connections folder and select Manage Host Connections in the Enterprise List.

   The Manage Enterprise Connections dialog box is displayed.

2. Add, edit, or delete a connection as follows:
Using the Add Host Connection command

To add a connection

1. On the Main tab of the Navigation window, right-click the Connections folder and click Add Host Connection.

   The Define Connection dialog box is displayed.

2. In the Host box, enter the name of the host.

3. In the Port box, enter the UIM port number.

   The value in the Display Name field is generated automatically from the host name and the port number.

4. (optional) In the Description box, enter a descriptive name for the connection.

5. In the Login Information area, select whether to connect by using console credentials or with credentials that you specify.

3. Click OK to apply your changes to the shared Enterprise List and close the dialog box.

Using the Add Host Connection command

To define a single connection quickly, use the Add Host Connection command. Use this method to create a connection definition when you know the required connection information, such as host and port.

To add a connection

1. Click Add.

2. Enter the connection information in the Details area.

3. Click Done.

Edit a connection

1. Select the connection, and click Edit.

2. Change the connection information in the Details area.

3. Click Done.

Delete a connection

1. Select the connection.

2. Click Delete.
Using the Add Host Connection command

**NOTE**
Console credentials are the user name and password that you used to log on to the console. If you select **Connect using these credentials**, you must enter a user name and password. If necessary, you can also enter the account and group to which the user name belongs.

6 *(optional)* To connect automatically whenever the console starts, select **Autoconnect at console start**.

7 Click **OK**.

The new host connection is displayed in the **Connections** folder on the **Main** tab of the Navigation window.

**To connect to a host**

1 On the **Main** tab in the Navigation window, right-click the host connection and click **Connect**.

The Connect dialog box displays the connection information for the selected host.

2 In the **Login Information** area, select whether to connect by using console credentials or with credentials that you specify.

**NOTE**
Console credentials are the user name and password that you used to log on to the console. If you select **Connect using these credentials**, you must enter a user name and password. If necessary, you can also enter the account and group to which the user name belongs.

3 *(optional)* To connect automatically whenever the console starts, select **Autoconnect at console start**.

4 Click **OK**.
Using a global connections list

You can use the BBM.SDBA.DNA.ECL SAF resource to configure the console to use a common global connections list. When you use the global connections list, you define users as having write access or read access:

- **users with write access**

  The console is mostly unchanged for users with write access except the **Save Password** and **Autoconnect at console start** check boxes are disabled in the following dialogs:
  
  - Connect
  - Define Connection
  - Edit Connection

- **users with read access**

  The following console items are removed or disabled for users with read access:
  
  - all menus for creating, editing, and deleting connections
  - all menus related to the Enterprise List
  - all menus for adding a DB2 subsystem

**To define a global connections list**

Add the following rule to your SAF resource definitions:

```
<rule name="SDBA_DNA_EDIT_CONNECTION_LIST"
resource="BBM.SDBA.DNA.ECL"
class="FACILITY" />
```
Implementing access controls

You can limit access to product functions and features by using access controls. This section describes how to set and use access controls to limit access to console-enabled product function and features.

Overview

The console lets you limit users’ ability to access product functions for console-enabled products. For example, you might want to limit access to the JES queue for security purposes. You might also limit the ability of a user to modify the connection list. For various purposes (such as auditing and training), you can limit the IMS systems in which users can use the products, and you can also limit the product functions that users can perform in an IMS system.

By default, all console components and functions are unrestricted. If you want to control users’ ability to access product components and use product functions, you must implement access controls.

To limit access, you use the system authorization facility (SAF). SAF is part of z/OS and provides the interface to your security product such as RACF, ACF2, or Top Secret. SAF tracks z/OS resources and uses security rules to determine who can access these resources and the type of access that they have (such as READ or UPDATE access).

Your security administrator identifies the resources to be managed within the FACILITY class and identifies the users and their permitted type of access to each resource. Based on an individual user’s permission to access those SAF resources, the user interface enables or disables the corresponding functionality.

You may want to define access controls to implement and enforce your site’s security policy. Access controls are typically established immediately after product installation but can be implemented later. Implementation will require cooperation from your security administrator and senior DBA.
Implementing access controls

Implementing access controls involves the following basic steps:

1. Plan the access control policy for your console-enabled products as described in the section “Planning your access control policy.”

2. Create the required resource types to SAF as described in the section “Creating SAF resources” on page 220.

3. Create the security rules for the users to access the resource types as described in section “Creating access rules for SAF resources” on page 228.

4. Perform any product-specific tasks to activate the controls, such as assigning an IMSPLEX name to be used by SAF as described in section “Assigning an IMSPLEX or IMS system name to be used by SAF” on page 229.

5. Protect your access controls as described in section “Protecting your access controls” on page 230.

---

**NOTE**
The FACILITY default class is used to implement access controls. To use a different class, see “Special considerations” on page 232.

---

Planning your access control policy

When you plan your access control policy, you must decide which resource types you want to put under access control. You must also identify the users or user groups who will have permission to access and use resources.

When you have made these decisions and identified the resources and users, you can define the required resource types in SAF and write the security rules for the users to access those resource types. Then you can identify the system or subsystem in which you want to activate those controls.
Creating SAF resources

SAF uses groups, called classes, for easier implementation. When you create SAF resources, BMC recommends that you take advantage of the FACILITY class that is predefined in SAF. If you decide to use a class other than FACILITY, see “Special considerations” on page 232.

The SAF resources that you create can be based on the following elements:

- user ID
- product function or feature
- IMS RECON name
- combination of function or feature and IMS RECON name

The following types of access are predefined:

- full
- write
- read
- no access

SAF resource definition pattern for the console

SAF resource definitions for the console are based on the following pattern:

BBM.SDBA.*.*.*

BBM.SDBA is the high-level qualifier that the console uses to define resources. The asterisks that follow represent additional product-specific qualifiers. The number of qualifiers that follow BBM.SDBA is product specific.

To create a SAF resource to control access to the shared Enterprise list of connections, specify the following definition:

BBM.SDBA.DNA.ECL
If you are creating a SAF resources to control access to the JES queue specify the following definitions:

- **BBM.SDBA.DNA.JOBVIEW.SPOOL** (to define a resource that controls access to the JES viewer)
- **BBM.SDBA.DNA.JOBMASK.SPOOL** (to define a resource that controls access to a filter for the jobs that are displayed in the JES viewer)

--- **NOTE**

If any of these resources are not defined to your security system (for example, RACF or ACF2), all users will have unrestricted access to that particular function.

**SAF resource definition pattern for IMS products**

SAF resource definitions for IMS database products are based on the following pattern:

**BBM.SDBA.IMSDB.**

**BBM.SDBA.IMSDB** is the high-level qualifier that is used to define resources. The first asterisk is the position for the IMS RECON name. The second asterisk is the position for the resource type (ENV, DBG, and so on).

**Creating access controls by user**

The simplest access policy is to restrict or allow access on all functions of the console that have access controls. This type of access policy means that only a single SAF resource must be created and named **BBM.SDBA.DNA.**

**Figure 20** shows the sample JCL to define resources to RACF globally.

---

**Figure 20  RACF resource definitions for global access controls**

```
*** Top of Data ***********************************************
//RACFBTCH JOB (PHUL), 'WITT', MSGCLASS=X, JOB07124
// CLASS=A, REGION=4M, NOTIFY=&SYSUID
//*
//SAMPLE DATABASE MANAGEMENT CONSOLE RACF RESOURCE DEFINITIONS
//******************************************************************************
//TSO EXEC PGM=IKJEFT01, REGION=4M, DYNAMNBR=30
//SYSTSPRT DD SYSOUT=* 
//SYSTSIN DD *
RDEFINE FACILITY BBM.SDBA.DNA.
```
For IMS products, you can restrict access to users. Only a single SAF resource must be created. The resource name is as follows:

BBM.SDBA.IMSDB.*.*

### Creating access controls by function

You can control access based on functional capability. Table 62 lists types of functions that you can put under access control.

<table>
<thead>
<tr>
<th>Resource type</th>
<th>Functional capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>BBM.SDBA.IMSAA.*.AAS</td>
</tr>
<tr>
<td></td>
<td>The AAS resource type controls whether a user is authorized to view or change policies or defaults for Application Accelerator. A user must have READ permission to view the Resources Savings window. A user must have WRITE permission to access and make changes in the Setup Wizard, the Manage Policy window, and Manage Defaults window.</td>
</tr>
<tr>
<td>DBG</td>
<td>BBM.SDBA.IMSDB.*.DBG</td>
</tr>
<tr>
<td></td>
<td>The DBG resource type controls whether a user is authorized to use the following functions:</td>
</tr>
<tr>
<td></td>
<td>■ add, edit, and delete database groups and database group criteria</td>
</tr>
<tr>
<td></td>
<td>■ manage database ownership</td>
</tr>
<tr>
<td>DBRC</td>
<td>BBM.SDBA.IMSDB.*.DBRC</td>
</tr>
<tr>
<td></td>
<td>The DBRC resource type controls whether a user is authorized to use the List History function. If a user has NONE access, the List History function will not be enabled. If a user has READ access, the user is authorized to execute a List History function and use the GENJCL button but the user is not authorized to use the DBRC Commands button. If a user has UPDATE authority, the user has access to all List History functionality.</td>
</tr>
<tr>
<td>ECL</td>
<td>BBM.SDBA.DNA.ECL</td>
</tr>
<tr>
<td></td>
<td>The ECL resource type controls whether a user is authorized to manage host connections in the Enterprise List.</td>
</tr>
<tr>
<td>ENV</td>
<td>BBM.SDBA.IMSDB.*.ENV</td>
</tr>
<tr>
<td></td>
<td>The ENV resource type controls whether a user is authorized to use the following functions:</td>
</tr>
<tr>
<td></td>
<td>■ add, edit, and delete IMS RECON repository definitions</td>
</tr>
<tr>
<td></td>
<td>■ add, edit, and delete IMS subsystem repository definitions</td>
</tr>
<tr>
<td></td>
<td>■ use Auto Configure functions</td>
</tr>
</tbody>
</table>
Table 62  Functional capability resource types (part 2 of 2)

<table>
<thead>
<tr>
<th>Resource type</th>
<th>Functional capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMO</td>
<td>BBM.SDBA.IMSDB.*.RMO</td>
</tr>
<tr>
<td></td>
<td>The RMO resource type controls whether a user is authorized to use the following functions:</td>
</tr>
<tr>
<td></td>
<td>- add, edit, and delete recovery threshold parameters</td>
</tr>
<tr>
<td></td>
<td>- add, edit, and delete RECON threshold parameters</td>
</tr>
<tr>
<td></td>
<td>- access and use Recovery Monitor functions</td>
</tr>
<tr>
<td></td>
<td>- run Recovery Advisor analysis on demand</td>
</tr>
<tr>
<td>SCD</td>
<td>BBM.SDBA.IMSDB.*.SCD</td>
</tr>
<tr>
<td></td>
<td>The SCD resource type controls whether a user is authorized to use the following functions:</td>
</tr>
<tr>
<td></td>
<td>- add, edit and delete schedules for the Database Advisor database scan</td>
</tr>
<tr>
<td></td>
<td>- add, edit, and delete schedules for Recovery Advisor analysis</td>
</tr>
<tr>
<td></td>
<td>- add, edit and delete schedules for repository backups</td>
</tr>
<tr>
<td></td>
<td>- add, edit and delete other scheduled tasks</td>
</tr>
<tr>
<td>SPOOL</td>
<td>BBM.SDBA.DNA.SPOOL</td>
</tr>
<tr>
<td></td>
<td>The SPOOL resource type controls the following functions:</td>
</tr>
<tr>
<td></td>
<td>- Browsing jobs in the JES queue that are owned by the connected user (JOBVIEW)</td>
</tr>
<tr>
<td></td>
<td>- Browsing jobs in the JES queue by filtering on a job name (JOBMASK)</td>
</tr>
<tr>
<td>SUB</td>
<td>BBM.SDBA.IMSDB.*.SUB</td>
</tr>
<tr>
<td></td>
<td>The SUB resource type controls whether a user is authorized to submit jobs to JES.</td>
</tr>
<tr>
<td>SVL</td>
<td>BBM.SDBA.IMSDB.*.SVL</td>
</tr>
<tr>
<td></td>
<td>The SVL resource type controls whether a user is authorized to edit general database administration parameter values.</td>
</tr>
<tr>
<td>TSH</td>
<td>BBM.SDBA.IMSDB.*.TSH</td>
</tr>
<tr>
<td></td>
<td>The TSH resource type controls whether a user is authorized to use the following functions:</td>
</tr>
<tr>
<td></td>
<td>- edit analysis and Conditional Reorg feature settings</td>
</tr>
<tr>
<td></td>
<td>- edit Database Advisor threshold values</td>
</tr>
</tbody>
</table>
NOTE
If you are implementing RECON-level access controls, you must grant at least one user CONTROL access for the ENV functional capability so that IMSPLEX names which are used by SAF can be assigned. Because all access controls are implemented at the IMSPLEX level in the object tree and IMSPLEXes are added from the host level (one level above the IMSPLEX level), you must have access to the ENV functional capability for all RECONs. The resource definition to create would be BBM.SDBA.IMSDB.*.ENV.
You can create SAF resources to control access that is based on functional capability. Figure 21 shows example JCL to use for RACF. Members DLIARCF1 and DLIARCF2 of the sample library contain JCL for creating function-based resources.

**Figure 21  RACF resource definitions for function-based access controls**

---

---

You can further restrict the SPOOL resource type by the job name. To allow JES viewer access but restrict filtering on the job name, use the following control cards in the RACF JCL instead of the BBM.SDBA.DNA.*.SPOOL control card:

- RDEFINE FACILITY BBM.SDBA.DNA.JOBVIEW.SPOOL
- RDEFINE FACILITY BBM.SDBA.DNA.JOBMASK.SPOOL
Creating access controls by IMS RECON name

If you are implementing RECON-level access control, you must assign an IMS RECON name (SAF) to your IMSPLEX. You can define the IMS RECON name in the console IMSPLEX window. For instructions about opening the IMSPLEX window, see the online Help.

To restrict access by IMS RECON, you must create the following SAF resource for each IMS RECON that you want to put under control:

BBM.SDBA.IMSDB.%recon_name%.*

%recon_name% is the IMS RECON name.

--- EXAMPLE ---

This example shows how to restrict access by IMS RECON name, using the following names:

- TESTRCN1, TESTRCN2, ...
- PRODRCN1, PRODRCN2, ...

Use the following SAF resources:

- BBM.SDBA.IMSDB.TEST*.*
- BBM.SDBA.IMSDB.PROD*.*

Use the following RACF control cards:

```
RDEFINE FACILITY BBM.SDBA.IMSDB.TEST*.*
RDEFINE FACILITY BBM.SDBA.IMSDB.PROD*.*
PERMIT  BBM.SDBA.IMSDB.TEST*.*  CLASS(FACILITY) +
        ID(USER00)    ACCESS(NONE)
PERMIT  BBM.SDBA.IMSDB.TEST*.*  CLASS(FACILITY) +
        ID(DBAGRP)    ACCESS(UPDATE)
PERMIT  BBM.SDBA.IMSDB.PROD*.*  CLASS(FACILITY) +
        ID(USER00)    ACCESS(NONE)
PERMIT  BBM.SDBA.IMSDB.PROD*.*  CLASS(FACILITY) +
        ID(USER01)    ACCESS(READ)
```
This specification restricts access to all IMS RECONs that are grouped by naming convention.

--- NOTE ---

If you are implementing RECON-level access control and IMSPLEXes are already defined, you must assign an IMS RECON name to each existing IMSPLEX. The IMS RECON name that is assigned to the RECON must match the name that is used in the corresponding SAF resource.

--- Creating access controls by function and RECON name ---

Another access control policy is to restrict access by a combination of IMS RECON and function. You must create the following SAF resources for each RECON name:

- BBM.SDBA.IMSDB.%recon_name%.ENV
- BBM.SDBA.IMSDB.%recon_name%.DBG
- BBM.SDBA.IMSDB.%recon_name%.SVL
- BBM.SDBA.IMSDB.%recon_name%.SCD
- BBM.SDBA.IMSDB.%recon_name%.SUB
- BBM.SDBA.IMSDB.%recon_name%.SPL
- BBM.SDBA.IMSDB.%recon_name%.TSH
- BBM.SDBA.IMSDB.%recon_name%.RMO

%recon_name% is the RECON name.

--- EXAMPLE ---

This example shows how to restrict access to submit and threshold functions for test RECONs.

Use the following SAF resources:

- BBM.SDBA.IMSDB.TEST*.TSH
- BBM.SDBA.IMSDB.TEST*.SUB

Use the following RACF control cards:

```
PERMIT BBM.SDBA.IMSDB.TEST*.TSH CLASS(FACILITY)+ ID(USER00) ACCESS(NONE)
PERMIT BBM.SDBA.IMSDB.TEST*.SUB CLASS(FACILITY)+ ID(USER00) ACCESS(NONE)
```
Creating access rules for SAF resources

When SAF resources have been created, you must define the access rules to those resources for a user (or group of users).

Table 63 lists the types of access that you can assign to a SAF resource for a user (or a group of users), and the type of functionality the access type will provide.

Table 63  Access resources and types

<table>
<thead>
<tr>
<th>Resource</th>
<th>READ access type</th>
<th>UPDATE access type</th>
<th>NONE access type</th>
<th>CONTROL access type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBM.SDBA.DNA.ECL</td>
<td>User can add a connection to the tree from the connections in the Enterprise list.</td>
<td>User can manage the connections in the Enterprise list of connections.</td>
<td>User has no access to the Enterprise list of connections.</td>
<td>N/A</td>
</tr>
<tr>
<td>BBM.SDBA.DNA.JOBVIEW.SPOOL</td>
<td>User is able to view the jobs that the user owns on the JES queue.</td>
<td>Same as READ.</td>
<td>User has no access to the JES Viewer.</td>
<td>N/A</td>
</tr>
<tr>
<td>BBM.SDBA.DNA.JOBMASK.SPOOL</td>
<td>User can change the job selection criteria to view jobs on the JES queue by job name.</td>
<td>Same as READ.</td>
<td>User has no access to view jobs on the JES queue by job name, and can only view jobs owned by the connected user name.</td>
<td>N/A</td>
</tr>
<tr>
<td>IMS Products</td>
<td>User is able to browse (but not update) the resource.</td>
<td>User is able to browse and update the resource.</td>
<td>User is not able to access the resource.</td>
<td>User is able to browse and update the resource, as well as assign a SAF resource name to an IMS RECON.</td>
</tr>
</tbody>
</table>

a If the BBM.SDBA.DNA.JOBVIEW.SPOOL access is set to NONE for a given user, that user’s BBM.SDBA.DNA.JOBMASK.SPOOL access is also NONE, regardless of the access that is specified in the RACF rule. The user must have READ access on JOBVIEW to have READ access on JOBMASK.

**NOTE**

If you are implementing RECON-level access controls, you must grant at least one user CONTROL access for the ENV functional capability so that IMSPLEX names which are used by SAF can be assigned. Because all access controls are implemented at the IMSPLEX level in the object tree and IMSPLEXes are added from the host level (one level above the IMSPLEX level), you must have access to the ENV functional capability for all RECONs. The resource definition to create would be BBM.SDBA.IMSDB.*.ENV.
Assigning an IMSPLEX or IMS system name to be used by SAF

Figure 22 is an example of defining UPDATE access in RACF.

```
RDEFINE FACILITY BBM.SDBA.DNA.ECL
RDEFINE FACILITY BBM.SDBA.DNA.JOBVIEW.SPOOL
RDEFINE FACILITY BBM.SDBA.DNA.JOBMASK.SPOOL
PERMIT BBM.SDBA.DNA.ECL CLASS(FACILITY) ID(<USERID1>) ACCESS(UPDATE)
PERMIT BBM.SDBA.DNA.JOBVIEW.SPOOL CLASS(FACILITY) ID(<USERID1>) + ACCESS(READ)
PERMIT BBM.SDBA.DNA.JOBMASK.SPOOL CLASS(FACILITY) ID(<USERID1>) + ACCESS(NONE)
PERMIT BBM.SDBA.DNA.ECL CLASS(FACILITY) ID(<USERID2>) ACCESS(READ)
PERMIT BBM.SDBA.DNA.JOBVIEW.SPOOL CLASS(FACILITY) ID(<USERID2>) + ACCESS(NONE)
```

### Assigning an IMSPLEX or IMS system name to be used by SAF

The IMSPLEX (or IMS system) name that is used by SAF uniquely identifies the RECON for which SAF resources are being defined. The IMSPLEX name is used as a qualifier in resource definitions to identify the IMS RECON.

**NOTE**

If you are implementing RECON-level access controls, you must assign an IMSPLEX name for SAF to use for each IMSPLEX that you define in the IMS database administration environment. The name that is assigned to the IMSPLEX must match the name that is used in corresponding resource definitions.

Before you can assign an IMSPLEX name for SAF to use, an IMSPLEX must be defined to the IMS database administration environment. To define an IMSPLEX, perform one of the following steps:

- Run Auto Configure.
- Add the IMSPLEX manually.

**NOTE**

The IMSPLEX name that SAF uses is specified in the IMSPLEX window.

To assign the IMSPLEX name, specify a value in the **IMSPLEX name to be used by (SAF) field**.

For instructions about opening the IMSPLEX window, see the online Help.
To assign IMSPLEX names that are used by SAF, you must have CONTROL access for the ENV functional capability. Because all access controls are implemented at the IMSPLEX level in the object tree and IMSPLEXes are added from the host level (one level above the IMSPLEX level), you must have access to the ENV functional capability for all IMS RECONs.

If you modify the value for the IMSPLEX name to be used by (SAF) field, you must also modify the SAF resource definitions to synchronize the new IMSPLEX name with the qualifier in the resource definitions.

**Protecting your access controls**

During installation of console-enabled products, you are not prompted to implement access controls. However, you are prompted to define the address spaces for the UIM server and any other servers that are installed. Files in the server address space determine server configuration.

**UIM Server configuration**

The UIM Server configuration file SMF$DHSP is an XML configuration file that is used to implement access controls. The file is installed in the UIM Server configuration data set (default data set name `HLQ.CONFIG`) on the mainframe.

To protect access control policy from unauthorized changes, you must secure update access to the XML configuration file so that defined resource names cannot be substituted.

Figure 23 shows the format that is used in the XML configuration file for specifying access controls. The format includes the name of the rule, the name of the resource, and the SAF class.

**Figure 23  Console configuration file excerpt**

```xml
<rule name="SDBA_DNA_EDIT_CONNECTION_LIST"
  resource="BBM.SDBA.DNA.ECL"
  class="FACILITY"/>

<rule name="SDBA_DNA_SPOOL"
  resource="BBM.SDBA.DNA.%FUNCTION%.SPOOL"
  class="FACILITY"/>
```
When a user tries to access a product component or function that is under access control, the information in the XML configuration file is validated against the resources that are defined in the security profile and the access rules that are assigned to the user.

If you use the default configuration (CLASS=FACILITY), the XML configuration file is not edited or changed during installation and no configuration changes are required. If you do not use the default configuration, see “Special considerations” on page 232.

**IMS product configuration**

During product installations, you are prompted to define the UIM and ADV server address spaces. Files in the UIM server address space determine server configuration for IMS products. One of those files (XMLConfigurationFile member ICO$DHSP) is an XML configuration file that is used to implement access controls. This file is downloaded to the UIM server configuration partitioned data set (default data set name hlq.CONFIG) on the mainframe.

If you use the default configuration, no configuration changes are required. To protect the access control policy from unauthorized changes, you must secure update access to the XML configuration file so that the defined resources names cannot be substituted.

**Figure 24** shows an excerpt from the XML configuration file (member ICO$DHSP, DLISDHSP, or BRI$DHSP) that is used to follow the access controls which are defined in SAF.

**Figure 24  Configuration file excerpt**

```xml
<rule name="SDBA_IMSDB_ENV"
  resource="BBM.SDBA.IMSDB.%RECON_NAME%.ENV"
  class="FACILITY" />
<rule name="SDBA_IMSDB_SCD"
  resource="BBM.SDBA.IMSDB.%RECON_NAME%.SCD"
  class="FACILITY" />
<rule name="SDBA_IMSDB_SVL"
  resource="BBM.SDBA.IMSDB.%RECON_NAME%.SVL"
  class="FACILITY" />
```

When a user attempts to perform a certain function or access a particular IMS RECON, the information in the XML configuration file is validated against the resources that are defined in the security profile and the access rules that are assigned to the user. Therefore, it is important to use the IMSPLEX name that is used by SAF (specified in the IMSPLEX window-IMSPLEX name that used by (SAF) field) as the IMS RECON name in the SAF resource definitions.
Special considerations

When you are implementing access controls, you must consider the following requirements:

- The default configuration in console-enabled products uses CLASS=FACILITY. To use a different class, you must edit the XML configuration file `HLQ.CONFIG(SMF$DHSP)` attributes. The class name that is defined to SAF must be the same as the class name attribute in the XML configuration file. To use batch JCL to create resource definitions, you must also edit the JCL with the new class name.

- The XML configuration file should be protected from UPDATE access after installation to prevent a user at your site from working around access controls.

- IMSPLEXes are displayed on the console navigation tree even if a user has no READ or UPDATE access.
Administering products and components

This part describes how to administer database products and components for IMS.

This part presents the following topics:

Chapter 8
Introduction to RMGR components and requirements

Chapter 9
Getting started with RMGR administration

Chapter 10
Managing the RMGR started task or job

Chapter 11
Managing RMGR option records

Chapter 12
Maintaining the RMGR repository

Chapter 13
Administering and operating the DBUSS

Chapter 14
Administering and operating subsystems for console-enabled functions

Chapter 15
Administering repositories for console-enabled functions
Introduction to RMGR components and requirements

This chapter introduces the Recovery Manager (RMGR) components and requirements of the BMC Backup and Recovery Solution for IMS and the RECOVERY MANAGER for IMS product. The following information is included:

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  RMGR repository .......................................................... 237
  RMGR ISPF interface and Help system ................................. 238
  Batch utilities .............................................................. 238
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RMGR components

The following sections describe the physical components of RMGR. This information helps you understand how you will be working with RMGR.

**NOTE**

This manual refers to the collection of Recovery Manager functions, utilities, features, and components simply as RMGR. For information about the functions and features of RMGR, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

**RMGR executable load modules**

RMGR runs as a started task or job in the operating system. You can associate RMGR with your IMS systems through various techniques.

**RMGR associations with IMS**

One RMGR is associated with each IMS system for which you want to use recovery management services. RMGR supports a data-sharing environment, in which two or more IMS online subsystems are sharing databases; this group of data-sharing IMS systems is called a sharegroup. A recovery management function can be processed on any of the RMGRs that are defined as belonging to the sharegroup.

Each RMGR maintains a control block structure that uses a minimal amount of extended CSA for storing control information and communicating with the associated IMS. RMGR provides a series of dynamic IMS extensions to help manage the associated IMS.

**RMGR use of the DFSPPUE0 exit routine**

The Single-RMGR configuration uses the IBM Partner Product exit routine (module DFSPPUE0). IMS calls this routine to allow the initialization of products that run with IMS.

BMC distributes the BMC product load library with the DFSPPUE0 module. IMS calls the exit routine if module DFSPPUE0 resides in a library that is included in the STEPLIB DD statement in the IMS control region JCL. IMS calls the routine at the end of IMS startup, immediately before issuing the `DFS994I START COMPLETED` message. The routine can load or link one or more partner product routines. IMS deletes the routine from working storage when control returns to IMS.
RMGR support for the Extended Partner Product exit service

Beginning with IMS 11 with APAR PM04456, IMS supports the Extended Partner Product exit service through the IMS DFSDFxxx member of the procedure library (PROCLIB). If you use this service, IMS supports multiple partner product exits, regardless of the order of the data sets in the STEPLIB concatenation. IMS calls each exit in the order that you have listed the exit names with the EXITS keyword in the DFSDFxxx member. For more information about the DFSDFxxx member, see the appropriate IMS system definition topics in the IBM IMS documentation set.

The RMGR exit is named IRMPPUE0. The exit for the BMC MAXM Reorg/Online for IMS product is named LCLPPUE0. The LCLPPUE0 exit calls the IRMPPUE0 exit if you have a license that activates RMGR. Therefore, if you have both RMGR and MAXM Reorg/Online, specify LCLPPUE0 instead of IRMPPUE0 with the EXITS keyword:

<table>
<thead>
<tr>
<th>Exit or exits to call</th>
<th>EXITDEF statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMGR only</td>
<td>EXITDEF=(TYPE=PPUE,EXITS=(IRMPPUE0))</td>
</tr>
<tr>
<td>RMGR and MAXM Reorg/Online</td>
<td>EXITDEF=(TYPE=PPUE,EXITS=(LCLPPUE0))</td>
</tr>
</tbody>
</table>

RMGR DBRC interfaces

RMGR provides interfaces to DBRC for accessing recovery information.

RMGR Startup utility

The RMGR Startup utility helps you automate RMGR startup. This batch utility starts RMGR as part of the IMS startup procedure. By implementing RMGR startup with the utility, you can ensure that RMGR is always available when IMS is available.

RMGR repository

Each RMGR connects to an RMGR repository, a data set that RMGR uses to store control and other recovery management information. In a data-sharing environment, all RMGRs in the sharegroup must share a single RMGR repository.

The RMGR repository is a virtual storage access method (VSAM) key-sequenced data set (KSDS). The repository is created during RMGR installation. You create records in the repository when you define groups, profiles, utilities, and environment information. RMGR creates records in the repository to track the objects that populate the groups and to report the status of functions you have initiated.
The repository needs periodic backups, checks of the logical structure, and deletion of obsolete records. Utilities are provided for performing these maintenance tasks. BMC also recommends that you reorganize the repository data set on a regular basis. For more information, see “Repository maintenance tasks” on page 345.

**RMGR ISPF interface and Help system**

You can perform almost all recovery management tasks through the RMGR ISPF interface. The ISPF interface provides a simple, powerful, and easy-to-use method for performing tasks quickly and efficiently. You can use it for most tasks, including the following:

- defining and maintaining groups and viewing group and object information
- initiating functions against groups
- monitoring and viewing the results of functions
- defining and maintaining records that describe your environment and the processing options you want to use
- viewing information about RMGR error and informational messages

The RMGR ISPF interface incorporates complete Help information for every panel and message. This information is available at any time through the HELP command (usually assigned to F1).

**Batch utilities**

RMGR provides batch utilities for performing many recovery management and product maintenance tasks. Control statement syntax for the batch utilities is simple; you use keywords to specify input information and processing options. You can use utilities for the following tasks:

- You can use a batch utility to build groups; this method may be preferable to building them interactively with the ISPF interface when you must process a large number of objects (such as when you are first implementing RMGR in an environment).

- You can use a batch utility to initiate recovery management functions, such as Check Assets, Hold Point of Consistency, and Group Validation. By using your operating system scheduling utility to schedule the execution of these functions, you can automate execution of the functions and ensure that they are performed as often as necessary to help you meet your data management goals.

- You can use a batch utility to automate repository maintenance tasks.
You can use batch utilities for tasks such as issuing IMS commands, simulating recoveries, automatically creating database data set delete and define statements, and cleaning up a RECON data set in preparation for disaster recovery.

**JCL PDS and log analysis summary file**

The Create Recovery JCL function writes the created JCL as members of a partitioned data set that you allocate. The Log Analysis function writes log information to a VSAM data set, called the log analysis summary file.

**Installation System**

BMC provides an installation system that you use to perform initial and maintenance installations of RMGR. You also use the installation system to perform first-time customization tasks, such as initializing the RMGR repository. You interactively provide information about your system and how you want to install the product, and the installation system uses this information to tailor the JCL for performing installation and customization tasks. You can then edit the tailored JCL before you submit it for execution.

As part of tailoring the JCL to install the products, the installation system also tailors JCL for performing various product tasks and places these members in the product sample library. You can use these members as models for your own jobs. The member names begin with `IRM`.

**CPU authorization passwords**

BMC authorizes its products to run on specific CPUs and controls this authorization with CPU authorization passwords. After you install a permanent CPU authorization password that is issued for your processor, you do not need to work with this password again unless you change processors.

For RMGR to initialize in the IMS environment, the CPU authorization password must be present in both RMGR and IMS; the password must be in the STEPLIB or BMCPSWD DD concatenation in both the IMS and RMGR startup JCL.
RMGR requirements and considerations

The following sections discuss the system resources that RMGR requires or supports and other considerations for using RMGR.

Hardware

RMGR operates on any processor that supports the operating system. BMC licenses specific products to run on specific CPUs.

Operating system

RMGR supports the versions and releases of the OS/390, z/OS, and MVS/ESA operating systems that IBM supports as of the date of this publication. RMGR uses storage above the 16 MB line whenever possible.

RMGR uses the Cross-System Coupling Facility (XCF). For more information, see “Understanding XCF requirements” on page 246.

IMS

RMGR supports the versions and releases of the IMS that IBM supports as of the date of this publication.

WARNING
The following IMS modules must not be loaded in the link pack area (LPA) or the modifiable link pack area (MLPA):

DBFDEDDB0
DBFEMH00
DFSDBDR0
DFSFLLG0
DFSRRA00
DFSVNUCx
**ISPF**

The IBM Interactive System Productivity Facility (ISPF) is required for RMGR. RMGR supports the versions and releases of ISPF that IBM supports as of the date of this publication. A region size of 3072 KB is required. BMC recommends that you use at least 4096 KB.

**Databases**

RMGR supports all full-function DL/I database organizations and Fast Path data entry databases (DEDBs), with the exception of generalized sequential access method (GSAM) databases and main storage databases (MSDBs).

**DBRC**

All databases to be manipulated by RMGR must be registered to DBRC. DEDBs that are designated as USERRECV in the RECON data sets are not supported by RMGR, and those areas should not be included in elemental groups. All image copies, logs, and change accumulations must also be included in the operating system ICF catalog. RMGR does not support the use of DEFLTJCL.

**Abbreviated dumps**

Abbreviated dumps do not provide the type of information needed for problem resolution. To ensure that any dump produced is complete, RMGR dynamically allocates the ABNLIGNR DD statement for the following types of jobs:

- Batch Interface utility (IRMBATCH)
- IMS Command utility
- RMGR started task or job
- Disaster Recovery RECON Cleanup (DRRCN) utility
- Automatic Delete/Define (DRAMS) utility

The ABNLIGNR DD statement turns off the Abend-AID product.
This chapter provides basic information about getting started with the Recovery Manager (RMGR) components of the BMC Backup and Recovery Solution for IMS and the RECOVERY MANAGER for IMS product. The following information is included:

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<th>Page</th>
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<td>Handling security in the RMGR environment</td>
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<td>Understanding RMGR configuration</td>
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<td>Understanding XCF requirements</td>
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<td>Administering RMGR</td>
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<td>Working with the RMGR ISPF interface</td>
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<td>Accessing the ISPF interface</td>
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<td>Preventing display of unwanted messages</td>
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<td>Using the BMC Software IMS DBU Product Selection Menu</td>
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<td>Using the Recovery Manager Primary Menu panel</td>
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<td>Implementing a legacy multiple-RMGR configuration</td>
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<td>Creating a new RMGR configuration from a model</td>
<td>270</td>
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<tr>
<td>Changing an RMGR configuration</td>
<td>271</td>
</tr>
</tbody>
</table>
Understanding RMGR installation and customization

A system programmer in a central administration group usually installs and customizes RMGR and other BMC Backup and Recovery products. If you did not install and customize RMGR yourself, a general understanding of the installation and customization tasks that were performed might be useful as you start using RMGR.

During the product installation process, the installer provides information that is used to tailor JCL to perform installation tasks. After successful completion of the installation jobs, the installer performs other installation and customization tasks. Then RMGR is ready to be configured, a task that is usually performed by the RMGR administrator.

For more information, see the BMC Products for IMS Installation Guide.

NOTE
This manual refers generically to the product load library (which means the library that contains the product load modules) and the product sample library (which means the library that contains the product sample JCL). The data set names of these libraries are specified during the product installation process. During the customization process, members of the product sample library are tailored to reflect product data sets and other information that is specified during installation and customization.

Handling security in the RMGR environment

Standard security methods are used to secure RMGR components and to allow RMGR and its users to access IMS and other resources in the environment. As the RMGR administrator, you may be responsible for ensuring that RMGR security considerations are addressed.

Security tasks are usually performed during RMGR configuration. For more information, see “Handling security in the RMGR environment” on page 42.
Understanding RMGR configuration

During the installation of RMGR, the basic components of RMGR (such as the repository, the ISPF interface, and the RMGR started task or job) were prepared for use. In addition, sample JCL was created for performing various RMGR administrative and user tasks. This general preparation allowed the installer to ensure that RMGR was installed successfully, but it probably did not set up an RMGR configuration that completely covers all IMS systems in your environment.

You can set up an RMGR configuration to fit any combination of stand-alone IMS systems, IMS data-sharing systems, and IMS systems in a sysplex environment. You can also change an existing RMGR configuration to accommodate changes in the IMS environment, and you can implement RMGR in new IMS environments as needed. For more information, see “RMGR configuration tasks” on page 260.

An RMGR configuration consists of the following elements:

- One RMGR must be active (when RMGR functions are executing) for each set of IMS systems that are sharing the same RECON. Keywords in the RMGR started task or job identify the IMS systems for this RMGR to serve and a sharegroup name for data sharing or IMSPLEX environments.

  During installation, JCL is tailored for starting RMGR. For more information, see Chapter 10, “Managing the RMGR started task or job.”

- A repository must be available for storing RMGR records.

  During installation, a repository is created and populated with default records. For more information, see Chapter 12, “Maintaining the RMGR repository.”

- An RMGR environment record must exist in the repository for each RMGR that uses the repository. This record contains job statement information that RMGR inserts into created recovery JCL.

  For more information, see “Working with RMGR environment records” on page 301.

- If the RMGR serves only one IMS, either an IMS environment record or a sharegroup environment record must exist in the repository. In contrast, if the RMGR serves a set of IMS systems that are sharing the same RECON, a sharegroup environment record is required.

  Environment records contain essential information about the IMS or sharegroup environment, such as:

  — data set names of the cataloged IMS system libraries that provide an application interface to the IMS database
Understanding XCF requirements

RMGR uses the Cross-System Coupling Facility (XCF). During communication processes, RMGR uses the following names to establish or join XCF groups:

<table>
<thead>
<tr>
<th>XCF groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCIRM00</td>
<td>one for each active RMGR</td>
</tr>
<tr>
<td>BMCIRM01</td>
<td>one for each active RMGR, and one for each active IMS</td>
</tr>
<tr>
<td></td>
<td>This group is not used with a legacy multiple-RMGR configuration.</td>
</tr>
<tr>
<td>IRMCimsid</td>
<td>one for the RMGR, and one entry for each batch job communicating with the RMGR</td>
</tr>
<tr>
<td>RMGR name</td>
<td>one for the RMGR, and one entry for each batch job communicating with the RMGR</td>
</tr>
<tr>
<td>sharegroup name</td>
<td>one identifying the RMGR</td>
</tr>
</tbody>
</table>

These names must be unique in the XCF domain.
Beginning with the Backup and Recovery product releases of August 29, 2003, if RMGR is active in the operating system, all Backup and Recovery utilities for IMS will attempt to join an XCF group that is established at RMGR startup. The operating system definitions for XCF should be reviewed and adjusted, if necessary, to ensure that the XCFMEMBER limit will not be exceeded when multiple utility jobs are initializing simultaneously. For more information, see the *BMC Products for IMS Installation Guide*.

### Understanding RMGR groups and functions

After RMGR is installed and configured, you and other database administrators (DBAs) can use it to execute recovery management functions against groups of recoverable objects. The following information provides a brief overview of these topics. For complete information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

Through the ISPF interface or Group Build utility, you create and maintain groups of recoverable objects. Groups simplify the management of recoverable objects that have some common element; for example, you can create a group of databases that are updated by a particular application and a group of databases that reside on a particular storage device.

Through the ISPF interface, you can set up profiles that contain processing options to use during execution of RMGR functions. You can associate these profiles with groups, objects, and executions of functions.

Through the ISPF interface, you can submit requests to perform recovery management functions against groups and monitor the status of the requests. You can also request many functions through the Batch Interface utility and set up the requests to execute on a scheduled basis.

You can perform the following recovery management functions with RMGR:

- validate existing groups and, if necessary, rebuild them
- check your recovery assets to ensure that all resources are available and in condition for a recovery
- create recovery points (hold a point of consistency) on an ongoing basis to optimize recovery results
- find standard recovery points in RECON data sets in a recovery situation
- analyze logs to find other recovery points in a recovery situation
- create and execute recovery JCL
issue IMS commands in batch

**Administering RMGR**

BMC distributes RMGR in a load module library with supporting ISPF panel, table, message, sample, and other product libraries. For more information about how RMGR libraries are maintained and updated, see the *BMC Products for IMS Installation Guide*.

In addition to the product libraries, the RMGR repository is the only other RMGR component to be maintained. RMGR provides utilities for performing the following repository maintenance tasks. For more information about these utilities, as well as other repository topics, see Chapter 12, “Maintaining the RMGR repository.”

- backing up the repository data set (the utility prevents updates from occurring during the backup)
- deleting obsolete records
- checking the structure of the repository data set and repairing any problems that are detected
- cloning records from a repository (creating a new repository from an existing repository)

**Working with the RMGR ISPF interface**

This section provides information about accessing the RMGR ISPF interface and using the RECOVERY MANAGER for IMS Primary Menu. For details, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

**Accessing the ISPF interface**

This section describes how to access the RMGR ISPF interface directly with a CLIST if the interface was set up in a typical way. The person who installed RMGR may have set up access to the RMGR ISPF interface in any of several ways. See the *BMC Products for IMS Installation Guide* for more information.
Preventing display of unwanted messages

To access the RMGR ISPF interface directly with a CLIST, perform the following steps:

1. Make sure that RMGR is started in the operating system. For more information, see Chapter 10, “Managing the RMGR started task or job.”
   
   If you have a data-sharing environment, you can use the ISPF interface on any system that belongs to the RMGR sharegroup. However, remember that to perform a function on any system, RMGR must be active in the system.

2. If you have not already done so, invoke ISPF.

3. Display a panel that accepts TSO commands, such as the TSO Commands Utility panel (typically option 6 on the ISPF primary menu).

4. Execute the CLIST that invokes the ISPF interface.
   
   During the product installation and customization processes, two CLISTs are created in the product sample library:
   
   - The BMCDBU CLIST invokes the ISPF interface and accesses the BMC IMS DBU Product Selection Menu (Figure 25 on page 250).
   
   - The BMCIRM CLIST invokes the ISPF interface and accesses the Recovery Manager Primary Menu (Figure 26 on page 251) directly.

Preventing display of unwanted messages

During your ISPF session, messages other than those that are issued by RMGR (messages other than BMC76nn messages) might be displayed. For example, when RMGR is populating an elemental group and your RECON data sets are allocated on SMS-managed devices, messages with an IGD prefix can be displayed.

If you do not want these "write to programmer" messages to be displayed, issue the following TSO command:

TSO PROFILE NOWTPMSG
Using the BMC Software IMS DBU Product Selection Menu

When you execute the BMCDBU CLIST, the BMC Software IMS DBU Product Selection Menu (Figure 25) is displayed.

Figure 25   BMC Software IMS DBU Product Selection Menu

To access the RMGR ISPF interface from this panel, perform the following steps:

1. Enter S in the field to the left of one of the following options:
   - **Backup and Recovery Solution for IMS**
     The Backup and Recovery Solution for IMS - Primary Menu (not shown) is displayed.
   - **Backup and Recovery Products for IMS**
     The IMS Database Utilities - Backup and Recovery Products panel (not shown) is displayed.

2. On either panel, select option 4 (Recovery Manager or RECOVERY MANAGER for IMS).

The Recovery Manager Primary Menu (Figure 26 on page 251) is displayed.
Using the Recovery Manager Primary Menu panel

When you execute the BMCIRM CLIST or select the Recovery Manager option from another panel, the Recovery Manager Primary Menu panel (Figure 26) is displayed. Use this to provide the name of the RMGR you want to use and to select the category of task you want to perform.

Figure 26   Recovery Manager Primary Menu

Provide the requested information in the following fields. Then press Enter.

Recovery Manager name
Type the name of the started task or job that starts the RMGR that you want to use in this operating system.

Instead of specifying an RMGR name, you can specify the sharegroup name; XCF connection will be made to the RMGR started task that refers to the sharegroup.
choice selection field
Type the number corresponding to one of the following options:

1. Create and maintain groups and submit recovery management functions. Most DBAs regularly perform tasks in this category. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

2. Monitor the status of recovery management functions. Most DBAs regularly perform tasks in this category. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

3. Create and maintain environment, utility, and profile information. Typically, the RMGR administrator (the person who is responsible for configuring and maintaining RMGR in the environment) and other DBAs perform tasks in this category. For more information, see Chapter 11, “Managing RMGR option records.”

4. Access the Recovery Advisor panels. This option is available only if the Backup and Recovery Solution (BRS) for IMS is installed; if you have the RECOVERY MANAGER for IMS product, this option is displayed as an asterisk (*), and the Recovery Advisor panels are not available. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

5. Access the Recovery Extensions feature for maintenance of additional recovery assets. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

A. View the version, release, and maintenance level of RMGR and information about how to contact BMC.

M. View information about online messages and errors and view a list of Help topics. This error message information is also provided in the BMC Documentation Center. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

N. View information about new features of the product. This information is also provided in the *Backup and Recovery Products for IMS Release Notes*.

X. Return to the ISPF panel that was used to invoke the RMGR ISPF interface.
Working with RMGR batch utilities

You can perform selected RMGR tasks with RMGR batch utilities. This section provides general information about these utilities.

NOTE

RMGR uses the Cross-System Coupling Facility (XCF) to provide communication between batch utilities and the RMGR started task or job. You can execute RMGR batch utilities from any system that shares an XCF domain with the image that is running the RMGR started task or job.

Choosing a batch utility

Table 64 lists the RMGR batch utilities alphabetically by their program names. The table lists the functions of the utilities, describes their uses, and provides a reference to the location of further information.

<table>
<thead>
<tr>
<th>Utility name</th>
<th>Program name</th>
<th>Utility functions</th>
<th>Uses</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch Interface</td>
<td>IRMBATCH</td>
<td>CHECKASSETS LOGANALYSIS REBUILD RECOVERY REPOSITORYBACKUP RMHPC STATUSDELETE VALIDATE</td>
<td>perform recovery management functions; back up RMGR repository; delete obsolete status and Recovery Advisor records</td>
<td>“Performing repository backups” on page 347; “Deleting repository records in batch” on page 355; various chapters in Backup and Recovery Products for IMS Recovery Manager User Guide</td>
</tr>
<tr>
<td>Group Build</td>
<td>IRMBGPMN</td>
<td>BUILD DELETE</td>
<td>build group records; delete group records</td>
<td>Backup and Recovery Products for IMS Recovery Manager User Guide</td>
</tr>
</tbody>
</table>
Table 64  RMGR batch utilities (part 2 of 2)

<table>
<thead>
<tr>
<th>Utility name</th>
<th>Program name</th>
<th>Utility functions</th>
<th>Uses</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Delete/Define</td>
<td>IRMDRAMS</td>
<td>CAPTURE BUILD</td>
<td>capture allocation information about IMS database data sets and build PDS members that contain TSO allocation or IDCAMS delete/define control statements</td>
<td>Backup and Recovery Products for IMS Recovery Manager User Guide</td>
</tr>
<tr>
<td>(DRAMS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaster Recovery RECON</td>
<td>IRMDRRCN</td>
<td>CHECK UPDATE DELETEPITRECORD</td>
<td>prepare DBRC RECON data set for IMS startup and database recovery in the event of a disaster</td>
<td>Backup and Recovery Products for IMS Recovery Manager User Guide</td>
</tr>
<tr>
<td>Cleanup (DRRCN)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMS Command</td>
<td>IRMICMD</td>
<td>N/A</td>
<td>issue IMS commands in batch with a positive response</td>
<td>Backup and Recovery Products for IMS Recovery Manager User Guide</td>
</tr>
<tr>
<td>Repository</td>
<td>IRMREPUT</td>
<td>CHECK REPAIR CLONE</td>
<td>check repository structure; correct repository structure; clone repository records</td>
<td>“Checking and repairing the repository” on page 361; “Cloning a repository” on page 366</td>
</tr>
<tr>
<td>Startup</td>
<td>IRMUP</td>
<td>START CHECK</td>
<td>start RMGR; check RMGR status</td>
<td>“Using the RMGR Startup utility” on page 292</td>
</tr>
</tbody>
</table>
Specifying RMGR batch utility JCL

The product sample library contains sample jobs for most tasks that you can perform with RMGR batch utilities. During RMGR installation, some of these jobs were customized for your environment. You can copy the samples and use them as models for your own jobs.

Figure 27 shows generic JCL for using RMGR batch utilities. Any additional JCL requirements that are specific to a particular utility are described in the information about that utility.

Figure 27  Generic RMGR JCL

```
//jobname JOB (ACCT),'RMGR batch job',MSGCLASS=X,CLASS=longrun,TIME=1440
//stepname EXEC PGM=programname
//STEPLIB DD DISP=SHR,DSN=product.LOAD
//SYSUDUMP DD SYSOUT=*  <--(recommended)
//ABNLIGNR DD DUMMY
//SYSPRINT DD SYSOUT=*  
//SYSIN DD *
* CONTROL STATEMENTS
keyword1=value
keyword2=value
keyword3=value
```

The following statements are standard in RMGR batch utility JCL:

**JOB** *(required)* Specify this statement to the standards for your environment.

**NOTE**

Depending on factors such as the number of objects in the group that RMGR is processing, the time that RMGR requires to run the function might exceed your site default time limits. BMC recommends that you use a long running class and specify **1440** for the **TIME** parameter.

**EXEC** *(required)* Specify the program name to execute.

**STEPLIB DD** *(required)* Identify the BMC product load library. This library must be APF authorized. If any other libraries are included in the concatenation, these libraries must also be APF authorized.

**SYSUDUMP DD** *(recommended)* Specify a valid SYSOUT device to contain dump information in case of a problem.
ABNLIGNR DD
(recommended) Specify this DUMMY statement to turn off the Abend-AID product so that a complete dump is produced in case of a problem. During initialization processing, RMGR dynamically allocates the ABNLIGNR DD statement if you omit it.

SYSPRINT DD
(required) Specify a valid SYSOUT device to contain system messages. If you allocate it to DASD, the record format (RECFM) must be fixed block ISO/ANSI (FBA), and the record length (LRECL) must be 121 bytes.

SYSIN DD
(required) Specify a data set to contain control statements. You can specify SYSIN DD * to include the control statements in-stream. If you allocate it to DASD, the RECFM must be fixed block (FB), and the LRECL must be 80 bytes. Only the first 72 bytes of the record are used.

Specifying RMGR batch utility control statements

Control statements for RMGR batch utilities consist of keywords and their associated values. The following rules apply to control statement syntax for all RMGR batch utilities. Specific utilities may have additional syntax requirements.

- Begin keywords in column 1.
- Specify each keyword on a separate line.
- Specify an equal sign between each keyword and its value.
- Do not include embedded spaces unless otherwise stated in the documentation for a particular keyword. In general, embedded spaces are only allowed in keyword values that refer to a name (such as a group, profile, or utility record name) in which spaces may be part of the name.
- Specify comments by placing an asterisk (*) in column 1. You can include comments only on a comment line.
Using pattern masking

RMGR supports pattern masking in some ISPF interface fields (and in some batch keywords) that allow you to specify the name of an object, group, utility, or other record or the nodes of a data set. You can substitute masking (wildcard) characters for one or more characters in the name or node, allowing you to easily select all objects, groups, records, or data sets that match the masking pattern.

Rules for pattern masking

Wildcard characters take the place of one or more characters, depending on the character you choose and its position in the name or node.

The question mark character (?) can replace a single character in a name or node. The character cannot be a null.

The asterisk character (*) can replace multiple characters when placed at the end of a name or node. If the asterisk is the only character typed in a field, it matches all values. Any characters that follow the asterisk (within a single name or node) are ignored.

You can use question marks and an asterisk in the same name or node as long as the question marks come before the asterisk. If the name is a data set name, you can use wildcard characters within multiple nodes as if each node were a separate name.
### Examples of pattern masking

Table 65 shows examples of pattern masking.

#### Table 65  Pattern masking examples

<table>
<thead>
<tr>
<th>Desired results</th>
<th>Pattern</th>
<th>Example matches</th>
<th>Example mismatches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show all four-character items that have “egu” in positions 1 through 3.</td>
<td>egu?</td>
<td>egui, eguo</td>
<td>eguid, eguodbd, dbd1egui, egu</td>
</tr>
<tr>
<td>Show all eight-character items that have “egui” in positions 1 through 4, any characters in positions 5 through 7, and “x” in position 8.</td>
<td>egui???x</td>
<td>eguidbdx, eguidb1, egui, eguid</td>
<td>eguidb1, eguix, eguidb1, eguidb</td>
</tr>
<tr>
<td>Show all items that have “egui” in positions 1 through 4.</td>
<td>egui*</td>
<td>eguidb1, egui, eguid</td>
<td>eguidb1, eguidb, dbd1egui, egu</td>
</tr>
<tr>
<td>Show all items that have “eg” in positions 1 and 2, have any character in position 3, have “idbd” in positions 4 through 7, and have any character (including no characters at all) in position 8.</td>
<td>eg?idbd*</td>
<td>eguidb1, eguidb1, eguidb1</td>
<td>eguidb1, eguidb1, eguidb1, egui</td>
</tr>
<tr>
<td>Show all items that have “egui” in positions 1 through 4 (the characters after * are ignored).</td>
<td>egui*dbd</td>
<td>eguidb1, eguidb1, eguidb1</td>
<td>eguidb1, eguidb1, eguidb1, egui</td>
</tr>
<tr>
<td>Show all items.</td>
<td>*</td>
<td>dbd1egui, eguidb1, egui</td>
<td>(none)</td>
</tr>
<tr>
<td>Show all items (the characters after * are ignored).</td>
<td>*egui</td>
<td>(all)</td>
<td>(none)</td>
</tr>
<tr>
<td>Show all data sets with “bmcirm” in the first node, any combination of characters in the second node, “dbd” in positions 1 through 3 of the third node, any character in position 4 of the third node, “01” in positions 5 and 6 of the third node, and any combination of characters in the fourth node and remaining nodes.</td>
<td>bmcirm.<em>, dbd01.</em></td>
<td>bmcirm.test.dbd01.dsgt01, bmcirm.test.dbd01.dsgt02, bmcirm.prod.dbdp01.dsgp01</td>
<td>bmc.test.dbdt01.dsgt01, bmcirm.test.dbd01.dsgt01, bmcirm.test.dbd</td>
</tr>
<tr>
<td>Show all data sets with “bmcirm” in the first node and any combination of characters in the remaining nodes.</td>
<td>bmcirm.*</td>
<td>bmcirm.test, bmcirm.prod.dbd</td>
<td>bmc.test.dbdt01.dsgt01, irm.test</td>
</tr>
</tbody>
</table>
Handling problems

The following resources may help you diagnose and solve a problem with RMGR or determine when you need assistance:

- The RMGR ISPF interface contains complete information about panels and fields. Issue the HELP command in the ISPF interface to obtain this information.

- RMGR error messages are documented in the BMC Documentation Center. The message information helps BMC diagnose and correct a problem as quickly as possible. Please review this list and gather the requested information before you contact BMC.

- Information about contacting BMC Customer Support is listed at the front of this manual and in the RMGR ISPF interface (select option A (About) on the Recovery Manager Primary Menu).
RMGR configuration tasks

To configure RMGR for the first time after an initial installation, you perform the procedures that are described in "Configuring Recovery Manager functions and utilities" on page 41. These procedures configure a single RMGR to work with one stand-alone IMS system in your environment.

You can configure RMGR for use with multiple IMS systems that share a common RECON in a data-sharing environment. The following approaches are available:

- Beginning with version 4.5.00 of Backup and Recovery Solution for IMS and RECOVERY MANAGER for IMS, you can use a single RMGR to serve all IMS systems that share a common RECON in a data-sharing environment. BMC recommends using a single-RMGR configuration because it simplifies and streamlines implementation, maintenance, and operation of RMGR components. You can use the single-RMGR configuration for both data-sharing IMS systems and stand-alone IMS systems. For more information, see “Configuring RMGR in a data-sharing environment” on page 261.

- The legacy multiple-RMGR configuration, which requires every IMS system in a data-sharing environment to have its own associated RMGR, is still valid. However, BMC does not recommend this configuration unless you are using the APPLICATION RESTART CONTROL (AR/CTL) suspend-and-resume interface. The single-RMGR configuration does not support the suspend-and-resume interface. For more information, see “Implementing a legacy multiple-RMGR configuration” on page 266.

If you have a legacy multiple-RMGR configuration, you can convert it to a single RMGR configuration. This conversion is recommended for both stand-alone and data-sharing IMS systems. For more information, see “Converting to a Single-RMGR configuration” on page 263.

You can use an existing RMGR configuration as a model for creating a new configuration. This approach is suitable for implementing RMGR in multiple stand-alone IMS systems (systems that do not share a RECON). You can also use this approach to implement RMGR in a production environment after testing. For more information, see “Creating a new RMGR configuration from a model” on page 270.

You can make changes to RMGR configurations as needed. For more information, see “Changing an RMGR configuration” on page 271.
Configuring RMGR in a data-sharing environment

In an IMS data-sharing environment (Figure 28), a single RMGR can serve all of the IMS systems; this ability applies whether the IMS systems are running on one operating system or on different systems in a sysplex environment. To enable this functionality, you designate a sharegroup name in the RMGR. When you submit function requests through the ISPF interface or the Batch Interface utility, you can specify the sharegroup name or the RMGR name.

Figure 28   Typical data-sharing environment

To establish an RMGR environment for two or more IMS systems that will share a RECON, among other steps you must

- Set up a single RMGR and a sharegroup.
- Create a sharegroup environment record in the RMGR repository.
- List all of the IMS systems in the IMSID keyword in the RMGR SYSIN data set. If more than one version of IMS is involved in the sharing systems, the IMS ID of the most current IMS system must be first in the list.
To configure RMGR in a data-sharing or sysplex environment

NOTE
This procedure assumes that a single-RMGR configuration exists for at least one of the IMS systems that belongs to the data-sharing group.

1. Choose a 4-character sharegroup name.

   This name should be a unique value for RMGR use. The name does not need to match the value of an IMSGROUP keyword. Also, the name must be different from the IMS IDs of the IMS systems in the sharegroup, and from the RMGR name.

2. Choose an existing RMGR to serve all IMS systems in the sharegroup, and update the JCL to execute the RMGR started task or batch job as follows:

   A. In the SYSIN data set, change the value of the IMSID keyword to list the IMS IDs of all IMS systems that share the same RECON.

      List the system with the latest IMS version first. Use a comma to separate each entry from the next in the list. Enclose the list in parentheses.

   B. In the SYSIN data set, add a SHAREGROUP keyword to specify the sharegroup name that you chose.

      For more information, see Chapter 10, “Managing the RMGR started task or job.”

3. Modify the startup JCL for each IMS control region as follows:

   A. Add the following DD statement:

      //RMGRSNGL DD DUMMY

   B. Insert the BMC product load library ahead of RESLIB in the STEPLIB concatenation.

   C. If the CPU authorization password for the BMC product is not located in the BMC product load library, insert the library that contains the product authorization password table in the STEPLIB or BMCPSWD DD concatenation.

4. Stop and restart the RMGR.

   RMGR creates an empty sharegroup environment record.

5. Update the sharegroup environment record.

   For more information, see “Working with IMS/sharegroup environment records” on page 312.
Converting to a Single-RMGR configuration

If you have an existing legacy multiple-RMGR configuration, you can convert it to a single-RMGR configuration with a few changes. Use the procedure that applies to your situation:

- To convert to a single-RMGR configuration for a stand-alone IMS system
- To convert to a single-RMGR configuration for data-sharing IMS systems

To convert to a single-RMGR configuration for a stand-alone IMS system

**NOTE**

This procedure assumes that you already have a stand-alone IMS system with the following characteristics:

- The BMC product load library is included in the STEPLIB concatenation in the JCL to start the IMS control region, and the BMC library is ahead of the RESLIB library in the concatenation.
- The BMC product password is located in a library that is included in the STEPLIB concatenation in the JCL to start the IMS control region.

1. Create an new single-RMGR started task or batch job (or modify the existing RMGR started task or batch job).

2. In the RMGR SYSIN data set, specify the IMSID=(imsId) keyword, where imsID is identifies the IMS system for this RMGR to serve.

3. In the JCL to start the IMS control region, add the following DD statement:

   ```
   //RMGRSNGL DD DUMMY
   ```

**NOTE**

The order of the following steps to stop and start the IMS systems and RMGRs is important. Perform these steps in the given sequence.

4. Stop the IMS system.

5. Stop the existing legacy RMGR that was associated with the IMS system.

6. Start the new single RMGR.
7 Start the IMS system.

The following message should be displayed in the JES messages for the IMS control region:

BMC76012I RECOVERY MANAGER: COMMAND MONITORING INITIATED

**To convert to a single-RMGR configuration for data-sharing IMS systems**

**NOTE**

This procedure assumes that you have an existing IMS data-sharing or IMSPLEX environment with the following characteristics:

- Each IMS system has a corresponding RMGR.
- Each RMGR shares the same repository and sharegroup name.
- The BMC product load library is included in the STEPLIB concatenation in the JCL to start each IMS control region, and the BMC library is ahead of the RESLIB library in the concatenation.
- The BMC product password is located in a library that is included in the STEPLIB concatenation in the JCL to start each IMS control region.

1 Create a new single-RMGR started task or batch job (or modify one of the existing RMGR started tasks or batch jobs).

2 In the RMGR SYSIN data set, specify the value of the IMSID keyword (enclosed in parentheses) as a list of the IMS IDs of all IMS systems that share the same RECON.

--- **EXAMPLE**

IMSID=(IMS1,IMS2,IMS3)

3 If the value of the IMSID keyword contains more than one IMS ID, ensure that the RMGR SYSIN data set contains the SHAREGROUP keyword that specifies the sharegroup name.

If you are modifying existing JCL, the SHAREGROUP keyword is probably already present in the JCL. If not, specify SHAREGROUP=sharegroupName, where sharegroupName is the 1- to 4-character sharegroup name that you assign. For more information, see “Specifying RMGR startup control statements” on page 282.

4 If the RMGR SYSIN data set contains the SHAREGROUP keyword, ensure that the RMGR repository contains a corresponding sharegroup environment record.
Converting to a Single-RMGR configuration

If you are modifying existing JCL and the SHAREGROUP keyword was already present, the sharegroup environment record has probably already been defined. If not, create the record as explained in “Working with IMS/sharegroup environment records” on page 312.

5 In the JCL to start each IMS control region, add the following DD statement:

```
//RMGRSNGL DD DUMMY
```

---

**NOTE**

The order of the following steps to stop and start the IMS systems and RMGRs is important. Perform these steps in the given sequence.

6 Stop each IMS system that is included in the IMSID keyword list.

7 Stop all legacy RMGRs that are associated with those IMS systems.

8 Start the new single RMGR.

9 Start any of the IMS systems that are specified with the IMSID keyword.

You can start a single IMS system, or start all IMS systems at the same time and in any order. The first IMS system that starts causes RMGR to initiate basic processes. The following message should be displayed in the JES messages for each IMS control region in the sharegroup:

```
BMC76012I RECOVERY MANAGER: COMMAND MONITORING INITIATED
```

10 For each RMGR batch job that refers to a specific legacy RMGR name, change the JCL to refer to the sharegroup name (BMC recommends this specification) or the new single-RMGR name.

11 As needed, use the ISPF interface to update the new, automatically created environment records in the RMGR repository:

- If you created a new single-RMGR started task or batch job, update the new RMGR environment record.

- If you specified a new sharegroup name when you created a new single-RMGR started task or batch job, update the new sharegroup environment record.

For more information, see “Working with IMS/sharegroup environment records” on page 312.
Implementing a legacy multiple-RMGR configuration

You can configure RMGR so that each IMS system has its own corresponding RMGR. This legacy multiple-RMGR configuration enables IMS systems that participate in a data-sharing environment to use the same RMGR resources and functions. BMC now provides the single-RMGR configuration to serve this purpose with less effort to implement, maintain, and operate RMGR components. BMC no longer recommends the multiple-RMGR configuration unless you are using the APPLICATION RESTART CONTROL (AR/CTL) suspend-and-resume interface.

In a legacy multiple-RMGR configuration for an environment in which two or more IMS systems will share data, you must set up a sharegroup and create an RMGR for each IMS that is involved in data sharing. The RMGRs must belong to the same RMGR sharegroup, whether the IMS systems are running on one operating system or on different systems in a sysplex environment. Each IMS system is connected to its own RMGR. One repository is shared by all RMGRs that belong to the sharegroup.

In the repository, you must create a sharegroup environment record. You can also create IMS environment records if needed; if any IMS system in the sharegroup is at a different version level than the one defined in the sharegroup definition record, an individual IMS environment record is required. When you submit function requests through the ISPF interface or the Batch Interface utility, you can specify the sharegroup name or an RMGR name.

When you configure RMGR for use in a SYSPLEX environment, the procedure is identical to configuring RMGR in a data-sharing environment. You must set up a sharegroup and create an RMGR for each IMS system in the SYSPLEX.

Figure 28 on page 261 shows a typical data-sharing environment.
To achieve all of the functionality that RMGR is designed to provide in an IMS data-sharing or sysplex environment, an RMGR instance must be configured and available for each IMS instance that is involved in data sharing. This requirement applies whether an IMS instance is on the same or different system image as the other IMS instances, as long as the IMS instances communicate with each other by using the Cross-System Coupling Facility (XCF).

RMGR provides considerable functionality even if only one RMGR instance is available to participate in an IMS data-sharing environment. The following functions and utilities are available in this case:

- Batch Interface utility (the functions that do not require IMS commands)
- Check Assets function
- Automatic Delete/Define (DRAMS) utility
- Find Recovery Points function
- Group Build function
- Group Rebuild function
- Group Validation function
- Log Analysis function
- Disaster Recovery RECON Cleanup (DRRCN) utility
- Recovery Advisor functions (available only with BRS)
- Create Recovery JCL function (/DBR of databases must be done manually)
When only one RMGR instance is used in a data-sharing environment, the unavailable RMGR functionality is related to issuing and validating IMS commands across all of the IMS instances. The following RMGR functionality is unavailable in this case:

- Hold Point of Consistency (HPC) function: issuing /DBR and /STA commands to create quiet points for recovery
- IMS Command utility: issuing various IMS commands in batch
- Log Sync function: issuing /SWI command to synchronize log switches across multiple IMS instances

**To implement a legacy multiple-RMGR configuration**

1. Decide on a 4-character sharegroup name. The name of the sharegroup is unique value for RMGR use; it does not need to match the value of an IMSGROUP keyword, and it must be different from the IMS IDs of the IMS systems in the sharegroup. This name must also be different from the RMGR name.

2. If an RMGR configuration does not already exist for at least one of the IMS systems that belongs to the data-sharing group, create an RMGR configuration as described in “Configuring Recovery Manager functions and utilities” on page 41 or “Creating a new RMGR configuration from a model” on page 270.

3. Add a SHAREGROUP keyword to the control statement data set of the existing or new RMGR. For more information, see Chapter 10, “Managing the RMGR started task or job.”

4. Stop and restart the RMGR. RMGR creates an empty sharegroup environment record.

5. Update the sharegroup environment record. For more information, see “Working with IMS/sharegroup environment records” on page 312.

6. Copy the existing RMGR startup procedure to create an RMGR for each IMS system that is involved in data sharing. For more information, see Chapter 10, “Managing the RMGR started task or job.”

7. Copy the RMGR SYSIN control statement that you created in step 2 to create a SYSIN control statement for each new RMGR.

   A. Change the IMSID keyword value to reflect the IMS ID of the IMS that the RMGR will serve.

   B. Create a JCL PDS for each new RMGR, and change the JOBPDS keyword value to refer to the data set name of the new JCL PDS.
C Ensure that the SHAREGROUP keyword value refers to the same sharegroup environment record.

D Ensure that the REPOSITORYBASE keyword value refers to the same repository as the existing RMGR.

E Change any other keywords as necessary.

8 Start the new RMGRs.

9 If any of the following elements are different between a new IMS in the sharegroup and the existing IMS, create an IMS environment record for each IMS that has a difference. For more information, see “Working with IMS/sharegroup environment records” on page 312.

- RESLIB (different releases or PUT levels)
- MODSTAT
- ACBLIBs
- RSENAMES (if the IMS is XRF-capable)

10 Modify the JCL that starts each IMS control region in the sharegroup as follows:

A Insert the BMC product load library ahead of RESLIB in the STEPLIB concatenation.

B If the CPU authorization password for the BMC product is not located in the BMC product load library, insert the library that contains the product authorization password table in the STEPLIB or BMCPWD DD concatenation.

11 Stop and start each IMS system in the sharegroup.
Creating a new RMGR configuration from a model

If you have multiple stand-alone IMS systems that do not share a RECON, for each IMS system you must create a corresponding separate RMGR and repository that contains the required records, as shown in Figure 30.

**Figure 30  RMGR configuration for stand-alone IMS systems**

To create a new single-RMGR configuration, you can use an existing RMGR configuration as a model. For example, after testing RMGR on a test system, you might want to install RMGR on a production system and use your tested configuration there. You can clone the existing test repository records and copy and modify the startup JCL to make the test system to work with the production system.

**To create a single-RMGR configuration from a model RMGR**

1. Clone existing repository records to a newly created repository by using the JCL in member IRMMODEL of the product sample library.

   This job creates a new repository and new RMGR and IMS environment records that correspond to the new names specified in the job. The job clones the SYSTEM-DEFAULT-PROFILE, which is required in the new repository. It can also clone any other record types to the new repository, based on the keywords you include. For more information, see “Cloning a repository” on page 366.

2. Create JCL to execute the RMGR started task or batch job:

   A. Create a new member in a JCL library; for the member name, specify the name that you want to use for the new RMGR.

   B. Copy the JCL in member IRMPROC of the product sample library (or copy the startup JCL for an existing RMGR) into the new member.
Changing an RMGR configuration

You can use the following procedures to make changes to your RMGR configuration:

- To change the RMGR name
- To change the IMS ID
- To change the RMGR sharegroup name
Changing an RMGR configuration

To change the RMGR name

1 (optional) Create a new RMGR environment record with the new RMGR name. You can use the existing RMGR environment record as a model. For more information, see “Working with RMGR environment records” on page 301.

2 Stop the RMGR with the following console command: F rmgrName,STOP

3 Change the RMGR procedure or job to reflect the new name. For more information, see Chapter 10, “Managing the RMGR started task or job.”

4 Start the RMGR with the new name.

5 If you did not create a new RMGR environment record at the beginning of this procedure, update the new RMGR environment record that RMGR created at startup. For more information, see “Working with RMGR environment records” on page 301.

To change the IMS ID

1 (optional) Create a new IMS environment record with the new IMS ID. You can use the existing IMS environment record as a model. For more information, see “Working with IMS/sharegroup environment records” on page 312.

2 Stop the IMS region that is connected to the RMGR.

3 Stop the RMGR with the following console command: F rmgrname,STOP

4 Change the IMSID keyword in the RMGR startup control statements to reflect the new IMS ID. For more information, see Chapter 10, “Managing the RMGR started task or job.”

5 Start the RMGR.

6 Start the IMS region.

7 If you did not create a new IMS environment record at the beginning of this procedure, update the new IMS environment record that RMGR created at startup. For more information, see “Working with IMS/sharegroup environment records” on page 312.
To change the RMGR sharegroup name

1 *(optional)* Create a new sharegroup environment record with the new sharegroup name. You can use the existing sharegroup environment record or an existing IMS environment record as a model. For more information, see “Working with IMS/sharegroup environment records” on page 312.

2 With the following console command, stop the RMGR that belongs to the sharegroup: `F rmgrName,STOP`

3 For the RMGR that belongs to the sharegroup, change the SHAREGROUP keyword in the RMGR startup control statements to reflect the new sharegroup name.

4 Start the RMGR that belongs to the sharegroup.

5 If you did not create a new sharegroup environment record at the beginning of this procedure, update the new sharegroup environment record that RMGR created at startup. For more information, see “Working with IMS/sharegroup environment records” on page 312.
Managing the RMGR started task or job

This chapter describes how to start and stop Recovery Manager (RMGR) in an operating system environment, modify RMGR processing, and automate the startup process. The following information is included:

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Overview

This section describes the relationships of RMGR with other elements in the environment and describes RMGR startup activities.

RMGR in the environment

RMGR runs as a started task or batch job in its own address space in the operating system. One RMGR must be started for each set of IMS systems that share the same RECON. The RMGR and IMS systems do not have to be on the same operating system image as long as the operating systems are in the same Cross-System Coupling Facility (XCF) domain. RMGR must have the authority to issue operator commands.

If you do not plan to connect RMGR to an IMS, you should consider adding the //NORMGR DD DUMMY statement to the IMS control region JCL. This statement prevents the IMS control region from allocating unnecessary CSA control blocks.

You can define a maximum of 16 combined RMGR and IMS systems for a single operating system image. Within a SYSPLEX, an RMGR can serve 64 IMS systems, with a maximum of 16 on a single operating system image.

RMGR requirements for functions, utilities, and activities

The RMGR started task or job does not need to be continuously active, but it must be active in the same Cross-System Coupling Facility (XCF) domain during execution of most RMGR functions and utilities and performance of ISPF activities. RMGR must also be connected to IMS for some functions and utilities. Connected to IMS means that the IMS system was started with the following JCL changes:

- The BMC product load library was inserted ahead of the IMS RESLIB library in the IMS STEPLIB concatenation.
- The //RMGRSNGL DD DUMMY statement was included.

NOTE

You can connect to IMS without the RMGRSNGL statement if you are still using legacy RMGR configurations, but this method is not recommended. For more information, see “Converting to a Single-RMGR configuration” on page 263.
Table 66 shows the RMGR requirements for the functions and utilities.

<table>
<thead>
<tr>
<th>RMGR function, utility, or activity</th>
<th>RMGR active</th>
<th>RMGR connected to IMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Delete/Define (DRAMS) utility</td>
<td>No if the IRM keyword not specified</td>
<td>No</td>
</tr>
<tr>
<td>Check Assets function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Create Recovery JCL function</td>
<td>Yes</td>
<td>Yes if the Create Recovery JCL function uses the IBM IMS Database Recovery utility; otherwise, No</td>
</tr>
<tr>
<td>Disaster Recovery RECON Cleanup (DRRCN) utility</td>
<td>No if the IRM keyword is not specified</td>
<td>No</td>
</tr>
<tr>
<td>environment records (creating, displaying, and updating)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Find Recovery Points function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>groups (creating, displaying, and updating)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Group Rebuild function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Group Validation function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hold Point of Consistency function</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>IMS Command utility</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Log Analysis function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Log Synchronization (Log Sync) function</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>profile records (creating, displaying, and updating)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Recovery Advisor function</td>
<td>Yes (a Backup and Recovery Solution for IMS product password is required)</td>
<td>No</td>
</tr>
<tr>
<td>Recovery Extensions feature</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Repository utility (Check, Clone, Repair functions)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Repository Backup utility</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>RMGR Startup utility</td>
<td>No (this utility starts the RMGR if it is not active)</td>
<td>No</td>
</tr>
<tr>
<td>Status Delete function</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Status Update function (during RMGR initialization)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>utility records (creating, displaying, and updating)</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
To start RMGR as a started task, you prepare a JCL procedure, place it in a procedure library, and issue the operating system start command to invoke the procedure. To start RMGR as a batch job, you prepare the JCL and submit it for execution.

After you issue the start command or submit the startup JCL, RMGR performs its initialization processing, including the following general tasks:

- preparing control blocks
- connecting to the IMS system
- establishing communication with the repository
- issuing an RMGR-enhanced MODIFY SNAP command to capture tracing information for diagnostic purposes
- executing the Status Update function to reset the status of flushed tasks

When initialization processing is complete, you can use standard operating system commands to stop or cancel RMGR. You can also use RMGR-enhanced modify commands to perform tasks such as starting and stopping the Global Trace option.

You can use the RMGR Startup utility to automate RMGR startup or determine whether RMGR is active in the environment.

The following considerations apply to starting and stopping RMGR:

- The order in which you start RMGR and start IMS is not important; RMGR does not need to be started before you start IMS.

- RMGR and IMS can each be recycled without recycling the other. RMGR does not have to be continuously active, but it must be active for execution of functions, most utilities, and use of the ISPF interface.

- Whenever you change the IMS release (upgrade to a new release or fall back to a previous release), you should recycle RMGR. Similarly, whenever you change the RMGR release, you should recycle the IMS systems that are served by that RMGR.
Starting RMGR

RMGR must be started (initialized) in the operating system environment. One RMGR is required for a set of IMS systems that share the same RECON. After the initialization process completes successfully, RMGR is ready for use.

Performing RMGR startup

You can use a started task or batch job to start RMGR in the operating system environment.

Starting RMGR by using a started task

To start RMGR by using a started task, perform the following general tasks:

1. Specify the JCL procedure (PROC). For details, see “Specifying JCL for starting RMGR” on page 280.

2. Specify the control statements. For details, see “Specifying RMGR startup control statements” on page 282.

3. Move the JCL procedure to a system procedure library.

4. Issue the following operating system command; rmgrname is the procedure name:

   /S rmgrname

   Issue the command from a facility that accepts these commands, such as the system console.

5. Verify that the initialization process has completed successfully. For details, see “Verifying that RMGR initialization is successful” on page 288.

Starting RMGR by using a batch job

To start RMGR by using a batch job, perform the following general tasks:

1. Specify the JCL. For details, see “Specifying JCL for starting RMGR” on page 280.

2. Specify the control statements. For details, see “Specifying RMGR startup control statements” on page 282.

3. Submit the JCL for execution.
Specify JCL for starting RMGR

During RMGR installation, a procedure and a batch job were customized for your environment and placed in members IRMJOB and IRMPROC of the product sample library. Figure 31 shows generic JCL for starting RMGR.

Figure 31   RMGR startup JCL

```
//rmgrname PROC
or
//rmgrname JOB (ACCT),'RMGR BATCH JOB',MSGCLASS=X,CLASS=Q
//*
//*----------------------------------------------------*
//*    RECOVERY MANAGER                             *
//*----------------------------------------------------*
//* THIS RMGR CONNECTS TO IMSID IMST               *
//*----------------------------------------------------*
//IRMPROD  EXEC PGM=IRMINIT,REGION=0M,TIME=1440
//STEPLIB  DD DISP=SHR,DSN=product.LOAD
//BMCPSWD DD DISP=SHR,DSN=product.PASSWORD        <--(optional)
//IRPRINT  DD SYSDUMP=*                         <--(recommended)
//ABNLIGNR DD DUMMY                               <-may need OUTLIM parm if
//SYSPRINT DD SYSOUT=*                            site default too low)
//IRMTRACE DD SYSOUT=*                            <-may need OUTLIM parm if
//SYSIN    DD DISP=SHR,DSN=IRM.SAMP(IRMSYSIN)
```

Specify the following statements in the startup JCL.

**NOTE**

Do not add other statements unless a BMC technical support analyst directs you to do so.

**PROC or JOB**

*(required)* Use the PROC statement if you want to start RMGR as a started task. Use the JOB statement if you want to start RMGR as a batch job. Set the PROC or JOB name to the RMGR name that identifies this RMGR in all RMGR processes and interfaces.

**EXEC**

*(required)* Specify program IRMINIT. A REGION value of 0M is recommended. Set the TIME keyword to the maximum value (1440).
**Specifying JCL for starting RMGR**

**Chapter 10 Managing the RMGR started task or job**

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### STEPLIB DD

*(required)* Identify the BMC product load library that contains the RMGR load modules. This library must be APF authorized.

### BMCPSWD DD

*(optional)* Identify the library that contains the RMGR CPU authorization table. If you omit this statement, the library that contains the passwords must be in the STEPLIB concatenation or the CPU authorization table must be in the product load library.

### IRMPRINT DD

*(required)* Specify a valid SYSOUT device to contain the RMGR processing log. The processing log includes startup messages and all messages that were issued after RMGR startup.

### SYSUDUMP DD

*(required)* Specify a valid SYSOUT device to contain dump information in case of a problem.

### ABNLIGNR DD

*(recommended)* Include this statement to turn off the Abend-AID product so that a complete dump is produced in case of a problem. During initialization processing, RMGR dynamically allocates the ABNLIGNR DD statement if you omit it.

### SYSPRINT DD

*(required)* Specify a valid SYSOUT device to contain system messages. This data set also contains GENJCL output.

### IRMTRACE DD

*(required)* If you omit this statement, RMGR allocates this data set dynamically but sets the TRACE option to **NO**. Specify a valid SYSOUT device to contain the trace information (control block and task information) that RMGR produces if you include the TRACE keyword in the RMGR startup control statements or issue the RMGR-enhanced modify command with the TRACEON keyword. This data set is empty if tracing is turned off.

   If a low limit for SYSOUT lines is set at your installation, you may need to specify the OUTLIM parameter to override that limit.

   If you direct this output to a data set other than SYSOUT and this data set is not large enough to contain the trace information, the condition may cause an RMGR abend.

### SYSIN DD

*(required)* Specify a data set to contain control statements for RMGR startup. You can specify SYSIN DD * to include the control statements in-stream.
Specifying RMGR startup control statements

The control statements in the RMGR startup SYSIN data set consist of keywords and their values. During RMGR installation, a control statement data set was customized for your environment and placed in member IRMSYSIN of the product sample library.

RMGR startup keyword summary

Table 67 summarizes information about the RMGR startup keywords.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid Values</th>
<th>Default Value</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMTTABLEMEM</td>
<td>member name</td>
<td>none</td>
<td>no</td>
<td>specifies name of member in which GMT table is stored</td>
</tr>
<tr>
<td>GMTTABLEPDS</td>
<td>data set name</td>
<td>none</td>
<td>no</td>
<td>specifies name of PDS in which GMT table is stored</td>
</tr>
<tr>
<td>IMSID</td>
<td>IMS ID</td>
<td>none</td>
<td>yes</td>
<td>identifies IMS systems for RMGR to serve</td>
</tr>
<tr>
<td>JOBPDS</td>
<td>data set name</td>
<td>none</td>
<td>yes</td>
<td>identifies PDS to contain recovery JCL</td>
</tr>
<tr>
<td>RECOVERYDBR</td>
<td>YES, NO</td>
<td>YES</td>
<td>no</td>
<td>controls whether /DBR commands can be issued by the Create Recovery JCL function</td>
</tr>
<tr>
<td>REPOSITORYBASE</td>
<td>data set name</td>
<td>none</td>
<td>yes</td>
<td>identifies VSAM KSDS repository to use for RMGR</td>
</tr>
<tr>
<td>SECUREREPOSITORY</td>
<td>NO, YES</td>
<td>NO</td>
<td>no</td>
<td>specifies whether to use repository security checking</td>
</tr>
<tr>
<td>SHAREGROUP</td>
<td>sharegroup name</td>
<td>none</td>
<td>no, if one IMS ID; yes, if more than one IMS ID</td>
<td>indicates that the RMGR is a member of the named sharegroup</td>
</tr>
<tr>
<td>TASKLIMIT</td>
<td>01 to 99</td>
<td>10</td>
<td>no</td>
<td>specifies maximum number of concurrent tasks</td>
</tr>
</tbody>
</table>
Specifying RMGR startup control statements

Chapter 10 Managing the RMGR started task or job

RMGR control statement syntax

Observe the following rules when specifying RMGR control statements:

- Begin keywords in column 1.
- Do not include embedded spaces.
- Specify each keyword on a separate line.
- Specify an equal sign between each keyword and its value.
- Specify keywords in any order.
- Specify comments by placing an asterisk in column 1.

RMGR startup keyword descriptions

You can use the following keywords in RMGR startup control statements. The keywords are listed first according to whether they are required or optional and then according to alphabetic order.

**IMSID**

*(required)* Use this keyword to specify the list of 1- to 4-character IMS IDs of the IMS systems for RMGR to serve. RMGR connects to these IMS systems during the initialization process. Enclose the list of IMS IDs in parentheses.

**JOBPDS**

*(required)* Use this keyword to specify the name of the partitioned data set to use for storing the recovery JCL that the RMGR Recovery function generates. Typically, this data set is allocated during the RMGR installation process. The attributes for this data set must be LRECL=80 and RECFM=FB.

**NOTE**

This data set should be used only to store RMGR-generated recovery JCL. It should not be used to store control statements and should not be accessed by other tasks.

---

Table 67 RMGR startup keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid Values</th>
<th>Default Value</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE</td>
<td>NO, YES</td>
<td>NO</td>
<td>no</td>
<td>indicates whether to enable Global Trace option</td>
</tr>
<tr>
<td>TSONOTIFY</td>
<td>NO, YES</td>
<td>NO</td>
<td>no</td>
<td>indicates whether to send TSO notify messages to users when RMGR functions have completed</td>
</tr>
</tbody>
</table>

---
RECOVERYDBR

*(optional)* Use this keyword to control whether the Create Recovery JCL function (initiated with the ISPF interface or with the Batch Interface utility) is allowed to issue /DBR commands for databases (as specified with the DBR option). This keyword does not affect the ability of the Hold Point of Consistency function or the IMS Command utility to issue /DBR commands. Table 68 explains the results of various combinations of RECOVERYDBR keyword and DBR option values. For more information, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

To change the value of this option, you must recycle the RMGR.

The following values are valid; the default value is YES.

**YES** Allow the Create Recovery JCL function to issue /DBR commands.

---

**WARNING**

If you specify this value, RMGR is allowed to issue /DBR commands for the databases in the specified group immediately when the Create Recovery JCL function is submitted for execution.

**NO** Do not allow the Create Recovery JCL function to issue /DBR commands. The function honors the DBR=NO and DBR=JCL options only. If the DBR=YES option is specified, RMGR converts it to DBR=NO.

Table 68 Results of RECOVERYDBR keyword values

<table>
<thead>
<tr>
<th>RECOVERYDBR keyword value in the RMGR startup SYSIN</th>
<th>DBR option value in the Create Recovery JCL function</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES (or not present)</td>
<td>YES</td>
<td>The /DBR command is issued when the Create Recovery JCL function is initiated.</td>
</tr>
<tr>
<td>YES (or not present)</td>
<td>NO</td>
<td>The /DBR command is not issued when the Create Recovery JCL function is initiated.</td>
</tr>
<tr>
<td>YES (or not present)</td>
<td>JCL</td>
<td>The /DBR command is not issued when the Create Recovery JCL function is initiated; /DBR commands are created in the recovery JCL.</td>
</tr>
<tr>
<td>NO</td>
<td>YES</td>
<td>The /DBR command is never issued when the Create Recovery JCL function is initiated.</td>
</tr>
<tr>
<td>NO</td>
<td>NO</td>
<td>The /DBR command is not issued when the Create Recovery JCL function is initiated.</td>
</tr>
<tr>
<td>NO</td>
<td>JCL</td>
<td>The /DBR command is not issued when the Create Recovery JCL function is initiated; /DBR commands are created in the recovery JCL.</td>
</tr>
</tbody>
</table>
REPOSITORYBASE
(required) Use this keyword to specify the data set name of the VSAM KSDS for this RMGR to use as a repository. The repository is defined and populated during RMGR installation.

GMTABLEMEM
(required if you specify GMTABLEPDS) Use this keyword to specify the name of the member in which the operating system clock information is stored. This information is necessary to support timestamp recoveries across a time change boundary.

If this keyword is not present, RMGR builds a default table by using your current operating system clock to determine local time and offset from GMT.

For an example of the contents of this member, see member GMTABLE in the product sample library.

GMTABLEPDS
(optional) If you specify this keyword, you must also specify GMTABLEMEM. Use this keyword to specify the name of the partitioned data set in which you have defined a member (specified by the GMTABLEMEM keyword) that identifies your operating system clock information. This information is necessary to support timestamp recoveries across a time change boundary. The attributes for this data set must be LRECL=80 and RECFM=FB.

If this keyword is not present, RMGR builds a default table by using your current operating system clock to determine local time and offset from GMT.

SECUREREPOSITORY
(optional) Use this keyword to enable or disable additional security checking during attempts to access the repository through the ISPF interface. This checking is performed in addition to the data set security checks that are set up through your site security package (such as RACF). The following values are valid; the default value is NO.

NO Do not perform additional security checking in the RMGR ISPF interface. If the user is not authorized to perform the READ or UPDATE repository access, a RACF-type message is issued and an abend may occur.

YES Perform security checking in the RMGR ISPF interface. During initialization of the ISPF interface, a RACROUTE check is executed to determine repository access authority. Subsequently, if the user is not authorized to perform the READ or UPDATE repository access, a BMC error message is displayed, and the function is denied.
SHAREGROUP
(required if multiple IMS IDs are specified with the IMSID keyword; optional if a single IMS ID is specified with the IMSID keyword) Use the SHAREGROUP keyword to specify that this RMGR is a member of a sharegroup. The keyword value is the 1- to 4-character sharegroup name. This name should be a unique value for RMGR use. The name does not need to match the value of an IMSGROUP keyword. Also, the name must be different from the IMS IDs of the IMS systems in the sharegroup, and from the RMGR name.

TASKLIMIT
(optional) Use this keyword to specify the maximum number (01 to 99) of function requests (tasks) that RMGR may process concurrently. The default value is 10. The larger the value, the greater the resources (such as storage and CPU cycles) are consumed concurrently.

TRACE
(optional) Use this keyword to turn on or turn off the Global Trace option. The following values are valid; the default value is NO.

NO Turn off the Global Trace option. You can turn on the Global Trace option later by using the RMGR-enhanced modify command with the TRACEON keyword.

YES Turn on the Global Trace option. You must include an IRMTRACE DD statement in the initialization JCL. You can turn off the Global Trace option later by using the RMGR-enhanced modify command with the TRACEOFF keyword. You can also turn on tracing by using the appropriate keyword in the batch initiation of a function.

TSONOTIFY
(optional) Use this keyword to specify whether to send a TSO notify message to RMGR users when a function completes. An RMGR user is anyone who submits a function from the ISPF interface or whose user ID is specified by the FROM keyword when a function is submitted in batch. The following values are valid; the default value is NO.

NO Do not send TSO notify messages.

YES Send TSO notify messages to RMGR users who are logged on to the same operating system as the RMGR started task or job.
RMGR initialization examples

The following examples show control statements for RMGR initialization.

Non-data-sharing environment

Figure 32 and Figure 33 show an example of running two separate RMGRs in a non-data-sharing environment.

**NOTE**

In a non-data-sharing environment, the two RMGRs do not share the same repository.

---

**Figure 32  RMGR initialization in a non-data-sharing environment (system “P”)**

```plaintext
//RMGRP PROC or JOB ...
//IRMPROD EXEC PGM=IRMINIT ...
...
/SYSIN DD *
*RMRGRP
IMSID=(PRD1)
REPOSITORYBASE=YOUR.RMGRP.REPDATA
JOBPDS=YOUR.RMGRP.JCLOUT
TASKLIMIT=10
TRACE=NO
SECUREPOSITORY=YES
```

**Figure 33  RMGR initialization in a non-data-sharing environment (system “T”)**

```plaintext
//RMGRT PROC or JOB ...
//IRMTST1 EXEC PGM=IRMINIT ...
...
/SYSIN DD *
*RMRGRT
IMSID=(TST1)
REPOSITORYBASE=YOUR.RMGRP.REPDATA
JOBPDS=YOUR.RMGRP.JCLOUT
TASKLIMIT=10
TRACE=NO
SECUREPOSITORY=YES
```
Data-sharing environment

Figure 34 shows an example of running an RMGR in a data-sharing environment in which two IMS systems, PRD1 and PRD2, share the same RECON.

Figure 34  RMGR initialization in a data-sharing environment

```
//RMGR PROC or JOB ...
//IRMPRD EXEC PGM=IRMINIT ...
...
//SYSIN    DD *
*RMGR1
  IMSID=(PRD1,PRD2)
  REPOSITORYBASE=YOUR.SAME.REPDATA
  JOBPDS=YOUR.RMGR.JCLOUT
  TASKLIMIT=10
  TRACE=NO
  SECUREPOSITORY=YES
  SHAREGROUP=ISHR
```

Verifying that RMGR initialization is successful

Check the JES message log (identified with the JESMSGLG DD statement) in the RMGR job or started task for the following message:

```
BMC76413I TASK CONTROL ACTIVE
```

If this message is present, RMGR has started successfully and is ready to be used. If this message is absent, check for error messages that indicate the cause of the initialization failure.

Stopping RMGR

You can use any of several techniques to stop RMGR after successful initialization. You do not need to recycle the connected IMS to recycle RMGR.
Using the stop command or RMGR-enhanced modify command

You can stop RMGR by issuing one of the following commands. The first is the operating system stop command; the second is an RMGR-enhanced modify command. In both commands, \textit{rmgrname} is the RMGR name.

\begin{itemize}
\item /P \textit{rmgrname}
\item /F \textit{rmgrname},STOP
\end{itemize}

RMGR determines whether the connected IMS is active. If IMS is not active, RMGR implements a normal termination. If IMS is active, RMGR saves internal information that allows reconnection to the same active IMS system (when RMGR is restarted) and implements a forced termination.

Using the cancel command

You can stop RMGR by issuing the following operating system cancel command (\textit{rmgrname} is the RMGR name):

\begin{itemize}
\item /C \textit{rmgrname},DUMP
\end{itemize}

RMGR saves internal information that allows reconnection to the same active IMS system (when RMGR is restarted) and implements a forced termination. You can include the optional DUMP keyword to generate diagnostic information.
Using RMGR-enhanced modify commands

After you start RMGR for an IMS system, you can issue RMGR-enhanced operating system modify commands to perform tasks such as starting and stopping the Global Trace option.

Specifying RMGR-enhanced modify commands

Figure 35 shows the syntax for the RMGR-enhanced modify command. (See “About this book” for information about how to read this syntax diagram.)

Figure 35  RMGR-enhanced modify commands

Using keywords with RMGR-enhanced modify commands

The following list describes the keywords that can be specified on the RMGR-enhanced modify command. Only one keyword is valid per command (with the exception of the DUMP keyword, which you can specify with the CANCEL TASK=task keyword). The keywords are listed in alphabetical order.

CANCEL TASK=task
   Use this keyword to cause RMGR to stop processing the specified task. The task is identified by a task number. You can find the task number in the RMGR status monitor panels or in the IRMPRINT data set. RMGR prints a dump unless you also use the optional DUMP=NO keyword.

DUMP=NO
   You can use this optional keyword with the CANCEL TASK=task keyword to prevent RMGR from printing a dump during cancel processing.
REFRESH
   Use this keyword to cause RMGR to reprocess the IMS/sharegroup
   environment record. RMGR automatically executes this command each time
   you update the IMS/sharegroup record. When the REFRESH command is
   initiated and completed, messages are displayed in the IRMPRINT data set and
   RMGR issues an RMGR-enhanced MODIFY SNAP command to capture tracing
   information for diagnostic purposes.

REFRESHGMTTABLE
   If you have specified the GMTTABLEPDS and the GMTTABLEMEM keywords
   in the RMGR startup control statements, use this keyword to cause RMGR to
   update the GMT table information dynamically.

SNAP
   Use this keyword to request a formatted printout of major RMGR control blocks.
   If you specify this keyword, you must also include an IRMTRACE SYSOUT DD
   statement in the JCL that you use to start RMGR. Output generated by the
   command is directed to this data set.

STOP
   Use this keyword to end execution of the RMGR task.

TCBS
   Use this keyword to request a formatted and printed trace of all task control
   blocks (TCBs) in the address space. Output generated by the command is
   directed to the IRMPRINT data set.

TRACEOFF
   Use this keyword to turn off the RMGR Global Trace option.

TRACEON
   Use this keyword to turn on the RMGR Global Trace option. The IRMTRACE
   DD statement must be included in the JCL that you use to start RMGR. If you
   omit this DD statement, RMGR dynamically allocates the data set at initiation
   and sets the TRACE control statement to NO.
Using the RMGR Startup utility

You can use the RMGR Startup utility to automate the tasks of starting and checking the status of RMGR in the IMS environment. This section describes how to use this utility.

Implementing the Startup utility

The Startup utility runs as a batch job step. The utility performs the specified function and then ends with a return code that you can check in a subsequent process.

Implementation procedure

To implement the Startup utility, perform the following procedures:

1. Select the function that you want to use. For details, see “Selecting a Startup utility function” on page 293.

2. Specify the JCL. For details, see “Specifying Startup utility JCL” on page 293.

3. Specify the control statements. For details, see “Specifying Startup utility control statements” on page 294.

4. Execute the job.

5. Verify that the utility has ended with the expected return code. For details, see “Verifying Startup utility return codes” on page 297.

Implementation in an IMS control region procedure

You can ensure that RMGR is active in an IMS environment by adding a Startup utility step to your IMS control region procedure. Add this Startup utility step before the step that initiates the associated IMS control region. A sample IMS procedure that includes a Startup utility step is available in member IRMUP of the product sample library.
Selecting a Startup utility function

The Startup utility offers two functions: Check and Start.

Check function

Use the Check function to determine the status of RMGR in the IMS environment. The Startup utility determines whether RMGR is active and issues a return code indicating the status.

Start function

Use the Start function to start RMGR. First, the Startup utility determines whether RMGR is already active. If RMGR is active, the Startup utility ends. If RMGR is not active, the Startup utility issues a console command to start RMGR as a started task, or it submits JCL to start RMGR as a batch job. After the Startup utility issues the start command, it waits for a specified amount of time for RMGR to start; if RMGR does not start within that time, the utility sets a return code indicating that RMGR startup was unsuccessful.

Specifying Startup utility JCL

Figure 36 shows generic JCL for executing the Startup utility.

Specify the following statements in the Startup utility JCL:

EXEC

*(required) Specify program name IRMUP.
STEPLIB DD
(required) Identify the BMC load library that contains the RMGR load modules. This library must be APF authorized.

SYSUDUMP DD
(recommended) Include a data set to contain a system dump for problem determination.

SYSIN DD
(required) Specify control statements for the Startup utility. You can specify SYSIN DD * to include the control statements in-stream.

Specifying Startup utility control statements

To specify control statements for the Startup utility, you use keywords and their values. For information about syntax rules, see “RMGR control statement syntax” on page 283.

Startup Utility keyword summary

Table 69 summarizes information about the Startup utility keywords and their uses with utility functions.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Check</th>
<th>Start as started task</th>
<th>Start as batch JCL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM</td>
<td>CONSOLE PDS</td>
<td>not valid</td>
<td>required</td>
<td>required</td>
<td>specifies whether to start RMGR by issuing the start command or by submitting a batch job</td>
</tr>
<tr>
<td>FUNCTION</td>
<td>CHECK START</td>
<td>required</td>
<td>required</td>
<td>required</td>
<td>identifies the Startup utility function to perform</td>
</tr>
<tr>
<td>IRM</td>
<td>rmgrname</td>
<td>required</td>
<td>required</td>
<td>required</td>
<td>identifies the RMGR to start</td>
</tr>
<tr>
<td>MEMBER</td>
<td>member name</td>
<td>not valid</td>
<td>not valid</td>
<td>required</td>
<td>identifies the member that contains the RMGR job</td>
</tr>
</tbody>
</table>
Specifying Startup utility control statements

Chapter 10 Managing the RMGR started task or job

Specify the following keywords in any order as required:

FROM
(required if FUNCTION=START is specified) Use this keyword to specify how to start RMGR. The value you use for this keyword depends on whether you created a JCL procedure or a batch job to start RMGR, as explained in “Specifying JCL for starting RMGR” on page 280. The following values are valid:

CONSOLE
Start the specified RMGR started task with a console command.

PDS Submit the JCL to start RMGR as a batch job.

FUNCTION
(required) Use this keyword to specify a function for the Startup utility to perform. The following values are valid:

CHECK
Check to determine whether RMGR is active. For more information, see “Check function” on page 293.

START
Start the specified RMGR. For more information, see “Start function” on page 293.

IRM=rmgrname
(required) Use this keyword to identify the 1–8 character RMGR name for the utility to act on.

MEMBER
(required if FROM=PDS is specified) Use this keyword to identify the name of the member in the partitioned data set that contains the JCL to start RMGR.

Table 69  Startup utility keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Check</th>
<th>Start as started task</th>
<th>Start as batch JCL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDS</td>
<td>data set name</td>
<td>not valid</td>
<td>not valid</td>
<td>required</td>
<td>identifies the data set that contains the RMGR job</td>
</tr>
<tr>
<td>TIMEOUT</td>
<td>mms (0000 to 5959)</td>
<td>not valid</td>
<td>required</td>
<td>required</td>
<td>specifies the number of minutes and seconds to wait for initialization processing to complete</td>
</tr>
</tbody>
</table>

Startup utility keyword descriptions

Specify the following keywords in any order as required:

FROM
(required if FUNCTION=START is specified) Use this keyword to specify how to start RMGR. The value you use for this keyword depends on whether you created a JCL procedure or a batch job to start RMGR, as explained in “Specifying JCL for starting RMGR” on page 280. The following values are valid:

CONSOLE
Start the specified RMGR started task with a console command.

PDS Submit the JCL to start RMGR as a batch job.

FUNCTION
(required) Use this keyword to specify a function for the Startup utility to perform. The following values are valid:

CHECK
Check to determine whether RMGR is active. For more information, see “Check function” on page 293.

START
Start the specified RMGR. For more information, see “Start function” on page 293.

IRM=rmgrname
(required) Use this keyword to identify the 1–8 character RMGR name for the utility to act on.

MEMBER
(required if FROM=PDS is specified) Use this keyword to identify the name of the member in the partitioned data set that contains the JCL to start RMGR.
PDS
(required if FROM=PDS is specified) Use this keyword to identify the name of the data set that contains the JCL to start RMGR as a batch job.

TIMEOUT
(required if FUNCTION=START is specified) Use this keyword to specify the amount of time for the Startup utility to wait for RMGR to become active. The value is four digits (0000 to 5959), indicating minutes and seconds (mmss).

**Startup utility examples**

This section provides examples of control statements for using the Startup utility.

**Check function**

The following example shows the control statement for determining the status of an RMGR named IRMPROD.

```
//SYSIN   DD *
*Check to determine whether RMGR is active
IRM=IRMPROD
FUNCTION=CHECK
```

**Start function—initiate started task with console command**

The following example shows the control statement for issuing the console command to initiate the RMGR started task for the RMGR named IRMTEST. RMGR must start within five minutes.

```
//SYSIN   DD *
*Start RMGR started task
IRM=IRMTEST
FUNCTION=START
FROM=CONSOLE
*Set timeout value of 5 minutes
TIMEOUT=0500
```
Start function—submit batch job

The following example shows the control statement for submitting JCL from a PDS to initiate the RMGR named IRMA as a batch job.

```plaintext
//SYSIN DD *
*Submit batch JCL to start RMGR
IRM=IRMA
FUNCTION=START
FROM=PDS
PDS=IRM.STARTUP.JCL
MEMBER=IRMA
*Set timeout value of 3 minutes, 30 seconds
TIMEOUT=0330
```

Verifying Startup utility return codes

The Startup utility issues a return code to indicate the results of the execution. The return code depends on the utility function.

Check function return codes

The Check function can issue the following return codes:

- 0 The specified RMGR is active.
- 8 The specified RMGR is not active.
- 12 One or more control statement syntax errors were detected.

Start function return codes

The Start function can issue the following return codes:

- 0 The specified RMGR is already active, or the specified RMGR has started within the time specified by the TIMEOUT keyword.
- 8 The specified RMGR has not started within the specified time limit. The utility issues an error message.
- 12 One or more control statement syntax errors were detected.
Verifying Startup utility return codes
Managing RMGR option records

This chapter describes how to set up and maintain the repository records that define options for the Recovery Manager (RMGR) functions and utilities of the BMC Backup and Recovery Solution (BRS) for IMS and the RECOVERY MANAGER for IMS product. The following information is included:

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- **Working with RMGR environment records** ............ 301
  - Understanding RMGR environment records .......... 301
  - Accessing RMGR environment records ............... 301
  - Using the RMGR Environment Selection panel ..... 302
  - Using the Recovery Manager Environment Definition panel ... 304
  - Specifying job statement information .................. 305
- **Working with IMS/sharegroup environment records** 312
  - Understanding IMS/sharegroup environment records 312
  - Accessing IMS/sharegroup environment records .......... 314
  - Using the IMS/Sharegroup Environment Selection panel .... 315
  - Using the IMS/Sharegroup Environment Definition—Page 1 panel ... 318
  - Using the IMS/Sharegroup Environment Definition—Page 2 panel .... 321
  - Using the IMS/Sharegroup Environment Definition—Page 3 panel .... 323
  - Using the IMS/Sharegroup Environment Definition—Page 4 panel .... 325
  - Using the IMS/Sharegroup Environment Definition—Page 5 panel .... 327
- **Working with utility records** ................................. 329
  - Understanding utility records ......................... 329
  - Accessing utility records ............................... 332
  - Using the Utility Type Specification panel .......... 333
  - Using the Utility Specification panel ............... 335
  - Using the Utility Maintenance—Page 1 panel ....... 338
  - Using the Utility Maintenance—Page 2 panel ........ 340
  - Using the Utility Maintenance—Page 3 panel ........ 342
Overview

You use the following types of records to provide the information that the recovery management functions need during execution:

- RMGR environment records provide job statement information that the Create Recovery JCL function inserts into created JCL. For more information, see “Working with RMGR environment records” on page 301.

- IMS environment records and sharegroup environment records (collectively called IMS/sharegroup environment records) contain essential information about the IMS or sharegroup environment. Information includes the data set names of cataloged IMS system libraries that provide an application interface to the IMS databases and information for accessing the DBRC RECON data sets that contain database recovery control information. For more information, see “Working with IMS/sharegroup environment records” on page 312.

- Utility records contain information about the BMC products or IBM IMS utilities that perform recovery, change accumulation, image copy, pointer checking, and index rebuild functions. For more information, see “Working with utility records” on page 329.

- Profile records contain processing information that RMGR needs while performing certain functions. The use of profiles, other than the system-default profile (named SYSTEM-DEFAULT-PROFILE) is optional and depends on your environment and needs. During an initial RMGR installation or configuration, the system-default profile is created with default values.

As the RMGR administrator, you should become familiar with the options that are controlled by the values in a profile. You should also evaluate the values in the system-default profile to make sure that they are appropriate. For more information, see the Backup and Recovery Products for IMS Recovery Manager User Guide.
Working with RMGR environment records

You use RMGR environment records to provide job statement information that the Create Recovery JCL function uses when it creates job statements in the created recovery JCL.

Understanding RMGR environment records

You create one RMGR environment record for each RMGR. The Create Recovery JCL function uses the RMGR environment record that corresponds to the RMGR from which you initiate the function. You use the ISPF interface to work with RMGR environment records. The records are stored in the repository.

Accessing RMGR environment records

To access RMGR environment records through the ISPF interface, perform the following steps:

1. Access the RMGR ISPF interface. For more information, see “Providing access to the ISPF interface” on page 52.

2. On the Recovery Manager Primary Menu, provide the name of the RMGR or sharegroup to use, and enter option 3 (Options).

   The Setup Options panel (Figure 37) is displayed.

3. On the Setup Options panel, enter option 1 (Recovery Manager).

   The RMGR Environment Selection panel (Figure 38) is displayed.
Using the RMGR Environment Selection panel

When you enter option 1 on the Setup Options panel (Figure 37 on page 301), the RMGR Environment Selection panel (Figure 38) is displayed. Use this panel to list and select RMGR environment records.

Figure 38   RMGR Environment Selection panel

The RMGR Environment Selection panel contains an information-only field, specification fields, and a selection list.

Information-only field

The information-only **Recovery Manager name** field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.

Specification fields

Use the specification fields in the upper portion of the panel for the following tasks:

- display a list of RMGR environment records
- create a new RMGR environment record

**NOTE**

Before you start to create a new record, you can display a list of existing records to determine whether the record name you want to use already exists and to find the name of an existing record to use as a model. You can enter a different record name to change the list of records at any time.
Provide information about the RMGR environment record you want to work with as follows. Then press Enter.

**RMGR name or mask**

Specify a fully qualified or generic RMGR name as follows:

- To display a list of records that match a pattern, type a generic name containing asterisk (*) and question mark (?) masking characters as appropriate. You can display a list of all RMGR environment records that are defined in this repository by typing an asterisk (*) by itself. (This list is displayed when you first display this panel.)

- To create a new RMGR environment record, type a fully qualified RMGR name (containing no masking characters) that does not already exist. The name can be 1 to 8 characters. When you press Enter, the RMGR Environment Definition panel (Figure 39 on page 304) is displayed.

**Model name**

If you are creating a new RMGR environment record, you can type the fully qualified name (containing no masking characters) of a record to use as a model.

If you provide a model record name, RMGR copies the contents from the model record. If you omit the model record name, RMGR creates a new blank record.

**Selection list**

If you enter a generic record name or a specific record name that already exists, the RMGR Environment Selection panel (Figure 38 on page 302) is redisplayed with a list of existing RMGR environment records that matched the entered name. Use the selection list to select one or more RMGR environment records for the following tasks:

- display and modify the contents of the record
- delete the record

The selection list contains the following fields:

**Act** Type one of the following action codes on the row for the RMGR environment record you want to select, and press Enter:

- **S** Display and modify the contents of the record (the contents are the job statements). The RMGR Environment Definition panel (Figure 39 on page 304) is displayed.

- **D** Delete the record. The Recovery Manager Environment Record Delete Confirmation panel (not shown) is displayed. Confirm or cancel the deletion. The RMGR Environment Selection panel is redisplayed.
**RMGR Name**

This information-only field contains the name of the RMGR environment record.

**Using the Recovery Manager Environment Definition panel**

When you select an existing record or enter the name of a new record on the RMGR Environment Selection panel (Figure 38 on page 302), the Recovery Manager Environment Definition panel (Figure 39) is displayed. Use this panel to specify the job statement information for the Create Recovery JCL function to use in created JCL.

**Figure 39  Recovery Manager Environment Definition panel**

The Recovery Manager Environment Definition panel contains an information-only field and specification fields.

**Information-only field**

The information-only **Recovery Manager name** field contains the RMGR name, which you specified on the Recovery Manager Primary Menu.
Specifying job statement information

**Specification fields**

Provide values in the specification fields as follows. Enter the END command to save the record and return to the RMGR Environment Selection panel.

**Format job statements**
*(required)* Use this field to specify whether RMGR should format the job statements. The following values are valid. The default value is 2.

1 Yes, RMGR should perform variable substitution and restructure the job statements.

2 No, RMGR should perform variable substitution and then leave each job statement as it is.

---

**NOTE**

RMGR interprets this option as 1 (Yes) for an RMGR environment record that was created before this option was introduced with RECOVERY MANAGER for IMS version 3.3.00 and Backup and Recovery Solution for IMS version 1.2.00.

**job statement**

Use the specification fields on this panel to provide the job statement information for the Create Recovery JCL function to use when it creates jobs. The first time you use this panel, the fields contain default job statement information. Specify the job statements as described in the following section.

---

**NOTE**

The Create Recovery JCL function can use the job name from these specification fields when the function is determining the member name to use for the member that contains the created JCL. To use the job name from the RMGR environment record as the JCL member name, specify &JOB as the value of the PDS member field or the RECOVERYPDSMEMBER keyword during initiation of the Create Recovery JCL function. For more information, see the Backup and Recovery Products for IMS Recovery Manager User Guide.

---

**Specifying job statement information**

You can provide a maximum of five lines of job statement information. You can provide job statement information that includes a combination of literal values, substitution parameters, and JCL comments. Syntax rules vary depending on the value in the Formatting Option field.
Using job statement substitution parameters

In the job statements in the RMGR environment record, you can specify the following substitution parameters:

&GRP

Use this parameter to substitute the associated elemental or connecting group name into the created JCL.

If you use &GRP in the job name, the recovery task fails if the group name has any of the following characteristics:

- longer than eight characters
- begins with a numeric character
- contains embedded blanks
- contains special characters other than @, #, and $

If you use &GRP in any other element of the job statement, the group name is not edited when it is used by the Create Recovery JCL function.

If the associated group is a connecting group, the following rules apply:

- In created JCL for change accumulation, the connecting group name is used.
- In created JCL for recovery, if the value of the CONGRPJCL keyword is SINGLE, the connecting group name is used.
- In created JCL for recovery, if the value of the CONGRPJCL keyword is MULTIPLE, the elemental group name is used.

&JOBDATAn (n is 1–5)

Use a maximum of five instances of this parameter to provide any valid job statement data. Specify &JOBDATAn; n is a digit (1–5) that corresponds to one of the Field n (JOBDATAn) fields on the Profile Maintenance—Page 6 panel. During execution of the Create JCL Recovery function, the function substitutes for this parameter the value of the Field n (JOBDATAn) field from the profile that applies to this function execution. For more information about profiles, see the Backup and Recovery Products for IMS Recovery Manager User Guide.

&SEQn (n is 1 or 2)

Use this parameter within the job name to create unique job names (distinct recovery jobs) within one JCL member or among multiple JCL members when you are creating JCL for a connecting group. This parameter allows multiple recovery jobs to run simultaneously.
If you specify &SEQ1, during execution of the Create JCL Recovery function the function substitutes an automatically generated and incremented digit or character (0–9, then A–Z). The first recovery job that is created during this execution is assigned sequence number 0, the second job is assigned sequence number 1, the tenth job is assigned sequence number A, and so on. After a job that is assigned sequence number Z, the next job is assigned sequence number 0.

If you specify &SEQ2, during execution of the Create JCL Recovery function the function substitutes for this parameter an automatically generated and incremented two-digit sequence number. The first recovery job that is created during this execution is assigned sequence number 01, the second job is assigned sequence number 02, and so on.

**NOTE**
RMGR still supports the &SEQ parameter; if it is specified, RMGR interprets it in the same way as the &SEQ2 parameter.

&TN \( (n \text{ is } 1–4)\)
Use this parameter within the job name to create unique job names (distinct recovery jobs) among the tasks that use the same profile. Specify &TN; \(n\) is the number (1–4) of digits to obtain from the recovery task number. During execution of the Create JCL Recovery function, the function substitutes for this parameter the right-most \(n\) digits from the recovery task number.

&USERID
Use this parameter to substitute a TSO user ID into the created JCL. During execution of the Create Recovery JCL function, the function substitutes for this parameter the user ID of the user who initiated the function. If the function is submitted with the Batch Interface utility (program name IRMBATCH), the value specified by the FROM keyword is used.

**Syntax rules**

The syntax rules that apply to the job statement information that you provide on this panel depend on the value in the **Formatting Option** field.

**Syntax rules for Formatting Option 1 (Yes)**

If you specify 1 (Yes) in the **Formatting Option** field, the following syntax rules apply:

- The first job statement must contain the **JOB** operation field.
- The total length of the job name, **JOB** operation field, and accounting information parameter cannot exceed 71 characters.
Specifying job statement information

- The third column of lines 2 through 5 must contain an asterisk or a blank.

- You can provide optional comment statements as follows:
  
  — Comment statements must begin with // (in columns 1–3) and must follow all job statements. The Create Recovery JCL function includes these comment statements in the recovery JCL.
  
  — The Create Recovery JCL function ignores any comment statements that are placed between job statement lines; these comment statements are omitted from the created recovery JCL.
  
  — Comment statements that follow parameter fields on the same line are not allowed and may cause unpredictable results.

  — Variables are not allowed in a comment.

- If the value for an &JOBDATAn variable is missing from the profile, this variable is treated as a literal in the JOB statement. The value for an &JOBDATAn variable may not be another variable.

- Specification of JES control statements and command statements may cause unpredictable results. If you want to include these statements, specify 2 (No) in the Formatting Option field to prevent RMGR from formatting the statements.

**Syntax rules for Formatting Option 2 (No)**

If you specify 2 (No) in the Formatting Option field, the following syntax rules apply:

- The first job statement must contain the JOB operation.

- After substituting values for the specified variables, RMGR truncates any data after column 72.

- RMGR performs variable substitution for variables found in any job statement, including comments and JES control statements.

- You can specify optional comment or JES control statements except as the first job statement.

- You can specify comments after the parameter fields on the same line.

**WARNING**

The comment should not contain a comma followed by a blank.
• If the value for an &JOBDATAn variable is missing from the profile, RMGR treats it as null in the job statement.

• The value for &JOBDATAn variables can include the &GRP, &SEQn, &Tn, &USERID variables.

Examples

The following examples show how job statement information that is specified in an RMGR environment record is used during execution of the Create Recovery JCL function.

Formatting Option 1 (Yes) example

The following job statement information is specified in the RMGR environment record:

```
//IRCV&T2&SEQ2 JOB (&JOBDATA1,&JOBDATA2),',&JOBDATA3',
//   CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),REGION=5M,
//   NOTIFY=&USERID
// * IMS1 RMGR FORMATTED JOBCARD
```

The value of the Formatting Option field is specified as 1 (Yes).

The following values are specified in PROFILE1, which applies to the Create Recovery JCL job:

- JOBDATA1 4211
- JOBDATA2 1921D
- JOBDATA3 USERNAME
- JOBDATA4
- JOBDATA5

During execution of the Create Recovery JCL function, the function performs the following substitutions of values that depend on current conditions:

- It substitutes &T2 with the two right-most digits of the RMGR task number. In this case, the task number is 4322, and the right-most digits are 22.

- It substitutes &SEQ2 with the sequence number. This case shows the first job in the sequence; therefore the number is 01.
Specifying job statement information

- It substitutes &JOBDATA1, &JOBDATA2, and &JOBDATA3 with the values of the JOBDATA1, JOBDATA2, and JOBDATA3 fields from the PROFILE1 profile.

- It substitutes &USERID with the TSO user ID of the user who initiated the function (or with the value specified by the FROM keyword). In this case, the user ID is ABCDEF.

The following job statement results from the substitution:

```
//IRCV2201 JOB (4211,1921D),
//  'USERNAME',
//  CLASS=A,
//  MSGCLASS=X,
//  MSGLEVEL=(1,1),
//  REGION=5M,
//  NOTIFY=ABCDEF
//* IMS1 RMGR FORMATTED JOBCARD
```

**Formatting Option 2 (No) example**

The following job statement information is specified in the RMGR environment record:

```
//IRCV&SEQ1 JOB (&JOBDATA1,&JOBDATA2),'&JOBDATA3',
//  CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),REGION=5M,
//  NOTIFY=&USERID
//* IMS1 RMGR NONFORMATTED JOBCARD
&JOBDATA5
```

The value of **Formatting Option** field is specified as 2 (No).

The following values are in specified in PROFILE1, which applies to the Create Recovery JCL job:

- **JOBDATA1**: 4211
- **JOBDATA2**: 1921D
- **JOBDATA3**: USERNAME
- **JOBDATA4**
- **JOBDATA5**: /* JOB FOR &USERID
During execution of the Create Recovery JCL function, the function performs the following substitutions of values that depend on current conditions:

- It substitutes &SEQ1 with the sequence number. This case shows the first job in the sequence; therefore the number is 0.

- It substitutes &JOBDATA1, &JOBDATA2, &JOBDATA3, and &JOBDATA5 with the values of the JOBDATA1, JOBDATA2, JOBDATA3, and JOBDATA5 fields from the PROFILE1 profile.

- It substitutes &USERID in the NOTIFY parameter and in the JOBDATA5 field with the TSO user ID of the user who initiated the function (or with the value specified by the FROM keyword). In this case, the user ID is ABCDEF.

The following job statement results from the substitution with PROFILE1:

```
//IRCV0 JOB (4211,1921D),'USERNAME',
// CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),REGION=5M,
// NOTIFY=ABCDEF
//* IMS1 RMGR NONFORMATTED JOBCARD
//* JOB FOR ABCDEF
```

The following values are in specified in PROFILE2, which applies to another Create Recovery JCL job that uses this RMGR environment record:

- JOBDATA1 4211
- JOBDATA2 1921D
- JOBDATA3 USERNAME
- JOBDATA4
- JOBDATA5

The following job statement results from the substitution with PROFILE2; since this profile has no value for the JOBDATA5 variable, this variable is treated as null:

```
//IRCV0 JOB (4211,1921D),'USERNAME',
// CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),REGION=5M,
// NOTIFY=ABCDEF
//* IMS1 RMGR NONFORMATTED JOBCARD
```
TYPRUN=HOLD in the JOB statement

Under certain conditions, RMGR inserts the TYPRUN=HOLD parameter into a JOB statement.

Start job

In the profile, you can specify creation of a separate job for start database commands; this job is created during the Create Recovery JCL function. RMGR adds the TYPRUN=HOLD parameter to the job statement for this type of job as follows:

- If you specify the value of the Formatting Option field as 1 (Yes), RMGR inserts the TYPRUN parameter as the last parameter of the job statement.
- If you specify the value of the Formatting Option field as 2 (No), RMGR inserts the TYPRUN parameter as the second line of the job statement.

DBR step present

If you have specified the DBR=JCL option for the Create Recovery JCL function, the recovery JCL contains a DBR step. In this case, RMGR inserts the TYPRUN=HOLD parameter into the JOB statement in the recovery JCL.

Working with IMS/sharegroup environment records

The following sections describe how to work with IMS/sharegroup environment records. For more information about how these records are used, see “RMGR configuration tasks” on page 260.

Understanding IMS/sharegroup environment records

IMS/sharegroup environment records contain essential information about the IMS or sharegroup environment, including the data set names of cataloged IMS system libraries that provide an application interface to the IMS databases and information for accessing the DBRC RECON data sets that contain database recovery control information.
Information in environment records

IMS/sharegroup environment records contain the following types of information:

- the IMS ID or sharegroup name
- for an IMS environment record, whether the IMS system is defined for XRF, and if so, the RSENAME
- whether the RECON data sets are dynamically allocated, and if not, the data set names of the RECONs
- data set names to include in the RESLIB, MDALIB, DBDLIB, and PSBLIB concatenations
- if you use BMC Fast Path products, the ACBLIB data set name (or names) and MODSTAT data set name

Storage of environment records

IMS/sharegroup environment records are stored in the repository. The IMS ID or sharegroup identifier is the name of the record.

Use of environment records

Various RMGR functions use the information in environment records to form groups of recoverable objects and to generate and build the JCL for processing groups and objects.

If you are in a data-sharing environment and have specified the SHAREGROUP keyword in the RMGR startup SYSIN statements, RMGR uses the sharegroup environment record to identify the IMS data sets. If you are not in a data-sharing environment, RMGR uses the IMS environment record to identify all IMS data sets.

Creation and update of environment records

If you have not created an IMS or sharegroup environment record, RMGR creates an empty environment record at startup. You must then update that environment record with the required data set information.

When you create or update an environment record, the ISPF interface checks data set names for naming conventions and invalid characters such as leading and trailing periods or embedded blanks.
When you create or update an IMS/sharegroup record, RMGR processes the information and writes REFRESH initiation and completion messages to the RMGR IRMPRINT data set.

## Accessing IMS/sharegroup environment records

To access IMS/sharegroup environment records through the ISPF interface, perform the following steps:

1. Access the RMGR ISPF interface. For more information, see “Providing access to the ISPF interface” on page 52.

2. On the Recovery Manager Primary Menu, provide the name of the RMGR or sharegroup to use, and enter option 3 (Options).

   The Setup Options panel (Figure 37 on page 301) is displayed.

3. On the Setup Options panel, enter option 2 (IMS/Sharegroup).

   The IMS/Sharegroup Environment Selection panel (Figure 40 on page 315) is displayed.
Using the IMS/Sharegroup Environment Selection panel

When you enter option 2 on the Setup Options panel (Figure 37 on page 301), the IMS/Sharegroup Environment Selection panel (Figure 40) is displayed. Use this panel to list and select IMS/sharegroup environment records.

Figure 40  IMS/Sharegroup Environment Selection panel

The IMS/Sharegroup Environment Selection panel contains an information-only field, specification fields, and a selection list.

**Information-only field**

The information-only **Recovery Manager name** field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.
**Specification fields**

Use the specification fields in the upper portion of the panel for the following tasks:

- display a list of IMS/sharegroup environment records
- create a new IMS/sharegroup environment record

**NOTE**

Before you start to create a new record, you can display a list of existing records to determine whether the record name you want to use already exists and to find the name of an existing record to use as a model. You can enter a different record name to change the list of records at any time.

Provide information about the IMS/sharegroup environment record (or records) you want to work with as follows. Then press **Enter**.

**IMS/Sharegroup name or mask**

Specify a fully qualified or generic IMS or sharegroup name as follows:

- To display a list of records that match a pattern, type a generic name containing asterisk (*) and question mark (?) masking characters as appropriate. You can display a list of all IMS/sharegroup environment records that are defined in this repository by typing an asterisk (*) by itself. (This list is displayed when you first display this panel.)

- To create a new IMS/sharegroup environment record, type a fully qualified IMS or sharegroup name (containing no masking characters) that does not already exist. The name can be 1 to 4 characters. The name of the sharegroup is unique value for RMGR use; it does not need to match the value of an IMSGROUP keyword, and it must be different from the IMS IDs of the IMS systems in the sharegroup. This name must also be different from the RMGR name. When you press **Enter**, the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318) is displayed.

**Model name**

If you are creating a new IMS/sharegroup environment record, you can type the fully qualified name (containing no masking characters) of a record to use as a model.

If you provide a model record name, RMGR copies the contents from the model record. If you omit the model record name, RMGR creates a new blank record.
Selection list

If you enter a generic record name or a specific record name that already exists, the IMS/Sharegroup Environment Selection panel (Figure 40 on page 315) is redisplayed with a list of existing IMS/sharegroup environment records that matched the entered name. Use the selection list to select one or more RMGR environment records for the following tasks:

- display and modify the contents of the record
- delete the record

The selection list contains the following fields:

**Act** Type one of the following action codes on the row for the IMS/sharegroup environment record you want to select, and press Enter:

- **S** Display and modify the contents of the record (the contents are the job statements). The IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318) is displayed.

- **D** Delete the record. The IMS/Sharegroup Environment Record Delete Confirmation panel (not shown) is displayed. Confirm or cancel the deletion. The IMS/Sharegroup Environment Selection panel is redisplayed.

**IMS or Sharegroup**
This information-only field contains the name of the IMS/Sharegroup environment record.

**Type**
This information-only field contains the type of the record. You control the type of the record with the Type of Record field on the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318). The following values are valid:

- **IMS**
  The record is an IMS environment record.

- **Sharegroup**
  The record is a sharegroup environment record.

**Associated With This RMGR**
This information-only field indicates whether this IMS/sharegroup environment record is associated with the RMGR that you entered on the Recovery Manager Primary Menu.
Using the IMS/Sharegroup Environment Definition—Page 1 panel

When you select an existing record or enter the name of a new record on the IMS/Sharegroup Environment Selection panel (Figure 40 on page 315), the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41) is displayed. Use this panel to specify the type of the record and general IMS system information for the IMS or sharegroup.

Figure 41  IMS/Sharegroup Environment Definition—Page 1 panel

The IMS/Sharegroup Environment Definition—Page 1 panel contains information-only fields and specification fields.

Information-only fields

The panel contains the following information-only fields:

Recovery Manager name
This field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.

IMS ID or Sharegroup
This field contains the IMS ID or sharegroup name of the record that you selected or entered on the IMS/Sharegroup Environment Selection panel (Figure 40 on page 315).
Specification fields

Use the following specification fields on this panel to provide information for the IMS or sharegroup environment. Type the values you want to use. Press Enter to display the IMS/Sharegroup Environment Definition—Page 2 panel (Figure 42 on page 321). Enter the END command to save the record and return to the IMS/Sharegroup Environment Selection panel.

Type of record

(required) Use this field to specify the type of the record. This field cannot be updated after the new IMS/Sharegroup environment record is saved. The following values are valid. The default value is 2.

1   This record is a sharegroup environment record.

2   This record is an IMS environment record.

XRF capable

(required) For an IMS environment record, use this field to indicate whether the IMS system has been generated for IMS XRF capabilities.

This field is not applicable for a sharegroup environment record. If you are in a data-sharing environment and are using XRF, you must create an IMS environment record and specify the RSENNAME in that record.

The following values are valid. The default value is 2.

1   Yes, the IMS system has been generated for IMS XRF capabilities. Enter the RSENNAME in the If XRF, RSENNAME field.

2   No, the IMS system has not been generated for IMS XRF capabilities. Leave the If XRF, RSENNAME field blank.

If XRF, RSENNAME

(required if you specify 1 in the XRF capable field; otherwise, not valid) Use this field to provide the RSENNAME (1–8 characters).

RESLIB data set n

(required) Use this field to specify the names of the IMS RESLIB (the data sets that contain the authorized load modules for the IMS system). RESLIB data set names that are specified in the IMS environment record override RESLIB data set names that are specified in a sharegroup environment record. Only one data set name is required.

If you use the BMC Fast Path Indexer/EP product, the RESLIB library must contain PFXLIBA and PFXLIBB dynamic allocation members unless these members are in the MDALIB.
RECON data sets dynamically allocated
(required) Use this field to indicate whether the RECON data sets are dynamically allocated. The following values are valid. The initial default value is 2.

**NOTE**
If the RECON data sets are dynamically allocated, RECON members must be available in either the RESLIB or MDALIB. If a sharegroup environment record is present, RMGR uses the RECON data sets specified in that record.

1. Yes, the RECON data sets are dynamically allocated and are specified as members in the RESLIB or MDALIB data set.

2. No, the RECON data sets are not dynamically allocated. Specify the data set names of the RECONs in the following RECON data set n fields.

RECON data set n
(required if you specify 2 in the RECON data sets dynamically allocated field; otherwise, not valid) Use these fields to specify the data set names of the RECONs.
Using the IMS/Sharegroup Environment Definition—Page 2 panel

When you press Enter on the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318), the IMS/Sharegroup Environment Definition—Page 2 panel (Figure 42) is displayed. Use this panel to specify MDALIB information for the IMS or sharegroup.

Figure 42 IMS/Sharegroup Environment Definition—Page 2 panel

In addition to information-only fields (explained in “Information-only fields” on page 318), the IMS/Sharegroup Environment Definition—Page 2 panel contains a data set specification list.

Data set specification list

Use the following fields in the data set specification list to identify the MDALIB data set (or data sets) that are used for the dynamic allocation of full function (DL/I) databases for the IMS or sharegroup environment. Tailor the list as needed, and press Enter to verify your changes. Press Enter again to display the IMS/Sharegroup Environment Definition—Page 3 panel (Figure 43 on page 323). Enter the END command to save the record and return to the IMS/Sharegroup Environment Selection panel.
The specification list contains the following fields:

**Act** Enter the following action codes in this field to the left of a data set name in the list as needed:

- **I** Insert one or more data set names after this data set name. To insert data set names ahead of the first entry in the list, enter **I** in the **Act** field of the **Top of Data row**.

- **D** Delete the data set name from the list.

**MDALIB Data set name(s)**
Type a data set name of a PDS to include in the data set concatenation. You can specify a maximum of 114 data set names. Each PDS must be cataloged.

If a sharegroup environment record is present, the MDALIB libraries specified in that record are used.

If you use the BMC Fast Path Indexer/EP product, the MDALIB library must contain PFXLIBA and PFXLIBB dynamic allocation members unless these members are in the IMS RESLIB.

---

**WARNING**
If you have specified 1 in the **RECON data sets dynamically allocated** field on the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318) and those dynamic definitions are in MDALIB, you must specify the name (or names) of the MDALIB data set (or data sets).
When you press Enter on the IMS/Sharegroup Environment Definition—Page 2 panel (Figure 42 on page 321), the IMS/Sharegroup Environment Definition—Page 3 panel (Figure 43) is displayed. Use this panel to specify DBDLIB information for the IMS or sharegroup.

Figure 43 IMS/Sharegroup Environment Definition—Page 3 panel

In addition to information-only fields (explained in “Information-only fields” on page 318), the IMS/Sharegroup Environment Definition—Page 3 panel contains a data set specification list.

**Data set specification list**

Use the following fields in the data set specification list to identify the data set names of the database description (DBD) library data set (or data sets) that contain the output of the DBDGEN process defining information about objects to be recovered. RMGR uses these libraries to determine the recoverable objects, database organization and access methods, the segments and fields in database records, and the relationship between segment types for all data bases available on the IMS system.
Tailor the list as needed, and press Enter to verify your changes. Press Enter again to display the IMS/Sharegroup Environment Definition—Page 4 panel (Figure 44 on page 325). Enter the END command to save the record and return to the IMS/Sharegroup Environment Selection panel.

The specification list contains the following fields:

**Act** Enter the following action codes in this field to the left of a data set name in the list as needed:

- I Insert one or more data set names after this data set name. To insert data set names ahead of the first entry in the list, enter I in the Act field of the Top of Data row.

- D Delete the data set name from the list.

**DBDLIB Data set name(s)**

Type a data set name of a PDS to include in the data set concatenation. You must specify at least one data set name. You can specify a maximum of 114 data set names. Each PDS must be cataloged. If a sharegroup environment record is present, RMGR uses the DBDLIBs specified in that record.
When you press Enter on the IMS/Sharegroup Environment Definition—Page 3 panel (Figure 43 on page 323), the IMS/Sharegroup Environment Definition—Page 4 panel (Figure 44) is displayed. Use this panel to specify PSBLIB information for the IMS or sharegroup.

**Figure 44  IMS/Sharegroup Environment Definition—Page 4 panel**

In addition to information-only fields (explained in “Information-only fields” on page 318), the IMS/Sharegroup Environment Definition—Page 4 panel contains a data set specification list.

**Data set specification list**

Use the following fields in the data set specification list to identify the data set names of the PSBLIB data set (or data sets) that contain the program specification blocks (PSBs) defining the databases which can be accessed, the available segments within the database, and the type of access. One PSB is defined for each application program, and the PSB library must be specified so that RMGR can group and manage recoverable objects by application.

Tailor the list as needed, and press Enter to verify your changes. Press Enter again to display the IMS/Sharegroup Environment Definition—Page 5 panel (Figure 45 on page 327). Enter the END command to save the record and return to the IMS/Sharegroup Environment Selection panel.
The specification list contains the following fields:

**Act**  Enter the following action codes in this field to the left of a data set name in the list as needed:

I  Insert one or more data sets names after this data set name. To insert data set names ahead of the first entry in the list, enter I in the Act field of the Top of Data row.

D  Delete the data set name from the list.

**PSBLIB Data set name(s)**
Type a data set name of a PDS to include in the data set concatenation. You can specify a maximum of 114 PSB libraries on the IMS system. Each PDS must be cataloged. If a sharegroup environment record is present, RMGR uses the PSBLIBs specified in that record.

---

**NOTE**
It is best if all data sets in the PSB list contain only PSB modules.
Using the IMS/Sharegroup Environment Definition—Page 5 panel

When you press Enter on the IMS/Sharegroup Environment Definition—Page 4 panel (Figure 44 on page 325), the IMS/Sharegroup Environment Definition—Page 5 panel (Figure 45) is displayed. Use this panel to specify ACBLIB information for the IMS or sharegroup.

Figure 45  IMS/Sharegroup Environment Definition—Page 5 panel

In addition to information-only fields (explained in “Information-only fields” on page 318), the IMS/Sharegroup Environment Definition—Page 5 panel contains specification fields.

Specification fields

If you use the BMC Backup and Recovery Solution for IMS with Fast Path data entry databases, the Fast Path Analyzer/EP product, or the Fast Path Indexer/EP product, use the following fields to specify information about the ACBLIB data sets that contain application control block information. The Create Recovery JCL function uses these data set names to build DD statements in JCL for pointer checking Fast Path areas and rebuilding Fast Path indexes.

Type or verify the requested information as appropriate. Press Enter to display the IMS/Sharegroup Environment Definition—Page 1 panel (Figure 41 on page 318). Enter the END command to save the record and return to the IMS/Sharegroup Environment Selection panel.

ACBLIBA library
Type the data set name of the first or only ACBLIB library in this field. If the IMS system uses one ACBLIB, leave the ACBLIBB field on this panel blank.
If an ACBLIB is found in an IMS environment record, it overrides values in the sharegroup environment record.

**ACBLIBB library**
If the IMS system uses two ACBLIB libraries, type the data set name of the second ACBLIB library in this field.

**MODSTAT library**
If the IMS system uses two ACBLIB libraries, or if you use the BMC Fast Path Indexer/EP product, type the data set name of the MODSTAT library in this field. Fast Path Indexer/EP uses this library to access the appropriate PFXLIB for Fast Path secondary indexes. PFXLIBA and PFXLIBB dynamic allocation members must exist in either MDALIB (which will be searched first) or in RESLIB.

If a MODSTAT library is found in an IMS environment record, it overrides values in the sharegroup environment record.
Working with utility records

The following sections describe how to work with utility records. For information about how utility records are used during execution of recovery management function, see the *Backup and Recovery Products for IMS Recovery Manager User Guide*.

Understanding utility records

Recovery management functions require information about the BMC products and IBM IMS utilities that are available on your system. You use utility records to provide this information.

Information in utility records

Utility records contain the following types of information:

- utility name and version
- program name to specify for executing the utility
- program parameters to use for executing the utility
- names of the data sets that contain the load modules to execute the utilities
- your own customized DD statements to be added to recovery JCL

Storage and naming of utility records

Utility records are stored in the repository. RMGR assigns default names to the default records it creates. You assign a name when you create a new record.

Use of utility records

The Create Recovery JCL function uses the information you have provided in utility records in the created JCL. You specify which utility records (and therefore, which utilities) you want to use by specifying the utility record name in a profile record that applies during execution of the function.
Creation and update of utility records

The RMGR Customization CLIST generates default records for every supported utility. You can use these records as models for creating new utility records, or you can modify the default records. You can create utility records for all supported utilities if you have them installed. You must define at least one utility record for recovery processing.

After you create utility records, you do not need to create or change the records again unless you want to include a new version of one of the utilities or you install a new utility and want to set it up for use.

Supported BMC utilities

Table 70 shows information about the supported BMC products.

Table 70 | Supported functions and program names for BMC utilities (part 1 of 2)
---|---|---|---|---|---|
**Supported BMC utility, product, and version** | **Default utility record name** | **Functions supported** | **Functions not supported** | **Program executed** | **Programs not executed** |
---|---|---|---|---|---|
Change Accumulation utility: Backup and Recovery Solution (BRS) for IMS 1.0 and later, CHANGE ACCUMULATION PLUS 1.6 and later | BMC-CHANGE-ACCUM-PLUS | change accumulation | incremental image copy (IIC) | CAPUMAIN | DFSUCUM0 |
Index Rebuild function for DEDBs: Fast Path Indexer/EP 3.2.00 and later | BMC-FAST-PATH-UTILITY/EP | rebuild of Fast Path indexes using BUILD | | PFPMAIN |
Concurrent Pointer Checking function for DEDBs: BRS 1.0 and later, Fast Path Analyzer/EP 2.0.01 and later | BMC-FAST-PATH-UTILITY/EP | CHECKSUM for image copy data sets using ANALYZE QUICK | CHECKSUM for database input | PFPMAIN |
RMGR also supports the execution of POINTER CHECKER PLUS under the IBM IMS Database Image Copy utility.

### Table 70  Supported functions and program names for BMC utilities (part 2 of 2)

<table>
<thead>
<tr>
<th>Supported BMC utility, product, and version</th>
<th>Default utility record name</th>
<th>Functions supported</th>
<th>Functions not supported</th>
<th>Program executed</th>
<th>Programs not executed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Copy utility: BRS 1.0 and later, IMAGE COPY PLUS 2.6 and later</td>
<td>BMC-IMAGE-COPY-PLUS</td>
<td>batch image copy (A/IC)</td>
<td>copy image copy (A/CIC) recovery (A/REC) online image copy (A/OIC) incremental image copy (A/IIC)</td>
<td>ICPUMAIN</td>
<td>DFSUDMP0 and DFSRRC00</td>
</tr>
<tr>
<td>Concurrent Pointer Checking function for full-function databases: BRS 1.0 and later, POINTER CHECKER PLUS 3.3 and later</td>
<td>BMC-POINTER-CHECKER-PLUS</td>
<td>hash checking for image copy data sets using TYPE(HASH)</td>
<td>hash checking for database input</td>
<td>PCPCHECK</td>
<td></td>
</tr>
<tr>
<td>Recovery utility: BRS 1.0 and later, RECOVERY PLUS for IMS 2.7 and later</td>
<td>BMC-RECOVERY-PLUS</td>
<td>recovery</td>
<td>roll forward</td>
<td>RVPUMAIN</td>
<td>DFSRRC00 and DFSURDB0</td>
</tr>
<tr>
<td>Index Rebuild EP function for full-function databases: BRS 1.0 and later, SECONDARY INDEX UTILITY/EP 1.3 and later</td>
<td>BMC-SEC-INDEX-UTILITY/EP</td>
<td>rebuild of full-function database indexes using BUILD</td>
<td>all other functions</td>
<td>BMCSIU</td>
<td></td>
</tr>
<tr>
<td>Index Rebuild Classic function for full-function databases: SECONDARY INDEX UTILITY 2.8 and later</td>
<td>BMC-SEC-INDEX-UTILITY</td>
<td>rebuild of full-function database indexes using BUILDALL</td>
<td>all other functions</td>
<td>BMCSIU</td>
<td></td>
</tr>
</tbody>
</table>
Supported IBM IMS utilities

Table 71 shows information about the supported IBM IMS utilities.

Table 71  Supported IBM IMS utilities

<table>
<thead>
<tr>
<th>Utility</th>
<th>Default utility record name</th>
<th>Program executed</th>
<th>Required parameter specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM IMS Database Recovery</td>
<td>IBM-RECOVERY</td>
<td>DFSRRC00</td>
<td>UDR,DFSURDB0,*,,,,,,,,,,,Y</td>
</tr>
<tr>
<td>IBM IMS Database Image Copy</td>
<td>IBM-IMAGE-COPY</td>
<td>DFSUDMP0</td>
<td>DBRC=Y</td>
</tr>
<tr>
<td>IBM IMS Change Accumulation</td>
<td>IBM-CHANGE-ACCUM</td>
<td>DFSUCUM0</td>
<td>DBRC=Y</td>
</tr>
</tbody>
</table>

Accessing utility records

To access utility records through the ISPF interface, perform the following steps:

1. Access the RMGR ISPF interface. For more information, see “Providing access to the ISPF interface” on page 52.

2. On the Recovery Manager Primary Menu, provide the name of the RMGR or sharegroup to use, and enter option 3 (Options).

   The Setup Options panel (Figure 37 on page 301) is displayed.

3. On the Setup Options panel, enter option 3 (Utilities).

   The Utility Type Specification panel (Figure 46 on page 333) is displayed.
Using the Utility Type Specification panel

When you enter option 3 on the Setup Options panel (Figure 37 on page 301), the Utility Type Specification panel (Figure 46) is displayed. Use this panel to select the type of utility record you want to select.

Figure 46 Utility Type Specification panel

The Utility Type Specification panel contains an information-only field, and a choice-entry field.

Information-only field

The information-only Recovery Manager name field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.

Choice-entry field

Select the type of utility record by typing one of the following numbers in the choice entry field. When you press Enter, the Utility Specification panel (Figure 47 on page 335) is displayed.

1 Display utility records for the BMC Image Copy utility.

2 Display utility records for the BMC Recovery utility.
3 Display utility records for the BMC Index Rebuild function for full-function databases.

4 Display utility records for the BMC Concurrent Pointer Checking function for full-function databases.

5 Display utility records for the BMC Concurrent Pointer Checking function and Index Rebuild function for Fast Path DEDBs.

6 Display utility records for the BMC Change Accumulation utility.

10 Display utility records for the IBM IMS Database Image Copy utility.

11 Display utility records for the IBM IMS Database Recovery utility.

12 Display utility records for the IBM IMS Change Accumulation utility.

99 Display all utility records that are stored in the repository.

**NOTE**

You cannot create a new utility record from a display of all utility records.
Using the Utility Specification panel

When you enter a choice on the Utility Type Specification panel (Figure 46 on page 333), the Utility Specification panel (Figure 47) is displayed. Use this panel to select or create a utility record.

Figure 47 Utility Specification panel

The Utility Specification panel contains information-only fields, specification fields, and a selection list.

Information-only fields

The panel contains the following information-only fields:

Recovery Manager name
This field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.

Utility type
This field contains the type of utility record that you selected on the Utility Type Specification panel (Figure 46 on page 333).
Specification fields

Use the specification fields in the upper portion of the panel for the following tasks:

- display a list of utility records that match the selected type
- create a new utility record

NOTE

Before you start to create a new record, you can display a list of existing records to determine whether the record name you want to use already exists and to find the name of an existing record to use as a model. You can enter a different record name to change the list of records at any time.

Provide information about the RMGR environment record (or records) you want to work with as follows. Then press Enter.

Utility name or mask

Specify a fully qualified or generic RMGR name as follows:

- To display a list of records that match a pattern, type a generic name containing asterisk (*) and question mark (?) masking characters as appropriate. You can display a list of all RMGR utility records of the selected type that are defined in this repository by typing an asterisk (*) by itself. (This list is displayed when you first display this panel.)

- To create a new utility record, type a fully qualified record name (containing no masking characters) that does not already exist. The name can be 1 to 25 characters. When you press Enter, the Utility Maintenance—Page 1 panel (Figure 48 on page 338) is displayed.

Model name

If you are creating a new utility record, you can type the fully qualified name (containing no masking characters) of a record to use as a model.

If you provide a model record name, RMGR copies the contents from the model record. If you omit the model record name, RMGR creates a new blank record.
**Selection list**

If you enter a generic record name or a specific record name that already exists, the Utility Specification panel (Figure 47 on page 335) is redisplayed with a list of existing utility records of the selected type that matched the entered name. Use the selection list to select one or more utility records for the following tasks:

- display and modify the contents of the record
- delete the record

The selection list contains the following fields:

**Act**  
Type one of the following action codes on the row for the utility record you want to select, and press **Enter**:

- **S**  
  Display and modify the contents of the record. The Utility Maintenance—Page 1 panel (Figure 48 on page 338) is displayed.

- **D**  
  Delete the record. The Utility Record Delete Confirmation panel (not shown) is displayed. Confirm or cancel the deletion. The Utility Specification panel is redisplayed.

**Utility Name**  
This information-only field contains the name of the utility record.
Using the Utility Maintenance—Page 1 panel

When you select a utility record or enter the name of a new utility record on the Utility Specification panel (Figure 47 on page 335), the Utility Maintenance—Page 1 panel (Figure 48) is displayed. Use this panel to provide information about the utility.

Figure 48 Utility Maintenance—Page 1 panel

The Utility Maintenance—Page 1 panel contains information-only fields and specification fields.

Information-only fields

The panel contains the following information-only fields:

Recovery Manager name
This field contains the RMGR or sharegroup name, which you specified on the Recovery Manager Primary Menu.

Utility name
This field contains the name of utility record that you selected or entered on the Utility Specification panel (Figure 47 on page 335).

Utility type
This field contains the type of utility record that you selected on the Utility Type Specification panel (Figure 46 on page 333).
**Specification fields**

Use the following specification fields to provide information about the utility. Provide the requested information. When you press Enter, the Utility Maintenance—Page 2 panel (Figure 49 on page 340) is displayed.

**Utility version**
(required) Type or verify the version of the utility. You can use the * or ? masking characters to retrieve a list of supported product versions.

---

**NOTE**

If this field contains the message UPGRADE REQ'D - PRESS PF1, the current version of this utility is obsolete.

**Utility program**
(required) Type or verify the program name to use in the PGM parameter on the EXEC statement when this utility is executed in stand-alone mode. The following program names are supported for the utilities:

- **BMCSIU**
  BMC Index Rebuild function (EP and Classic) for full-function databases

- **CAPUMAIN**
  BMC Change Accumulation utility

- **DFSUCUM0**
  IBM IMS Change Accumulation utility

- **DFSUDMP0**
  IBM IMS Image Copy utility

- **DFSRRC00**
  IBM IMS Database Recovery utility

- **ICPUMAIN**
  BMC Image Copy utility

- **PCPCHECK**
  BMC Concurrent Pointer Checking function for full-function databases
**PFMAIN**
BMC Concurrent Pointer Checking function and Index Rebuild function for Fast Path DEDBs

**RVPUMAIN**
BMC Recovery utility

**Program parameters**
*(optional for BMC products; required for IBM utilities)* Type or verify parameters to include during program execution. For IBM utility parameters, see Table 71 on page 332.

---

**Using the Utility Maintenance—Page 2 panel**

When you press **Enter** on the Utility Maintenance—Page 1 panel (Figure 48 on page 338), the Utility Maintenance—Page 2 panel (Figure 49) is displayed. Use this panel to provide the names of data sets to include in the STEPLIB concatenation in created JCL.

**Figure 49  Utility Maintenance—Page 2 panel**

In addition to information-only fields (described in “Information-only fields” on page 338), the Utility Maintenance—Page 2 panel contains a data set specification list.

In addition to information-only fields (described in “Information-only fields” on page 338), the Utility Maintenance—Page 2 panel contains a data set specification list.
Data set specification list

Use the following fields in the data set specification list to identify the data set names to include in the STEPLIB concatenation when the utility is executed. These data sets must contain the program load modules and any other service modules that may be needed during utility execution.

Tailor the list as needed, and press Enter to verify your changes. Press Enter again to display the Utility Maintenance—Page 3 panel (Figure 50 on page 342). Enter the END command to save the record and return to the Utility Specification panel (Figure 47 on page 335).

The specification list contains the following fields:

**Act**  Enter the following action codes in this field to the left of a data set name in the list as needed:

- **I** Insert one or more data set names after this data set name. To insert data set names ahead of the first entry in the list, enter I in the Act field of the Top of Data row.

- **D** Delete the data set name from the list.

**STEPLIB Data set name(s)**  Type a data set name of a PDS to include in the data set concatenation. The PDS must be cataloged.

---

**NOTE**

If the IMS RESLIB should be included, type RESLIB. When appropriate, the function will obtain the RESLIB data set name or names from the IMS environment record in the repository.
Using the Utility Maintenance—Page 3 panel

When you press Enter on the Utility Maintenance—Page 2 panel (Figure 49 on page 340), the Utility Maintenance—Page 3 panel (Figure 50) is displayed. Use this panel to provide additional DD and data set name information for executing the utility.

**Figure 50  Utility Maintenance—Page 3 panel**

In addition to information-only fields (described in “Information-only fields” on page 338), the Utility Maintenance—Page 3 panel contains specification fields.

**Specification fields**

You can use the specification fields on this panel to provide additional DD statements to include in the JCL that is created for this utility. Type or verify the statements as appropriate. The statements are included in the generated JCL exactly as you enter them into these fields; no editing or reformatting is performed.

When you press Enter, the Utility Maintenance—Page 1 panel (Figure 50) is displayed. Enter the END command to save the record and return to the Utility Specification panel (Figure 47 on page 335).
This chapter describes how to maintain the Recovery Manager (RMGR) repository. The following information is included:

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<td>Verifying the return code of the Clone function</td>
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<tr>
<td>Using Clone function reports</td>
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</tr>
</tbody>
</table>
Overview

This section provides overview information about the repository, the batch utilities for maintaining the RMGR repository and about security considerations for the repository.

Repository structure

The repository is a VSAM key-sequenced data set. Member IRMREPIN of the product sample library contains a job to allocate the repository. During installation of RMGR, the repository data set is created and populated with default required records. As the people in your environment work with RMGR, other records are created.

The following types of records are required:

- an RMGR environment record for each RMGR started task or job that will use the repository
- an IMS environment record or sharegroup environment record for each IMS system or each sharegroup of IMS systems that will use the repository
- a system-default profile record that defines processing options to use during recovery management functions if no other profile record is selected

The following types of records are created during operations with RMGR:

- elemental group records that define groups of recoverable objects (IMS database data sets, Fast Path areas, and HALDB partitions)
- connecting group records that define groups of elemental groups
- object records that identify recoverable objects
- utility records that provide information about the utilities that you will use for performing recovery tasks
- profile records that define processing options to use during recovery management functions
- status records that contain information about individual executions of recovery management functions
- Recovery Advisor records that contain information about detected events
Repository maintenance tasks

You can perform repository maintenance tasks on a regularly scheduled basis or as needed.

**NOTE**
Some RMGR features (such as the Recovery Extensions feature for management of information about additional recovery assets) can create a large number of records in the repository. During the process of implementing these features, you should evaluate the size of the RMGR repository regularly and increase the size if necessary. After the feature has been implemented fully, the number of records should become stable and you should need to make occasional adjustments only.

**Regularly scheduled tasks**

Typically, you should schedule the following tasks for regular execution. You can also perform these tasks as needed.

- backing up the repository data set
  
  RMGR provides a utility function to perform the backup; this utility prevents updates from occurring during the backup. For more information, see “Performing repository backups” on page 347.

- deleting obsolete records
  
  RMGR provides a utility function to delete records that are no longer needed. For more information, see “Deleting repository records in batch” on page 355.

- reorganizing the repository data set
  
  BMC recommends that you reorganize the RMGR repository on a regular basis. You can use the Access Method Services (AMS) REPRO command to perform the reorganization. See member IRMREPRG in the product sample data set for example JCL.

- checking and repairing the repository data set
  
  RMGR provides a utility to check the repository for structural problems and correct problems if any are detected. For more information, see “Checking and repairing the repository” on page 361.
## Tasks to perform as needed

You can perform the following tasks for repositories as needed:

- **creating a new repository**

  If you need to create a new repository, use the job in member IRMMODEL of the product sample library. For more information, see “Creating a new repository” on page 365.

- **restoring a repository**

  To restore a repository from a backup, use the IDCAMS REPRO command to copy the backup data set to a new repository data set. For more information, see “Restoring a repository from a backup” on page 354.

- **cloning a repository**

  RMGR provides a utility to copy records from one repository to another. For more information, see “Cloning a repository” on page 366.

## Repository security

You must use your existing security procedures to secure the repository.

TSO users need at least read access to the base repository data set. TSO users who define the initial product setup; create or maintain groups, utilities, and profiles; or initiate functions against groups need update access to all repository data sets.

When SECUREREPOSITORY=YES is specified at RMGR startup, security checking is performed in the RMGR ISPF interface. During initialization of the ISPF interface, a RACROUTE check is executed to determine the user’s repository access authority. Then, each time that a repository READ or UPDATE is required, the user authority level is verified. If the user is not authorized to perform the access, an error message is displayed and the function is denied. See “Specifying RMGR startup control statements” on page 282 for more information on the SECUREREPOSITORY keyword.
Performing repository backups

This section describes how to use the Repository Backup function of the Batch Interface utility (program name IRMBATCH) to perform a backup of the RMGR repository.

To restore a repository from a backup produced by this function, use the IDCAMS REPRO command to copy the backup data set to a new repository data set. For more information, see “Restoring a repository from a backup” on page 354.

Understanding the Repository Backup utility

The Repository Backup function takes advantage of RMGR features, allows the repository to be read during backup, and prevents repository updates during backup. All backup processing occurs in the RMGR address space. RMGR dynamically allocates the backup data set that you specify with SYSIN keywords and copies the RMGR repository to that data set. The high-used RBA of the repository is used to determine how much space is needed for the backup data set.

WARNING
To prevent repository updates during a backup when RMGR is active, you should always use the Repository Backup function rather than the IDCAMS REPRO command.

BMC recommends that you back up the RMGR repository on the same schedule as you back up your IMS RECON data sets. To obtain a second copy of the RMGR repository, BMC recommends that you submit a job after the repository backup job to perform a copy (for example, IDCAMS REPRO or IEBGENER) of the backup data set that was just created.

Using the Repository Backup function

To use the Repository Backup function of the Batch Interface utility, perform the following steps:

1. Specify the JCL to execute the utility.
2. Specify the control statements for the utility.
3. Execute the utility.
4. Check the return code.
Review the reports and other output to evaluate the results.

Specifying JCL for the Repository Backup function

Figure 51 shows generic JCL for executing the Repository Backup function of the Batch Interface utility. The program name is IRMBATCH. See members IRMREPBK and IRMREPRS of the product sample library for sample repository backup and restore jobs.

**Figure 51 Repository Backup function JCL**

```
//jobname  JOB (nnnn),'RMGR REQUEST*.CLASS=x,' 
//          MSGCLASS=x,NOTIFY=userid,TIME=1440
//*
//stepname EXEC PGM=IRMBATCH
//*
//** STANDARD DD STATEMENTS
//STEPLIB  DD   DSN=product.LOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=* 
//SYSPRINT DD   SYSOUT=* 
//*
//** OPTIONAL DD STATEMENTS FOR REPOSITORYBACKUP FUNCTION
//TASKMSGS DD   SYSOUT=* 
//*
//** CONTROL STATEMENTS FOR REPOSITORYBACKUP FUNCTION
//SYSIN    DD   *  
* REQUIRED KEYWORDS 
IRM=rmgrname | sharegroup name 
FUNCTION=REPOSITORYBACKUP 
FROM=userid 
REPOSITORYBACKUPDSN=dsn | REPOSITORYBACKUPGDGBASE=gdgname 
BACKUPONDASD=YES | NO 
* 
* REQUIRED IF REPOSITORYBACKUPGDGBASE IS SPECIFIED 
* AND NO SMS CLASS KEYWORDS ARE SPECIFIED 
BACKUPOPTIONALDSCB=modeldscbname 
* 
* REQUIRED IF NO SMS KEYWORDS ARE SPECIFIED 
BACKUPUNIT=unitname 
* 
* OPTIONAL KEYWORDS  
BACKUPVOLSER=volser 
EXPDT=yyyy/ddd | RETPD=nnnn 
SMSDATACLASS=name 
SMSMANAGEMENTCLASS=name 
SMSSTORAGECLASS=name 
WAIT=NO | YES 
//*
```
The following DD statement is optional in Batch Interface utility JCL. For more information about the standard DD statements, see “Specifying RMGR batch utility JCL” on page 255.

**TASKMSGS DD**
Optional for all functions. Specify this DD statement to allocate a SYSOUT-type data set to use if you specify the WAIT=YES control statement keyword. This data set contains task messages that are also written to the RMGR processing log (which is allocated with the IRMPRINT DD statement in the RMGR startup JCL).

### Specifying control statements for the Repository Backup function

To specify control statements for Repository Backup function (FUNCTION=REPOSITORYBACKUP) of the Batch Interface utility, use keywords and their values as explained in this section.

**NOTE**
The Batch Interface utility also performs many other recovery management functions. See the *Backup and Recovery Products for IMS Recovery Manager User Guide* for information about other functions and keywords that are valid for the Batch Interface utility.

### Batch interface utility control statement syntax

The following syntax requirements are specific to the Batch Interface utility:

- Specify the IRM keyword first in the control statement data set.
- Specify the FUNCTION keyword second.
- Specify the other required and optional keywords in any order.

For other rules for control statement syntax, see “Specifying RMGR batch utility control statements” on page 256.
**Repository Backup function keyword summary**

Table 72 summarizes information about the keywords that are valid for the Repository Backup function of the Batch Interface utility. The keywords are listed alphabetically.

Table 72  Batch Interface utility Repository Backup function keywords (part 1 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Default value</th>
<th>Usage</th>
<th>Description and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKUPMODEL DSCB</td>
<td>existing DSCB name</td>
<td>none</td>
<td>required</td>
<td>existing model DSCB name for allocating backup data set as a GDG</td>
</tr>
<tr>
<td>BACKUPONDASD</td>
<td>YES NO</td>
<td>none</td>
<td>required</td>
<td>whether to add space parameters to allocation statements</td>
</tr>
<tr>
<td>BACKUPUNIT</td>
<td>unit name</td>
<td>none</td>
<td>required if SMS keywords are not specified</td>
<td>unit name of device to use for backup data set</td>
</tr>
<tr>
<td>BACKUPVOLSER</td>
<td>volume serial</td>
<td>none</td>
<td>optional</td>
<td>volume serial of device to contain backup data set</td>
</tr>
<tr>
<td>EXPDT</td>
<td>yyddd yyyy/ddd</td>
<td>none</td>
<td>optional if BACKUPONDASD=NO is specified; not valid if REPTD is specified</td>
<td>expiration date of backup data set</td>
</tr>
<tr>
<td>FROM</td>
<td>user ID</td>
<td>none</td>
<td>required</td>
<td>TSO user ID</td>
</tr>
<tr>
<td>FUNCTION</td>
<td>REPOSITORYBACKUP</td>
<td>none</td>
<td>required</td>
<td>utility function to execute (other functions are valid)</td>
</tr>
<tr>
<td>IRM</td>
<td>RMGR name or sharegroup name</td>
<td>none</td>
<td>required</td>
<td>RMGR name or sharegroup name</td>
</tr>
<tr>
<td>REPOSITORYBACKUPDSN</td>
<td>new data set name</td>
<td>none</td>
<td>required if REPOSITORYBACKUPGDGBASE is not specified</td>
<td>new data set to contain repository backup</td>
</tr>
<tr>
<td>REPOSITORYBACKUP-GDGBASE</td>
<td>GDG name</td>
<td>none</td>
<td>required if REPOSITORYBACKUPDSN is not specified</td>
<td>name of GDG base index to use for backup data set</td>
</tr>
</tbody>
</table>
Specifying control statements for the Repository Backup function

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Repository Backup Function keywords

The following keywords are valid in Repository Backup function requests:

**BACKUPMODELDSCB**
(required if you specify the REPOSITORYBACKUPGDGBASE keyword and you do not specify the SMS keywords; otherwise, not valid) Use this keyword to specify the name of an existing data set control block (DSCB) to be used as a model for the repository backup.

**BACKUPONDASD**
(required) Use this keyword to specify whether to add space parameters to the backup allocation. The high-used RBA of the repository data set is used to determine how much space is needed for the backup data set. The RLSE parameter is used to ensure that unused space will be released. The following values are valid. No default value is provided.

YES  The backup will be written to DASD.

NO   The backup will be written to tape.

---

Table 72  Batch Interface utility Repository Backup function keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Default value</th>
<th>Usage</th>
<th>Description and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETPD</td>
<td>nnnn (0000–9999)</td>
<td>none</td>
<td>optional if BACKUPONDASD=NO is specified; not valid if EXPDT is specified</td>
<td>retention period</td>
</tr>
<tr>
<td>SMSDATACLASS</td>
<td>data class name</td>
<td>none</td>
<td>optional</td>
<td>SMS data class for allocating backup data set</td>
</tr>
<tr>
<td>SMSMANAGEMENTCLASS</td>
<td>management class name</td>
<td>none</td>
<td>optional</td>
<td>SMS management class for allocating backup data set</td>
</tr>
<tr>
<td>SMSSTORAGECLASS</td>
<td>storage class name</td>
<td>none</td>
<td>optional</td>
<td>SMS storage class for allocating backup data set</td>
</tr>
<tr>
<td>WAIT</td>
<td>NO, YES</td>
<td>NO</td>
<td>optional</td>
<td>whether to wait for batch job step completion until RMGR request has completed</td>
</tr>
</tbody>
</table>
Specifying control statements for the Repository Backup function

**BACKUPUNIT**
*(required if you do not specify SMS keywords)* Use this keyword to specify the unit name of the device to use for the repository backup.

**BACKUPVOLSER**
*(optional)* Use this keyword to specify the volume serial of the device to contain the repository backup data set.

**EXPDT**
*(optional if you specify the BACKUPONDASD=NO keyword; not valid if you specify the REPTD keyword)* Use this keyword to specify the expiration date of the repository backup. Specify the value in either of the following alphanumeric formats:

- **yyddd**
  In this format, *yy* is the last two digits of the year (00–99) and *ddd* is the day of the year (001–366). The function prefixes the *yy* value with the literal value 20 unless you specify the *yy* value as 98 or 99.

- **yyyy/ddd**
  In this format, *yyyy* is the four-digit year and *ddd* is the day of the year (001–366).

**IRM**
*(required)* Use this keyword to specify the RMGR name (1–8 characters) or sharegroup name (1–4 characters) that is associated with the repository to back up. This keyword must be the first keyword in the control statement data set.

**FROM**
*(required)* Use this keyword to specify a TSO user ID (1–7 characters) to identify with this execution of the Repository Backup function.

**FUNCTION**
*(required)* Use this keyword to specify that you want to initiate the Repository Backup function. Specify **REPOSITORYBACKUP** as the keyword value. This keyword must be the second keyword in the control statement data set.

**REPOSITORYBACKUPDSN**
*(required if you do not specify the REPOSITORYBACKUPGDGBASE keyword; not valid if you specify the REPOSITORYBACKUPGDGBASE keyword)* Use this keyword to specify the name (maximum 44 characters) of a new data set to contain the repository backup. This data set must *not* already exist in the system.

**REPOSITORYBACKUPGDGBASE**
*(required if you do not specify the REPOSITORYBACKUPDSN keyword; not valid if you specify the REPOSITORYBACKUPDSN keyword)* Use this keyword to specify the name of the GDG base index to which you want to back up the repository. A valid value is a GDG base index name.
RETPD
(optional if you specify the BACKUPONDASD=NO keyword; not valid if you specify the EXPDT keyword) Use this keyword to specify the retention period (0000–9999) of the repository backup.

SMSDATACLASS
(optional) If SMS manages data storage in your environment, you can use this keyword to specify the SMS data class for the Repository Backup function to use when it allocates the repository backup data set.

SMSMANAGEMENTCLASS
(optional) If SMS manages data storage in your environment, you can use this keyword to specify the SMS management class for the Repository Backup function to use when it allocates the repository backup data set.

SMSSTORAGECLASS
(optional) If SMS manages data storage in your environment, you can use this keyword to specify the SMS storage class for the Repository Backup function to use when it allocates the repository backup data set.

WAIT
(optional) Use this keyword to control whether the Batch Interface utility job step completes as soon as the function is initiated or whether it completes only after RMGR completes processing of the function and reports the function return code. The following values are valid. The default value is NO.

NO Allow the Batch Interface utility job step to complete as soon as the function is initiated. This completion may occur before RMGR completes processing of the function. The return code for the job step indicates whether the request was successfully sent to RMGR for processing; it does not indicate the result of the request execution.

YES Wait for RMGR processing of the function to complete before allowing the Batch Interface utility job step to complete. If you include the TASKMSGS DD statement, RMGR uses this data set to write task messages.

By waiting for the outcome of the function, you can set a completion code for the job step and use this completion code to control processing for a subsequent job step.
Verifying the return code of the Repository Backup function

When the Repository Backup function completes, it issues a return code to indicate the results of the process. The following return codes are valid for the Repository Backup function:

00  The function completed successfully.

08  An error, such as an allocation failure for the backup file, has occurred. The backup was unsuccessful. For an explanation, see the error messages in the task processing log that is written to the TASKMSGS data set for the utility job or the IRMPRINT data set for the RMGR job or started task.

12  One or more syntax errors were detected.

16  An abend condition occurred.

Using reports from the Repository Backup function

The Repository Backup function reports the results of the execution as messages in the TASKMSGS data set. Figure 52 shows example results from a job that encountered an error.

Figure 52  Repository Backup Function report

************************************************** RMGR IRMPRINT DATA **************************************************
BMC76151I REPBKP TASK 0004 ON RMGRPROD STARTED AT 973511607217 (GLOBAL FUNCTION)
BMC76401E ALLOCATION FAILURE ON REPOSITORY BACKUP FILE
SVC99 ERROR CODE IS HEX 1708
BMC76152I REPBKP TASK 0004 ENDED AT 973511607261 RC = 08
**************************************************

Restoring a repository from a backup

To restore a repository from a backup that was produced by the Repository Backup function of the Batch Interface utility (program name IRMBATCH), use IDCAMS to REPRO the repository backup data set to a new repository data set. Sample JCL for this task is located in member IRMREPRS of the product sample library.

After you restore the repository, recycle all active RMGRs in the sharegroup, and make sure that they refer to the restored copy of the repository.
Any changes that were made to the repository data since the backup was made will be lost, including changes to, additions of, and deletions of IMS/sharegroup environment records, profile records, utility records, and group records. In addition, any information related to tasks that were initiated since the backup was taken will be lost.

**NOTE**

Although information about HPC tasks that were executed after the backup will no longer be listed in the status monitor panels, any recovery points that were created for full-function databases still exist (because they are written to the RECONs).

### Deleting repository records in batch

RMGR provides the Status Delete function of the Batch Interface utility to delete obsolete function status and Recovery Advisor records in batch.

### Understanding the Status Delete function

You should use the Status Delete function regularly to delete records that are older than the time interval that you specify. This function deletes the following types of records:

- status
- task message
- function information
- records created by the Recovery Advisor function
- recovery point records created by the HPC /DBD function for Fast Path areas

**NOTE**

If you are using the /DBD command with the HPC function for Fast Path areas, do not specify a value for the OLDERTHAN keyword that is less than the number of days of recovery information required for these Fast Path records.
Using the Status Delete function

To use the Status Delete function of the Batch Interface utility, perform the following steps:

1. Specify the JCL to execute the utility.
2. Specify the control statements for the utility.
3. Execute the utility.
4. Check the return code.
5. Review the reports and other output to evaluate the results.

Specifying JCL for the Status Delete function

Figure 53 shows generic JCL for executing the Status Delete function of the Batch Interface utility. The program name is IRMBATCH. This JCL is available in member IRMREPDL of the product sample library.

Figure 53  Status Delete function JCL (part 1 of 2)

```plaintext
//jobname  JOB (nnnn),'RMGR REQUEST',CLASS=x,       
//         MSGCLASS=x,NOTIFY=userid,TIME=1440
/**
//stepname EXEC PGM=IRMBATCH,REGION=0M
/**
/** STANDARD DD STATEMENTS
//STEPLIB  DD   DSN=product.LOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=*  
//SYSPRINT DD   SYSOUT=*  
/**
/** OPTIONAL  DD STATEMENTS FOR STATUSDELETE FUNCTION
//TASKMSGS DD   SYSOUT=*  
//SUMMARY  DD   SYSOUT=*  
/**
/** CONTROL STATEMENTS FOR STATUSDELETE FUNCTION
//SYSIN    DD   * 
*  
* REQUIRED KEYWORDS
IRM=rmgrname or sharegroup name
FUNCTION=STATUSDELETE
FROM=userid
OLDERTHAN=nnn
*  
* OPTIONAL KEYWORD
```
Specifying control statements for the Status Delete function

The following DD statements are optional in Batch Interface utility JCL. For more information about the standard DD statements, see “Specifying RMGR batch utility JCL” on page 255.

**TASKMSGS DD**
Optional for all functions. Specify this DD statement to allocate a SYSOUT-type data set to use if you specify the WAIT=YES control statement keyword. This data set contains task messages that are also written to the RMGR processing log (which is allocated with the IRMPRINT DD statement in the RMGR startup JCL).

**SUMMARY DD**
(Optional) Specify this DD statement to contain a report of the function result. If you omit this statement, RMGR allocates a default data set with DD name SYSnnnnn; nnnnn is a unique sequence number. This information is produced if you specify the WAIT=YES,REPORT control statement keyword.

### Specifying control statements for the Status Delete function

To specify control statements for Status Delete function (FUNCTION=STATUSDELETE) of the Batch Interface utility, use keywords and their values as explained in this section.

**NOTE**
The Batch Interface utility also performs many other recovery management functions. See the Backup and Recovery Products for IMS Recovery Manager User Guide for information about other functions and keywords that are valid for the Batch Interface utility.

### Batch Interface utility control statement syntax

The following syntax requirements are specific to the Batch Interface utility:

- Specify the IRM keyword first in the control statement data set.
- Specify the FUNCTION keyword second.
- Specify the other required and optional keywords in any order.

For other rules for control statement syntax, see “Specifying RMGR batch utility control statements” on page 256.
Status Delete function keyword summary

Table 73 summarizes information about the keywords that are valid for the Status Delete function of the Batch Interface utility. The keywords are listed alphabetically.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Default value</th>
<th>Usage</th>
<th>Description and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVISOROLDERTHAN</td>
<td>nnn (001–999)</td>
<td>180</td>
<td>optional</td>
<td>maximum number of days for which to keep Recovery Advisor event records; records older than this number of days are deleted</td>
</tr>
<tr>
<td>FROM</td>
<td>user ID</td>
<td>none</td>
<td>required</td>
<td>TSO user ID</td>
</tr>
<tr>
<td>FUNCTION</td>
<td>STATUSDELETE</td>
<td>none</td>
<td>required</td>
<td>utility function to execute (other functions are valid)</td>
</tr>
<tr>
<td>IRM</td>
<td>RMGR name or sharegroup name</td>
<td>none</td>
<td>required</td>
<td>RMGR name or sharegroup name</td>
</tr>
<tr>
<td>OLDERTHAN</td>
<td>nn (001–999)</td>
<td>none</td>
<td>required</td>
<td>maximum number of days for which to keep status records; records older than this number of days are deleted</td>
</tr>
<tr>
<td>WAIT</td>
<td>NO, YES, REPORT</td>
<td>NO</td>
<td>optional</td>
<td>whether to wait for batch job step completion until RMGR request has completed</td>
</tr>
</tbody>
</table>

Status Delete function keywords

The following keywords are valid in Status Delete function requests:

**IRM**

*(required)* Use this keyword to specify the RMGR name (1–8 characters) or sharegroup name (1–4 characters) that is associated with the repository that contains the records to delete. This keyword must be the first keyword in the control statement data set.
FROM
(required) Use this keyword to specify a TSO user ID (1–7 characters) to identify with this execution of the Status Delete function.

FUNCTION
(required) Use this keyword to specify that you want to initiate the Status Delete function. Specify STATUSDELETE as the keyword value. This keyword must be the second keyword in the control statement data set.

ADVISOROLDERTHAN
(optional) Use this keyword to specify the maximum number of days (001–999) for which to keep Recovery Advisor event records. Recovery Advisor records that are older than this number of days are deleted. The default value is 180.

OLDERTHAN
(required) Use this keyword to specify the maximum number of days (001–999) for which to keep status records. Status records that are older than this number of days are deleted.

WAIT
(optional) Use this keyword to control whether the Batch Interface utility job step completes as soon as the function is initiated or whether it completes only after RMGR completes processing of the function and reports the function return code. The following values are valid. The default value is NO.

NO Allow the Batch Interface utility job step to complete as soon as the function is initiated. This completion may occur before RMGR completes processing of the function. The return code for the job step indicates whether the request was successfully sent to RMGR for processing; it does not indicate the result of the request execution.

YES Wait for RMGR processing of the function to complete before allowing the Batch Interface utility job step to complete. If you include the TASKMSGS DD statement, RMGR uses this data set to write task messages.

By waiting for the outcome of the function, you can set a completion code for the job step and use this completion code to control processing for a subsequent job step.

YES, REPORT
Wait for RMGR processing of the function to complete before allowing the Batch Interface utility job step to complete. In addition, write report information to the SUMMARY data set.
Verifying the return code of the Status Delete function

When the Status Delete function completes, it issues a return code to indicate the results of the process. The following return codes are valid for the Status Delete function:

00  The function completed successfully.

08  An error has occurred. The function was unsuccessful. For an explanation, see the error messages in the task processing log that is written to the TASKMSGS data set for the utility job or the IRMPRINT data set for the RMGR job or started task.

12  One or more syntax errors were detected.

16  An abend condition occurred.

Using reports from the Status Delete function

If you specify the WAIT=YES,REPORT keyword, the Status Delete function writes the Status Delete Summary report (Figure 54) to the SUMMARY or SYSunnnn data set.

Figure 54  Status Delete function report

<table>
<thead>
<tr>
<th>DATE: 06/04/2001</th>
<th>TIME: 11:44:39</th>
<th>STATUS DELETE SUMMARY</th>
<th>PAGE: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNCTION</td>
<td>STATUS DELETE</td>
<td>GROUPNAME</td>
<td>(NOT APPLICABLE)</td>
</tr>
<tr>
<td>START TIME</td>
<td>06/04/2001 11:32:50</td>
<td>END TIME</td>
<td>06/04/2001 11:44:35</td>
</tr>
<tr>
<td>TASKID</td>
<td>0001</td>
<td>RETURN CODE</td>
<td>0000</td>
</tr>
<tr>
<td>USER ID</td>
<td>UA$04001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RECOVERY ADVISOR RECORDS OLDER THAN 12/05/2000
- RECORDS EXAMINED: 403
- RECORDS DELETED: 2
- RECORDS REMAINING: 401

STATUS RECORDS OLDER THAN 12/05/2000
- RECORDS EXAMINED: 72,425
- RECORDS DELETED: 4,360
- RECORDS REMAINING: 68,065

REPOSITORY SPACE INFORMATION
- TOTAL VSAM RECORDS: 70,758
- CURRENT FREE SPACE: 27,328 K
- PERCENT FREE SPACE: 24 %
- NUMBER OF EXTENTS: 4
Checking and repairing the repository

The following sections describe the Check and Repair functions of the RMGR Repository utility (program name IRMREPUT). You can use this utility to check the physical structure of the repository and repair it if damage is detected. Pointer problems can be caused by cancellation of an RMGR during a repository update.

**NOTE**

The RMGR Repository utility also supports a Clone function. For more information, see “Cloning a repository” on page 366.

Using the Check and Repair functions

To use the Check and Repair functions of the RMGR Repository utility, perform the following steps:

1. Specify the JCL to execute the utility.
2. Specify the control statements for the utility.
3. Execute the utility.
4. Check the return code.
5. Review the reports and other output to evaluate the results.

Specifying JCL for the Check and Repair functions

Figure 55 shows generic JCL for executing the Check and Repair functions of the RMGR Repository utility. The program name is IRMREPUT. Member IRMREPCK of the product sample library contains sample JCL.
Specifying control statements for the Check and Repair functions

To specify control statements for Check and Repair functions of the RMGR Repository utility, use keywords and their values as explained in this section.

Check and Repair function control statement syntax

The Check and Repair functions of the RMGR Repository utility have no syntax requirements other than the standard syntax rules. For more information, see “Specifying RMGR batch utility control statements” on page 256.

Check and Repair function keywords

The following keywords are valid for Check and Repair function control statements:

FUNCTION
(required) Use this keyword to specify the function you want to perform. The following values are valid:

- CHECK
  Scan the specified repository and report on any errors in repository structures and record chains.

- REPAIR

NOTE
The RMGR Repository utility also supports the CLONE and CLONE,STATUS values. For more information, see “Specifying control statements for the Clone function” on page 369.
REPAIR
Perform the Check function and automatically correct any detected errors by performing the following tasks:

— deleting orphan pointers that point to repository records that do not exist
— deleting status and task message records with missing segments
— deleting orphaned segments
— deleting segment references that point to record segments that do not exist

NOTE
A segment is created when the length of a repository record exceeds 31,744 characters.

REPOSITORY
(required) Use this keyword to specify the data set name (1–44 characters) that identifies the repository that you want to check or repair.

Verifying the return code of the Check and Repair functions

When the RMGR Repository utility function completes, it issues a return code to indicate the results of the process. The following return codes are valid for RMGR Repository utility functions:

00 The function completed successfully.
04 The Repair function found and corrected pointer errors. For an explanation, see the error messages in the SYSPRINT data set.
08 The Check function found pointer errors. For an explanation, see the error messages in the SYSPRINT data set.
12 One or more syntax errors were detected.
16 An abend condition occurred.
Using Check and Repair function reports

The RMGR Repository utility reports the results of the execution as messages in the SYSPRINT data set.

**RMGR repository Utility Check function report**

Figure 56 and Figure 57 on page 364 show sample output from the Check function. Figure 58 on page 365 shows a sample of the Repository Orphan Segment report.

---

**NOTE**

If the Repository Check function output contains the field `recordtype recordname REC LENGTH LARGER THAN SUPPORTED (nnnnn) WILL BE DELETED`, the information in the `REPOSITORY CONTAINS` field and the reported number of repository pointer errors might be inaccurate. You should back up the repository and then execute the REPAIR function.

---

**Figure 56  RMGR repository utility report Check function output—sample 1**

<table>
<thead>
<tr>
<th>DATE: 11/22/1999</th>
<th>TIME:  8:31</th>
<th>RECOVERY MANAGER</th>
<th>(IRMREPUT)</th>
<th>PAGE: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT PROCESSING CONTROLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - REPOSITORY= REPOSITORY.DATASET.NAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - FUNCTION=CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY RECORD BREAKDOWN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY CONTAINS: 327 OBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 CONNECTING GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47 ELEMENTAL GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 UTILITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 PROFILES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY POINTER ERRORS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 POINTER ERRORS FOUND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 57  RMGR repository utility report Check function output—sample 2**

<table>
<thead>
<tr>
<th>DATE: 11/22/1999</th>
<th>TIME:  8:31</th>
<th>RECOVERY MANAGER</th>
<th>(IRMREPUT)</th>
<th>PAGE: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT PROCESSING CONTROLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - REPOSITORY= REPOSITORY.DATASET.NAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - FUNCTION=CHECK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY RECORD BREAKDOWN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY CONTAINS: 27 OBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 CONNECTING GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47 ELEMENTAL GROUPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 UTILITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 PROFILES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPOSITORY POINTER ERRORS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP groupname REFERS TO MISSING PROFILE profilename</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP groupname REC LENGTH LARGER THAN SUPPORTED (nnnnn) WILL BE DELETED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 POINTER ERRORS FOUND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Creating a new repository

During RMGR customization, a job was tailored for creating a repository data set. This job was stored in a member of the product installation library. For more information, see the installation guide.

When you run this job during the installation process, the repository data set and all required repository records are created.
During installation, two repository creation jobs are tailored and stored in the following members of the product sample library:

- IRMREPIN contains a job that creates a brand new repository and populates it with default utility records and the system-default profile record (SYSTEM-DEFAULT-PROFILE) from the REPRIME data set that was created during installation.

- IRMMODEL contains a job that creates a new repository data set and copies or models records from an existing repository by using the Clone function of the Repository utility (program IRMREPUT). For more information about this function, see “Cloning a repository” on page 366.

### Cloning a repository

The following sections describe the Clone function of the RMGR Repository utility (program name IRMREPUT).

**NOTE**
The RMGR Repository utility also supports the Check and Repair functions. For more information, see “Checking and repairing the repository” on page 361.

### Understanding the Clone function

The Clone function provides a safe and easy method for copying selected records from one repository to another.

You use keywords to identify the source repository, which contains the records that you want to copy, and the target repository, which will contain the copied records. You also use keywords to select the records that you want to copy:

- For elemental group, connecting group, object, profile, and utility records, you can provide a generic name (by using masking characters) or a specific name. You can also specify whether to replace an existing record in the target repository.

When you use the Clone function to clone elemental group, connecting group, and object records, the function copies these records without modification from the source repository to the target repository. To ensure that the data in the cloned repository accurately reflects the new environment, you should verify and update
the data in the IMS and Sharegroup environment records and run the Rebuild function. The Rebuild function detects changes and updates the group and object definitions as necessary to reflect the new environment. This function also produces a report that summarizes detected differences.

**NOTE**
Although the Rebuild function will change object data set names and volume serial numbers to reflect their current state, these changes do not indicate changes to the organization or composition of the group and are not identified in the report.

For RMGR environment, IMS environment, and sharegroup environment records, you can specify a new RMGR name, IMS ID, or sharegroup name for the new record in the target repository. If you specify a new name, you must specify the name of a record in the source repository to use as a model for the contents. This action simplifies the setup of multiple similar environments.

For an RMGR environment, IMS environment, or sharegroup environment record to be cloned, the new record cannot exist in the target repository, and the model record must exist in the source repository.

### Using the Clone function

To use the Clone function of the RMGR Repository utility, perform the following steps:

1. If the target repository data set does not already exist, create it with the job in member IRMREPIN of the product sample library. For more information, see “Creating a new repository” on page 365.

2. Identify the RMGR, IMS, and sharegroup entities that the target repository will serve.

3. Decide which records to copy from the source repository.

4. Specify the JCL to execute the RMGR Repository utility. For more information, see “Specifying JCL for the Clone function” on page 368.

5. Specify the control statements for the utility. For more information, see “Specifying control statements for the Clone function” on page 369.

6. Execute the utility.

7. Check the return code. Check the JESMSGLG and SYSPRINT data sets in the utility job for information about errors. For more information, see “Verifying the return code of the Clone function” on page 373.
Specifying JCL for the Clone function

Review the reports and other output to evaluate the results. For more information, see “Using Clone function reports” on page 374.

Figure 61 shows generic JCL for executing the Clone function of the RMGR Repository utility. The program name is IRMREPUT. Member IRMREPCL of the product sample library contains sample JCL for this task.

The RMGR Repository utility requires no DD statements other than the standard statements for all RMGR batch utilities. For more information about the standard DD statements, see “Specifying RMGR batch utility JCL” on page 255.

```plaintext
//jobname  JOB (nnnn),'RMGR REQUEST'.CLASS=x,  
 //         MSGCLASS=x,NOTIFY=userid,TIME=1440  
 //*/
//stepname EXEC PGM=IRMREPUT  
//*/
//* STANDARD DD STATEMENTS
//STEPLIB  DD   DSN=product.LOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=*  
//SYSPRINT DD   SYSOUT=*  
/*
* CONTROL STATEMENTS
//SYSIN   DD   *  
* REQUIRED KEYWORDS FOR ALL FUNCTIONS
REPOSITORY=repository data set name
FUNCTION=CLONE | CLONE,STATUS
* REQUIRED KEYWORDS FOR CLONE FUNCTION
NEWREPOSITORY=new repository dataset name
* REQUIRED KEYWORDS FOR CLONE FUNCTION
MODELFROM=imsid,MODELFROM=imsid
NEWSHAREGROUP=sharegroup,MODELFROM=sharegroup
NEWIRMNAME=irmname,MODELFROM=irmmodel
ELEMENTALGROUPMASK=*,REPLACE
CONNECTINGGROUPMASK=*,REPLACE
OBJECTDBDMASK=*,REPLACE
PROFILEMASK=*,REPLACE
UTILITYMASK=*,REPLACE
```
Specifying control statements for the Clone function

To specify control statements for the Clone function of the RMGR Repository utility, use keywords and their values as explained in this section.

Clone function control statement syntax

The RMGR Repository utility has no syntax requirements other than the standard syntax rules. For more information, see “Specifying RMGR batch utility control statements” on page 256.

Clone function keyword summary

Table 74 summarizes information about the keywords that are valid for the RMGR Repository utility. The keywords are listed alphabetically.

Table 74  Clone function keywords (part 1 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Default value</th>
<th>Usage</th>
<th>Description and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONNECTINGGROUPMASK</td>
<td>connecting group name or mask</td>
<td>none</td>
<td>optional</td>
<td>identify connecting group records to clone; can be used with optional REPLACE keyword</td>
</tr>
<tr>
<td>ELEMENTALGROUPMASK</td>
<td>elemental group name or mask</td>
<td>none</td>
<td>optional</td>
<td>identify elemental group records to clone; can be used with optional REPLACE keyword</td>
</tr>
<tr>
<td>FUNCTION</td>
<td>CLONE,STATUS</td>
<td>none</td>
<td>required</td>
<td>utility function to execute</td>
</tr>
<tr>
<td>MODELFROM</td>
<td>RMGR name</td>
<td>none</td>
<td>required with selected keywords</td>
<td>specify model for new RMGR, IMS, or sharegroup environment record</td>
</tr>
</tbody>
</table>
Table 74  Clone function keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Valid values</th>
<th>Default value</th>
<th>Usage</th>
<th>Description and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWREPOSITORY</td>
<td>data set name</td>
<td>none</td>
<td>required</td>
<td>provide data set name of target repository to contain cloned records</td>
</tr>
<tr>
<td>NEWSHAREGROUP</td>
<td>sharegroup name</td>
<td>none</td>
<td>optional</td>
<td>sharegroup name of new sharegroup record; use with required MODELFROM keyword</td>
</tr>
<tr>
<td>OBJECTDBDMASK</td>
<td>object DBD name or mask</td>
<td>none</td>
<td>optional</td>
<td>identify object records to clone; can be used with optional REPLACE keyword</td>
</tr>
<tr>
<td>PROFILEMASK</td>
<td>profile name or mask</td>
<td>none</td>
<td>optional</td>
<td>identify profile records to clone; can be used with optional REPLACE keyword</td>
</tr>
<tr>
<td>REPLACE</td>
<td>none</td>
<td>none</td>
<td>optional</td>
<td>whether to replace existing records in target repository</td>
</tr>
<tr>
<td>REPOSITORY</td>
<td>data set name</td>
<td>none</td>
<td>required</td>
<td>provide data set name of source repository to clone</td>
</tr>
<tr>
<td>UTILITYMASK</td>
<td>utility name or mask</td>
<td>none</td>
<td>optional</td>
<td>identify utility records to clone; can be used with optional REPLACE keyword</td>
</tr>
</tbody>
</table>

**Clone function keywords**

The following keywords are valid in Clone function control statements:

**CONNECTINGGROUPMASK**
*(optional)* Use this keyword to identify the connecting group records that you want to clone. You can provide specific connecting group names or generic names (with masking patterns). You can also specify the optional REPLACE keyword to replace an existing record in the target repository.

**ELEMENTALGROUPMASK**
*(optional)* Use this keyword to identify the elemental group records that you want to clone. You can provide specific elemental group names or generic names (with masking patterns). You can also specify the optional REPLACE keyword to replace an existing record in the target repository.
FUNCTION  
(required) Use this keyword to specify the function you want to perform. The following values are valid:

- **CLONE**  
  Copy specified records from the source (existing) repository to the target (new) repository. The Check function executes as part of the Clone function, and if errors are found in the source repository, the Clone function is not performed.

- **CLONE,STATUS**  
  Perform the Clone function as described for the CLONE value. In addition, copy function status records from the source repository.

**NOTE**  
Cloning a large number of status records can result in a shortage of storage.

**MODELFROM**  
(required with the NEWIMSID, NEWIRMNAME, and NEWSHAREGROUP keywords) Use the MODELFROM keyword immediately after one of these keywords to specify the name of an environment record in the source (existing) repository to use as a model for a new environment record in the target (new) repository. If an environment record with the specified name does not exist in the target repository, the utility creates one and copies the information from the environment record that you specify with the MODELFROM keyword.

**NEWIMSID**  
(optional) Use this keyword to specify the IMS ID (1–4 characters) of the IMS environment record to create. This IMS ID should be for an IMS system to be served by an RMGR that will use the target (new) repository. Use the MODELFROM keyword to specify the name of a model record in the source (existing) repository; the utility copies the contents from the specified model IMS environment record to the newly created record.
Specifying control statements for the Clone function

NEWIRMNAME
*(optional)* Use this keyword to specify the name of the RMGR environment record to create. This name should be for an RMGR started task or job that will use the target (new) repository. Use the MODELFROM keyword to specify the name of a model record in the source (existing) repository; the utility copies the contents from the specified model RMGR environment record to the newly created record.

NEWREPOSITORY
*(required)* Use this keyword to specify the data set name (1–44 characters) of the target (new) repository to contain the cloned records.

NEWSHAREGROUP
*(optional)* Use this keyword to specify the sharegroup name of the sharegroup environment record to create. This sharegroup name should be for the IMS systems that are involved in data sharing and are served by the RMGRs that will use the target (new) repository. Use the MODELFROM keyword to specify the name of a model record in the source (existing) repository; the utility copies the contents from the specified model sharegroup environment record to the newly created record.

OBJECTDBDMASK
*(optional)* Use this keyword to identify the object records that you want to clone. You can provide specific DBD names or generic names (with masking patterns). You can also specify the optional REPLACE keyword to replace an existing record in the target (new) repository.

If the OBJECTDBDMASK value matches a HALDB object, the information for the master DBD of that object is also cloned.

The last Recovery Advisor run date value in the object record is not copied to the target object.

**NOTE**
The value * is recommended so that all required records will be cloned. Cloning extra object records that will never be used is not a problem, but not cloning a required record causes unpredictable results.

PROFILEMASK
*(optional)* Use this keyword to identify the profile records that you want to clone. You can provide specific profile names or generic names (with masking patterns). You can also specify the optional REPLACE keyword to replace an existing record in the target (new) repository.
REPLACE
(optional with ELEMENTALGROUPMASK, CONNECTINGGROUPMASK, OBJECTDBDMASK, PROFILEMASK, and UTILITYMASK keywords) Use the REPLACE keyword immediately after one of these keywords if you want to replace existing records that match the record selection criteria in the target (new) repository. If you omit this keyword and a record in the source (existing) repository matches a record in the target repository, the record from the source repository is not written to the target repository.

REPOSITORY
(required) Use this keyword to specify the data set name (1–44 characters) that identifies the source (existing) repository that contains the records to clone to the target (new) repository.

UTILITYMASK
(optional) Use this keyword to identify the utility records that you want to clone. You can provide specific utility record names or generic names (with masking patterns). You can also specify the optional REPLACE keyword to replace an existing record in the target (new) repository.

Verifying the return code of the Clone function

When the Clone function completes, it issues a return code to indicate the results of the process. The following return codes are valid for the Clone function:

00 The function completed successfully.
04 The REPLACE keyword was not specified, and a record already exists in the target repository. One or more records were not cloned.
08 Errors were detected. If source records were not found, the clone process was incomplete.

If pointer errors were detected, no records were cloned. To correct the problem, execute the Repair function of the Repository utility (as described in “Checking and repairing the repository” on page 361), and resubmit the Clone function.

12 Errors were detected. No records were cloned.
16 An abend condition occurred.
Using Clone function reports

The RMGR Repository utility reports the results of the execution as messages in the JES messages or SYSPRINT data set. Figure 62 shows sample output from the Clone function.

Figure 62  RMGR repository utility Clone function output

<table>
<thead>
<tr>
<th>DATE: 11/22/1999</th>
<th>TIME:  8:31</th>
<th>RECOVERY MANAGER (IRMREPUT)</th>
<th>PAGE: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT PROCESSING CONTROLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - REPOSITORY=REPOSITORY.DATASET.NAME</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - FUNCTION=CLONE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - NEWREPOSITORY=NEW.REPOSITORY.DATASET.NAME</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - NEWIMSID=IMSA,MODELFROM=IMSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - NEWIRMNAME=RMGRPROD,MODELFROM=RMGRPROP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - ELEMENTALGROUPMASK=*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - CONNECTINGGROUPMASK=*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - OBJECTDBMASK=*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - PROFILEMASK=*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMC76120I - UTILITYMASK=*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REPOSITORY RECORD BREAKDOWN

REPOSITORY CONTAINS: 327 OBJECTS
6 CONNECTING GROUPS
47 ELEMENTAL GROUPS
13 UTILITIES
29 PROFILES

REPOSITORY POINTER ERRORS
0 POINTER ERRORS FOUND

CLONED RECORD COUNTS: 1 IMS ENVIRONMENT RECORDS
1 RMGR ENVIRONMENT RECORDS
327 OBJECTS
6 CONNECTING GROUPS
47 ELEMENTAL GROUPS
13 UTILITIES
29 PROFILES
Chapter 13 Administering and operating the DBUSS

This chapter describes the Database Utilities Subsystem (DBUSS).

This chapter presents the following topics:

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DBUSS usage ...................................................... 378
  Authorized interface ........................................... 376
  Fast I/O .......................................................... 377
  TSO monitoring messages ................................... 377
  Other services .................................................. 377
DBUSS system requirements ................................. 380
  DBUSS maintenance level requirements .................. 381
Permanent DBUSS installation .............................. 381
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DBUSS operation ................................................ 384
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  Displaying DBUSS status .................................. 387
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  Displaying information about the operating system environment . . . . . . . . . . . . . . . . 389
  Stopping the DBUSS ......................................... 390
Overview

The DBUSS can be used by most BMC database products for IMS and provides the following services:

- authorized interface
- fast I/O
- TSO monitoring messages
- other services

Authorized interface

The DBUSS provides the following authorization and supervisory functions:

- Products that require APF authorization may obtain this authorization through the DBUSS rather than the product library.

- Supervisory functions are required for the fast I/O services used under the high performance access method that is requested with the FASTIO option.

- The DBUSS can provide an interface, using program call (PC) instructions, for some products to perform authorized functions. Access to these authorized functions is allowed only through the PC interface. By using this interface, the product and any user exit routines still run in non-authorized mode.

- The DBUSS enables certain authorized services of IMAGE COPY PLUS when STEPLIB is not APF authorized.

WARNING

The DBUSS must be active when you run IMAGE COPY PLUS under the IMS batch region controller (PGM=DFSRRGC00) with DBRC active and IMAGE COPY PLUS loaded from an APF-authorized list. This condition occurs when you omit the STEPLIB DD statement (because all required libraries were placed in the system LNKLST concatenation) or when all libraries that are specified by the STEPLIB DD statement are APF authorized. For more information, see the Backup and Recovery Products for IMS Image Copy Utility User Guide.
Fast I/O

The DBUSS provides fast I/O services for some products. The fast I/O services manage page fixing of buffers, creation of channel command words (CCWs), and scheduling of I/O requests.

NOTE

The DBUSS is no longer used for fast I/O services under the DBACC(3) option of IMAGE COPY PLUS. The start I/O access method has replaced the DBUSS for this purpose.

TSO monitoring messages

The DBUSS enables some products to send monitoring messages to the TSO user identifiers for people who are not logged on while the product is executing. (This feature requires TSO version 1.4 or later.) To send messages, a DBUSS must be installed, started, and available to the executing job step.

The default DBUSS name is DBUZ; some products provide the DBUSSID keyword that you can use to select a different DBUSS to use.

NOTE

The DBUSS is not required for MAXM Reorg/EP for IMS, MAXM Reorg/Online for IMS, or the extended performance utilities to receive monitoring messages.

Other services

The DBUSS enables non–BMC utilities to read an image copy that is produced by IMAGE COPY PLUS by using one of the compression options or the VOLCOPY option with MERGE specified.

The DBUSS provides a Resource Cleanup interface which releases system resources (CSA/ECSA) that were obtained by the utility but were not released because of an error condition. Resource cleanup is provided at the task level and the address space level.
## Table 75 DBUSS usage with database products for IMS (part 1 of 3)

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>DBUSS usage?</th>
<th>DBUSS auth?</th>
<th>DBUSS fast I/O?</th>
<th>DBUSS TSO msgs?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup and Recovery Solution for IMS</td>
<td>optional</td>
<td>partial</td>
<td>no</td>
<td>partial</td>
<td>- Recovery Manager functions and utilities require authorization and cannot obtain it through the DBUSS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- The console requires authorization.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- The DBUSS enables certain authorized services of the Image Copy utility when STEPLIB is not APF authorized.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- The DBUSS enables non-BMC utilities to read a non-standard image copy produced with the Image Copy utility.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- The DBUSS can enable monitoring messages for the Recovery utility.</td>
</tr>
<tr>
<td>CHANGE ACCUMULATION PLUS</td>
<td>optional</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>Authorization is required, but it can be obtained through the DBUSS.</td>
</tr>
<tr>
<td>CHANGE RECORDING FACILITY for IMS</td>
<td>not used</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
<tr>
<td>DATABASE INTEGRITY PLUS</td>
<td>not used</td>
<td>N/A</td>
<td>no</td>
<td>no</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>FAST REORG FACILITY</td>
<td>optional</td>
<td>N/A</td>
<td>no</td>
<td>no</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>FAST REORG FACILITY/EP</td>
<td>optional</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
</tbody>
</table>
The DBUSS is no longer used for fast I/O services under the DBACC(3) option. The start I/O access method has replaced the DBUSS for this purpose.

The DBUSS enables non–BMC utilities to read a non–standard image copy produced with IMAGE COPY PLUS.

The DBUSS enables certain authorized services of IMAGE COPY PLUS when the STEPLIB is not APF authorized.

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>DBUSS usage?</th>
<th>DBUSS auth?</th>
<th>DBUSS fast I/O?</th>
<th>DBUSS TSO msgs?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMAGE COPY PLUS</td>
<td>optional</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>The DBUSS is no longer used for fast I/O services under the DBACC(3) option. The start I/O access method has replaced the DBUSS for this purpose. The DBUSS enables non–BMC utilities to read a non–standard image copy produced with IMAGE COPY PLUS. The DBUSS enables certain authorized services of IMAGE COPY PLUS when the STEPLIB is not APF authorized.</td>
</tr>
<tr>
<td>LOADPLUS for IMS</td>
<td>optional</td>
<td>N/A</td>
<td>no</td>
<td>yes</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>LOADPLUS/EP for IMS</td>
<td>optional</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>All functions require authorization and can obtain it through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg for IMS</td>
<td>optional</td>
<td>partial</td>
<td>yes</td>
<td>yes</td>
<td>The DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg for IMS with Online/Defrag Feature</td>
<td>optional</td>
<td>partial</td>
<td>yes</td>
<td>yes</td>
<td>The Online/Defrag feature and the DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg/EP for IMS</td>
<td>optional</td>
<td>partial</td>
<td>no</td>
<td>no</td>
<td>The DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg/EP for IMS with Online/Defrag Feature</td>
<td>optional</td>
<td>partial</td>
<td>no</td>
<td>no</td>
<td>The Online/Defrag feature and the DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg/EP Express for IMS</td>
<td>optional</td>
<td>partial</td>
<td>no</td>
<td>no</td>
<td>The DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>MAXM Reorg/Online for IMS</td>
<td>optional</td>
<td>partial</td>
<td>no</td>
<td>no</td>
<td>The Online/Defrag feature and the DBA Toolkit cannot obtain authorization through the DBUSS.</td>
</tr>
<tr>
<td>POINTER CHECKER PLUS</td>
<td>recommended</td>
<td>N/A</td>
<td>yes</td>
<td>no</td>
<td>Authorization is not required. Fast I/O is not used when checking HALDBs.</td>
</tr>
<tr>
<td>PREFIX RESOLUTION PLUS</td>
<td>optional</td>
<td>N/A</td>
<td>no</td>
<td>yes</td>
<td>Authorization is not required.</td>
</tr>
<tr>
<td>RECOVERY MANAGER for IMS</td>
<td>not used</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Recovery Manager functions and utilities require authorization and cannot obtain it through the DBUSS.</td>
</tr>
<tr>
<td>RECOVERY PLUS for IMS</td>
<td>optional</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>Authorization is required, but it can be obtained through the DBUSS.</td>
</tr>
</tbody>
</table>
The DBUSS uses the following system resources:

- any IBM–supported release of MVS/ESA, OS/390, or z/OS
- APF–authorized library
- common service area (CSA) and extended CSA (ECSA) requirements as follows:
  - 15 KB of ECSA for the DBUSS base
  - 7 KB of ECSA for each product that the DBUSS is supporting
  - 1040 bytes CSA (must be allocated below the 16 MB line)
  - 552 bytes CSA for each data set group that is being unloaded by an UNLOAD PLUS job using the DBUSS

All CSA, with the exception of 400 bytes, is released when the DBUSS is terminated normally. If you monitor the job for CSA usage, the 552 or 320 bytes (per data set group) are in the address space of UNLOAD PLUS for IMS or POINTER CHECKER PLUS, not in the DBUSS address space.

The default buffer size that is used by the DBUSS is 16 cylinders (about 10 MB). The default buffer size is increased to improve performance. The memory that the DBUSS uses is page-fixed; the DBUSS does not use virtual memory.

If the CPU you are using has limited real memory, BMC recommends that you specify a smaller default in the UNLOAD PLUS for IMS global options module.
DBUSS maintenance level requirements

Installing a new level of the DBUSS with the same subsystem identifier as an older level of the DBUSS causes the older level to abend during startup. You should use a different subsystem identifier while testing the new level. When you are ready to use the new level in production, change the test subsystem identifier to the production subsystem identifier.

Permanent DBUSS installation

To install the DBUSS permanently, perform the following steps:

1. Generate a cataloged procedure.

   The DBUSS can be executed as a started task or as a job. If you use a started task, you must create a cataloged procedure. Figure 63 is an example of the cataloged procedure to execute the DBUSS. The Installation system generates this JCL for you. You can also use the JCL in member #DBUZJCL of the sample library.

   You can override the NAME parameter and the DBULVL parameter on the procedure statement when you want to start a DBUSS with a different subsystem identifier than DBUZ (for example, to start a test DBUSS which is at a different maintenance level or on a different system).

2. Authorize the DBUSS for READ access to SYS1.LPALIB.

   If you have a data set security system installed, you must authorize the DBUSS for READ access to SYS1.LPALIB. The DBUSS dump format routine reads LPALIB when the DBUSS abends and produces a dump in the BMC–required format. BMC also requires EXEC access to LPALIB for Media Manager. If you do not authorize the DBUSS for READ access, the DBUSS issues a system 913 abend and continues processing without the dump format.

---

**Figure 63  Cataloged procedure to execute the DBUSS**

```plaintext
//DBUSS PROC NAME=DBUZ, DBULVL='DBU'
//DBUSS EXEC PGM=DBUZPCCR, PARM='&NAME'
//STEPLIB DD DSN=BMC.&DBULVL..AUTHLOAD, DISP=SHR
//SYSUDUMP DD SYSOUT=A
```

You can override the NAME parameter and the DBULVL parameter on the procedure statement when you want to start a DBUSS with a different subsystem identifier than DBUZ (for example, to start a test DBUSS which is at a different maintenance level or on a different system).
3 Define the DBUSS in SYS1.PARMLIB.

If you want non-BMC programs to read compressed image copies produced by IMAGE COPY PLUS and you have a JES3 environment, you must define the name of the DBUSS (DBUZ) as an entry in the IEFSSNxx member in your SYS1.PARMLIB. This member defines the names of the subsystems to initialize at IPL.

BMC recommends that you name the DBUSS production procedure DBUSS. You can use any name for the procedure. If you name the procedure DBUZ (the internal four-character subsystem identifier), the procedure must be in SYS1.PROCLIB and all data sets in the procedure must be accessible by the master catalog. This restriction within the operating system applies only when the cataloged procedure is named DBUZ.

4 Start the DBUSS.

Enter one of the following operating system START commands:

```
S DBUSS
S procname
```

If the name is not DBUSS, use the cataloged procedure name (procname).

To start a test subsystem (one with a subsystem identifier that is not DBUZ), specify the NAME parameter and the DBULVL parameter to identify a unique four-character subsystem identifier; for example:

```
S DBUSS,NAME=DBUT,DBULVL=TEST
```
DBUSS operational considerations

The DBUSS must be active before a utility job begins for the utility job to be able to use the DBUSS. The DBUSS must remain active while the utility job is using the fast I/O interface. If the DBUSS is terminated while a utility job is using it, the job abnormally terminates with a system 0D6 or system 0C4 abend.

The address space used by the DBUSS is non-reusable. When it terminates, the address space in which it was active cannot be used again until after the next IPL. This is an operating system requirement because cross-address space linkage is established by the DBUSS.

The DBUSS requires the use of one global system linkage entry. Global system linkage entries, after being assigned, are not reassigned until after the next IPL. When a linkage entry is assigned to the DBUSS, the entry continues to be reused by the DBUSS until the next IPL. No other routines may use this linkage entry.

APF authorization for the DBUSS

Certain DBUSS modules must reside in an APF–authorized library. Table 76 lists these modules. You can authorize the distribution library that contains the DBUSS modules (the hlq.DBULIB or hlq.IMLIB library), or the Installation System can copy these modules to a separate APF–authorized library during installation.

Table 76  DBUSS modules to place in an APF–authorized library  (part 1 of 2)

<table>
<thead>
<tr>
<th>Module name</th>
<th>Authorization</th>
<th>Link-edit options</th>
<th>Source library</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUAMRTM</td>
<td>N/A</td>
<td>RENT,REUS</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>common utilities recovery management routines</td>
</tr>
<tr>
<td>DBUAPCIN</td>
<td>N/A</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>common utilities initialization routine</td>
</tr>
<tr>
<td>DBUAPCRT</td>
<td>N/A</td>
<td>RENT,REUS</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>common utilities service routines</td>
</tr>
<tr>
<td>DBUIPCIN</td>
<td>N/A</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>common utilities initialization routine</td>
</tr>
<tr>
<td>DBUIPCRT</td>
<td>N/A</td>
<td>RENT,REUS</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>common utilities service routines</td>
</tr>
<tr>
<td>DBUUPCIN</td>
<td>N/A</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>UNLOAD PLUS for IMS initialization routine</td>
</tr>
<tr>
<td>DBUUPCRT</td>
<td>N/A</td>
<td>RENT,REUS</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>UNLOAD PLUS for IMS service routines</td>
</tr>
<tr>
<td>DBUZDFMT</td>
<td>N/A</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.IMLIB</td>
<td>dump formatter</td>
</tr>
</tbody>
</table>
DBUSS operation

This section describes how to operate the DBUSS.

Running multiple DBU subsystems

You can run more than one DBUSS on an operating system image. Running multiple subsystems lets you test a new level of the DBUSS on the same operating system image as a production level of the DBUSS.

**WARNING**

Multiple subsystems are useful only for testing purposes. No performance advantage is gained from running more than one subsystem. Multiple subsystems may degrade overall operating system performance through increased storage requirements and paging activity.

Subsystems are identified to the operating system with a subsystem identifier. The DBUSS subsystem identifier must be four characters, and the first character must be alphabetic. The default DBUSS identifier is **DBUZ**. *DBUZ* is the subsystem identifier the individual products use by default, and it is the default subsystem that is controlled by the DBUSS commands which are described in this chapter.

**NOTE**

To stop a test DBUSS, you must use the subsystem identifier (usually DBUT) in the operating system **HALT (Z)** command.

### Table 76  DBUSS modules to place in an APF–authorized library (part 2 of 2)

<table>
<thead>
<tr>
<th>Module name</th>
<th>Authorization</th>
<th>Link-edit options</th>
<th>Source library</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUZDPH0</td>
<td>AC=1</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.ILMLIB</td>
<td>dump formatter initialization</td>
</tr>
<tr>
<td>DBUZDUMP</td>
<td>N/A</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.ILMLIB</td>
<td>dump formatter</td>
</tr>
<tr>
<td>DBUZPCCR</td>
<td>AC=1</td>
<td>N/A</td>
<td>hlq.DBULIB or hlq.ILMLIB</td>
<td>control routine</td>
</tr>
<tr>
<td>DBUZSRSM</td>
<td>N/A</td>
<td>RENT,REUS</td>
<td>hlq.DBULIB or hlq.ILMLIB</td>
<td>service routine</td>
</tr>
</tbody>
</table>

Modules DBUZDFMT and DBUZDUMP are dynamically added to the Link Pack Directory Entry (LPDE) chain.
To use a test DBUSS during the execution of a product, use the `DBUSSID` keyword on the function control statement to specify the test subsystem identifier. For example, the following control statement tells UNLOAD PLUS for IMS to use the DBUSS that was started with the subsystem identifier `DBUT`:

```plaintext
//PLUSIN DD *
  UNLOAD FASTIO(YES) DBUSSID(DBUT)
/*
```

**Starting the DBUSS**

To start the DBUSS, use one of the following operating system `START` commands:

- `S DBUSS`
- `S procname`

Use the cataloged procedure name if the name is not DBUSS. To start a test subsystem (one with a subsystem identifier that is not `DBUZ`), specify the `NAME` parameter and the `DBULVL` parameter to identify a unique four-character subsystem identifier. For example:

`S DBUSS,NAME=DBUT,DBULVL=TEST`
Displaying DBUSS identifiers and overall status

Because multiple DBU subsystems can run in one operating system image, you can
direct commands to a specific DBUSS by providing its four-character subsystem
identifier. To determine the subsystem identifiers and the status of all DBU
subsystems running in the operating system image, issue the following command:

```
D DBUSS,SYSTEMS
```

The command returns information about the subsystems that are running. For
example:

```
DBUZ IS ACTIVE
DBUT IS ACTIVE
```

To inquire about a particular subsystem, issue the following command (where `ssid`
is the subsystem identifier and `status` is one of the following):

- **ACTIVE**
  Available for processing.

- **ABENDED**
  In the process of cleaning up the address space after a DBUSS abend.

- **STARTING**
  In the process of starting.

- **STOPPING**
  In the process of normal termination after the operating system `HALT (Z)`
  command was issued. When all jobs that use the subsystem have terminated, the
  DBUSS also terminates.

```
D ssid,status
```

The command returns the following message:

```
ssid IS status
```
Displaying DBUSS status

Use one of the following commands to display the status of the DBUSS:

D DBUSS,STATUS
D DBUSS,STATUS,E
D ssid,STATUS,E

Use the operating system DISPLAY command to display the status of the DBUSS and any jobs that use it. Specify DBUSS when entering the DISPLAY command for the production subsystem (with the subsystem identifier DBUZ), not the procedure name. DBUSS is the command identifier. Specify the actual subsystem identifier to display the status of a test DBUSS (with a subsystem identifier other than DBUZ). Specify STATUS,E to list all active jobs in the display response.

The following is an example of the information that is returned by the DISPLAY command:

```
D DBUSS,STATUS,E
DBUSS DISPLAY STATUS DBUZ
SUBSYSTEM STARTED 1999-09-24 09:06:20
  EFJ3ULP ( 108)  ULP   1999-09-24 11:40:23  1512
0001 ACTIVE JOBS
```

The following information is displayed:

- The subsystem was started on September 24, 1999 at 9:06 A.M.
- One job is using the subsystem.
- The job name is EFJ3ULP.
- EFJ3LDP is running in ASID 108.
- EFJ3LDP is using the UNLOAD PLUS for IMS (ULP) interface of the subsystem.
- EFJ3LDP began using the subsystem on September 24, 1999 at 11:40 A.M.
- DBUSS is using 1512 bytes of CSA storage for Fast I/O.
Displaying the DBUSS maintenance level

Use one of the following commands to display the maintenance level of the DBUSS and its interface with the products:

\[ \text{D DBUSS,LEVEL} \]
\[ \text{D ssid,LEVEL} \]

Use the operating system `DISPLAY` command to display the maintenance level (the date on which maintenance was last applied to the module). Specify `DBUSS` or `DBUZ` to display information about the production DBU subsystem. Specify `ssid` (the subsystem identifier) of a subsystem whose identifier is not `DBUZ`.

The following is an example of the information returned by the `DISPLAY LEVEL` command:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU/SS</td>
<td>The maintenance level for the main DBUSS modules. This level must be the same as the maintenance levels on the modules that interact with the individual products.</td>
</tr>
<tr>
<td>DBUU/AM</td>
<td>The maintenance level for the modules that interface to UNLOAD PLUS for IMS, MAXM Reorg for IMS, or MAXM Reorg for IMS with Online/Defrag Feature.</td>
</tr>
<tr>
<td>DBUI/AM</td>
<td>The maintenance level for modules that interface to IMAGE COPY PLUS and POINTER CHECKER PLUS.</td>
</tr>
<tr>
<td>DBU-SR</td>
<td>The maintenance level for modules that handle large VSAM CI sizes and other general-purpose DBUSS modules.</td>
</tr>
</tbody>
</table>

If a difference exists between modules DBUZSRSM and DBUZPCCR, the following messages may also appear:

\[ \text{WARNING: DBUZSRSM IS AT LEVEL 09/28/89} \]
\[ \text{WARNING: ERROR PROCESSING DBUZSRSM} \]

**NOTE**

If you receive these messages, verify that all modules in the authorized library are at the same level.
Displaying information about the operating system environment

To display information about the operating system environment under which the DBUSS is running, use the following command (ssid is the subsystem identifier):

\[ D \ ssid, \ MVS \]

The following is an example of the information that is returned by the \texttt{DISPLAY MVS} command:

\begin{verbatim}
DBU/SS MVS ENVIRONMENT ssid aaa
SP5.2.0 SMS 1.2
DFAFEATS=6E 62 00 00
CVTOSLVL=00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
\end{verbatim}

This display indicates the following information:

- **ssid**: The subsystem identifier.
- **aaa**: The address space identifier (ASID) of the subsystem.
- **SPv.r.m**: The level of the operating system (MVS SP version 5.2.0 in this example).
- **SMS v.r**: The level of SMS (version 1.2 in this example).
- **DFAFEATS**: A bit mask indicating what features are available for SMS. For more information, see the discussion of the DFA control block in the IBM documentation.
- **CVTOSLVL**: A bit mask indicating what features are available for the operating system. For more information, see the discussion of the CVT control block in the IBM documentation.
Stopping the DBUSS

Use the operating system **HALT** command (Z) to terminate the DBUSS. If you issue **HALT** for the DBUSS but jobs are still actively using the DBUSS interface, the DBUSS begins termination, but does not terminate until all jobs using the DBUSS interface are terminated. Use the **DISPLAY** command to determine which jobs are still actively using the DBUSS interface.

To stop the DBUSS, use *one* of the following commands:

```
Z DBUSS
Z DBUSS,CANCEL
Z ssid
Z ssid,CANCEL
```

The **DBUSS** parameter specifies the default DBUSS, which has subsystem identifier **DBUZ**.

**NOTE**

To stop a test DBUSS, you must use the subsystem identifier (usually DBUT) in the operating system **HALT (Z)** command.

If you specify the **CANCEL** option, the DBUSS terminates immediately with a system 222 abend. Any jobs actively using the DBUSS abnormally terminate and all CSA/ECSA storage used by the DBUSS is not released. The CSA/ECSA is reused the next time the DBUSS is started and is released the next time the DBUSS is terminated normally.
This chapter provides information about administering and operating the subsystem and server components that are used with BMC functions and features in the Database Management Console. The following information is included:

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Starting and stopping the UIM Server ........................................ 392
Verifying that the UIM Server is running .................................... 393
Verifying UIM server installation and configuration ...................... 393
Accessing the BMC UIM Server Commands web page .................. 395
Viewing active users ................................................................. 397

Merging multiple products into a single UIM Server ...................... 398
Sharing a UIM Server with DB2 and IMS products ....................... 398
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Creating a new UIM Server ....................................................... 402
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Permanently changing the UIM Server original configuration ......... 412
Changing the port number ....................................................... 414
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Changing the idle timeout for affinity tasks ............................... 416
Changing the HFS server-side storage data set name .................... 416
Enabling or disabling the network browser command interface ....... 417
Enabling or disabling the overall tracing option ......................... 418
Enabling or disabling specific tracing options .......................... 420
Operating the UIM Server

You can control the operation of the UIM Server through a web browser. If the UIM Server is not running, you cannot run the console. From a web browser, you can start and stop the UIM Server, view the active users, change the security authorization feature, and refresh the content of the UIM Server. You can also change the status of the response logs and the internal trace.

Starting and stopping the UIM Server

Before you start the console, the UIM Server must be running. If the UIM Server is not running, you cannot run or install the console. In addition, you cannot access any UIM commands through a web browser. To start and stop the UIM Server, you must issue operating system operator commands on the host that the UIM Server is installed on.

---

**WARNING**

To avoid data loss, notify active users when you must stop the UIM Server.
To start the UIM Server

To start the UIM Server, issue the following operating system operator command:

\[ S \text{ uimServerName} \]

\textit{uimServerName} is the name of the UIM Server started task.

To stop the UIM Server

To stop the UIM Server, issue the following operating system operator command:

\[ P \text{ uimServerName} \]

\textit{uimServerName} is the name of the UIM Server started task.

Verifying that the UIM Server is running

You can verify whether the UIM Server is running by reviewing the JESMSGLG SYSOUT file for the following messages:

- BMC340290I UIM Server, Level V.R.MM MM,DD,YY, initialization complete!
- BMC340122I Ready for MVS Operator Commands

Verifying UIM server installation and configuration

When the UIM server is installed and running, you can install and update the console. The UIM server contains the code for the console and downloads it to users’ personal computers. If the UIM server has been configured correctly, you can install the console, launch the console, and connect to the UIM server on the host computer. Any UIM server error messages will appear in the console message window.

To install the console

1. From a supported web browser, enter the URL for the UIM server on the mainframe.

For example: \texttt{http://uimServerHostName:uimPortNumber/dna/index.html}
Verifying UIM server installation and configuration

The variables in the URL are defined as follows:

- `uinServerHostName` is the name of the host computer on which the UIM server is running.
- `uinPortNumber` is the port number that is assigned to the UIM server.

To determine which host name and port number are used for the server, contact your system administrator.

2. On the resulting web page, click **Install Local Client**.

3. Based on the browser that you are using, you must open the file from its current location or save the file to your hard drive and then run the program.

   - If you are using Internet Explorer, perform the following steps:
     
     A. In the File Download dialog box, select **Run this program from its current location**, and click **OK**.

        Depending on your Internet Explorer security settings, the Security Warning dialog box is displayed.

     B. Click **Yes**.

   - If you are using Netscape Navigator or Mozilla Firefox, perform the following steps:

     A. In the Save As dialog box, select a location in which to save the installation file, and click **Save**.

        The `.exe` file is downloaded.

     B. Browse to the save location, and double-click the file.


5. On the last Wizard page, select **Launch the Database Management Console**.

6. Click **Finish**.

   The BMC Database Management Console is started. You should now add a connection.
To add a connection

1 On the Main tab of the Navigation window, right-click the Connections folder and click Add Host Connection.

   The Define Connection dialog box is displayed.

2 In the Host box, enter the name of the host for the UIM server.

3 In the Port box, enter the UIM port number.

   The Display Name is generated automatically from the host name and the port number.

4 Click OK.

   The new host connection definition is displayed in the Connections folder on the Main tab of the Navigation window, and a connection is made to the host. If the UIM server is installed and configured correctly, you will not see any error messages in the message window of the console.

5 (optional) Exit the console by selecting Exit from the File menu.

   The Quit? dialog box is displayed.

6 Click Yes.

   The console closes.

Accessing the BMC UIM Server Commands web page

All UIM Server operation tasks are performed from the BMC UIM Server Commands web page. The UIM Server must be started before you can access this web page.

Authorization settings

Before you can access the BMC UIM Server Commands web page, the variable ALLOW_NETCMD must be set in the UIM startup member. For information about this variable, see the information about enabling the network browser command interface in your configuration documentation.
If the AUTH setting has been set in the UIM startup member, and you are not authorized to access the BMC UIM Server Commands web page, you will see the following message in your browser when you try to access the web page:

403 - Access to URN not allowed

If you see this message, you must follow the steps in “To access the BMC UIM Server Commands web page using authorization” on page 396.

Table 77  ALLOW_NETCMD variable settings

<table>
<thead>
<tr>
<th>ALLOW_NETCMD setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>The BMC UIM Server Commands web page is disabled.</td>
</tr>
<tr>
<td>YES</td>
<td>The BMC UIM Server Commands web page is enabled.</td>
</tr>
<tr>
<td>AUTH</td>
<td>You must log into the console UIM Server Logon web page to verify that you are allowed to access the BMC UIM Server Commands web page. If the logon is successful, the user can display the BMC UIM Server Commands web page.</td>
</tr>
</tbody>
</table>

To access the BMC UIM Server Commands web page

From a supported web browser, enter the following URL for the BMC UIM Server Commands web page:

http://uimServerHostName:uimPortNumber/htpcmd.html

The variables in the URL are defined as follows:

- `uimServerHostName` is the name of the host computer on which the UIM Server is installed.

- `uimPortNumber` is the port number that is assigned to the UIM Server. The default is 9999.

For example: http://syso:9999/htpcmd.html

To access the BMC UIM Server Commands web page using authorization

1. From a supported web browser, enter the following URL for the console UIM Server Logon web page:

   http://uimServerHostName:uimPortNumber/UIMLogon
The variables in the URL are defined as follows:

- `<uimServerHostName>` is the name of the host computer on which the UIM Server is installed.
- `<uimPortNumber>` is the port number that is assigned to the UIM Server. The default is 9999.

For example: `http://syso:9999/UIMLogon`

2 Enter your user ID and password.

3 *(optional)* Enter a group identification and account.

**NOTE**
You can change the password on the UIM host by entering a new password in the **New Password** field.

4 Click OK.

The message Logon successful is displayed in your web browser. The authentication for the UIM Server is stored in a cookie in your web browser.

5 Enter the following URL for the BMC UIM Server Commands web page:

   `http://uimServerHostName:uimPortNumber/htpcmd.html`

6 To stop access to the BMC UIM Server Commands web page, enter the following URL:

   `http://uimServerHostName:uimPortNumber/UIMLogoff`

### Viewing active users

Active users are any users who are logged on to a console.

**To view the names of active users**

1 Access the BMC UIM Server Commands web page as described in “Accessing the BMC UIM Server Commands web page” on page 395.

2 Click **Display Active Users**.
The UIM Server Active User Display page is displayed, and the names of the active users are listed on the page.

3 Return to the BMC UIM Server Commands web page by clicking Back to UIM Server Commands.

Merging multiple products into a single UIM Server

If you have a UIM Server already installed on a z/OS image, and you install an additional product that uses the UIM Server, you can merge the two UIM Servers into a single UIM Server and a single started task procedure.

If you install multiple IMS and DB2 products during the same Installation System session, the products will automatically share the UIM Server that you specify.

If you have a UIM Server already installed on a mainframe, and you install new products on the same mainframe, you must manually customize both products to share the same UIM Server.

To merge IMS and DB2 products into sharing one UIM Server, see the instructions in “Sharing a UIM Server with DB2 and IMS products.”

To merge multiple IMS products into sharing one UIM Server, see the instructions in “Sharing a UIM Server with multiple IMS products” on page 401.

Sharing a UIM Server with DB2 and IMS products

If you have installed a UIM Server for a DB2 product (for example, SmartDBA Database Performance for DB2), and a UIM Server for an IMS product (for example, MAXM Database Advisor for IMS), you can merge the two UIM Servers into a single UIM Server and a single started task procedure. The single UIM Server will then work with both products.

To merge multiple products into one UIM Server

1 Locate the #UIM member that the Installation System created in the UIM sample library.

2 Copy the #UIM member to your system procedure library and give the new member the name that you selected for the startup member during installation.
3 Ensure that the new UIM load library (HLQ.XXLINK) is first in the STEPLIB concatenation.

4 Add the older versions of the following files in concatenation order after the newer versions:
   - application load library
   - configuration file (see Figure 64 for an example)
   - content file (see Figure 65 for an example)

   **NOTE**
   The content files and the configuration files must be ordered from the newest products and files to the oldest products and files.

**Figure 64 Example of the UIM concatenated configuration file**

<table>
<thead>
<tr>
<th>DD</th>
<th>DISP=SHR,DSN=HLQ.XXCNFG</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.IMCNFG</td>
</tr>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.productCodeCNFG</td>
</tr>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.CONFIG</td>
</tr>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.CONT</td>
</tr>
</tbody>
</table>

**Figure 65 Example of UIM content concatenated files**

<table>
<thead>
<tr>
<th>DD</th>
<th>DISP=SHR,DSN=HLQ.XXCONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.IMCONT</td>
</tr>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.productCodeCONT</td>
</tr>
<tr>
<td>DD</td>
<td>DISP=SHR,DSN=HLQ.CONT</td>
</tr>
</tbody>
</table>

   **NOTE**
   Use only the files that you currently have in the concatenation.

**Figure 66** shows an example of a consolidated started task procedure for the UIM Server. The product application load library, content file, and configuration file are the newer versions.
Figure 66  Example—consolidated #UIM member  (part 1 of 2)

```plaintext
//configMember PROC M=configMember,  <--- NAME OF CONFIGURATION MEMBER
//          ENV=

//*---------------------------------------------------------------
//* UIMname EXEC PGM=UIMMAIN,  +
//              REGION=0K,  <--- SPECIFY REGION SIZE  +
//              TIME=1440,ACCT=(5210),  +
//              PARM=('"-C &M &ENV -L =B =CNFTRACE =S =U =VERSION"')
//*
//* COMMON COMMAND-LINE PARAMETERS:
//*
//*   -C MMMMMM  CONFIGURATION FILE MEMBERNAME
//*
//*   -P 9999 TCP LISTENER PORT NUMBER
//*
//*   -L LOG MESSAGES AND TRACE VIA SUBTASK
//*
//* ENVIRONMENT VARIABLES TO CONTROL EXECUTION:
//*
//*   =SOUT= SPECIFY THE SYSOUT CLASS FOR DYNAMICALLY ALLOCATED
//*           LOG FILES( IE. =SOUT=X )
//*
//* SAS/C RUNTIME LIBRARY PARAMETERS:
//*
//*   =B PRINT FUNCTION TRACEBACK WITH LIBRARY WARNINGS
//*
//*   =CNFTRACE PRINT DIAGNOSTICS DUE TO TCP/IP CONFIGURATION FAILURES
//*
//*   =S PRINT STORAGE ANALYSIS REPORT AT TERMINATION
//*
//*   =U PRINT STORAGE USAGE REPORT AT TERMINATION
//*
//*   =VERSION PRINT RUNTIME LIBRARY RELEASE INFORMATION TO SYSTERM
//*
//*---------------------------------------------------------------
// STEPLIB DD DISP=SHR,DSN=HLQ.XXLINK <--from new UIM/DHS install
// DD DISP=SHR,DSN=HLQ.LOAD <--from new DFD install
// DD DISP=SHR,DSN=HLQ.IMLOAD <--from merged IMS install
// DD DISP=SHR,DSN=HLQ.productCodeLOAD <--from nonmerged IMS
//*
// DD DISP=SHR,DSN=DB2HLQ.DSNEXIT <--if DB2 products are installed
//*
// DD DISP=SHR,DSN=DB2HLQ.DSNLOAD <--if DB2 products are installed
```
Sharing a UIM Server with multiple IMS products

If you have installed multiple IMS products you can use one UIM Server for all the products. If you are installing both IMS and DB2 products on the same UIM Server, see the instructions in “Sharing a UIM Server with DB2 and IMS products” on page 398.

5 Restart the UIM Server address space.
Creating a new UIM Server

For IMS products to work together and share a UIM Server, ensure that the CPC started task name has been created with a suffix of ADV. For example, use the name CPCxADV.

NOTE
If you need to change the started task name, you must update the CPCxCMDs to issue CPC START ADV instead of CPC START IPT that was originally created during IPT customization.

Creating a new UIM Server

When the UIM Server was installed, the sample startup procedure was copied, customized, and saved in your sample library. You may want to create additional UIM Servers.

Creating a new UIM Server comprises several tasks. Each high-level task includes several steps. The tasks are:

1. “Creating a startup configuration member” as described on page 402.
2. “Creating a started task procedure” as described on page 404.
3. “Allocating the HFS data set” as described on page 406.
4. “Initializing the HFS data set” as described on page 407.
5. “Enabling and disabling password caching” as described on page 408.

Creating a startup configuration member

Since the UIM Server requires a startup configuration member, you must create a member for the new UIM server.

To create a startup configuration member

1. Locate the #NORMAL member in the UIM sample library.
2. Create a startup configuration member by copying the #NORMAL member from your product sample library into your configuration file and giving it a new name.
Figure 67 shows the startup configuration member. The *hlq* shown in this member is the high-level qualifier that you specified during installation.

**Figure 67  Startup configuration member**

```xml
<BMCHTTP>
  <BMC_PARM ID="PORT" VALUE="9999" />
  <BMC_PARM ID="AUTH_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="HFS_DATASET" VALUE="hlq.HFS" />
  <BMC_PARM ID="ALLOW_NETCMD" VALUE="YES" />
</BMCHTTP>
```

3 Edit the new startup configuration member by changing the variables that are listed in Table 78.

**Table 78  Startup configuration member variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Accepted value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;BMC_PARM ID=&quot;PORT&quot; VALUE=&quot;9999&quot;/&gt;</code></td>
<td>port value for the UIM Server</td>
<td>unique numeric value that is between 1 and 65535</td>
<td>“Changing the port number” on page 414</td>
</tr>
<tr>
<td><code>&lt;BMC_PARM ID=&quot;AUTH_TIMEOUT_SECS&quot; VALUE=&quot;1800&quot;/&gt;</code></td>
<td>security authorization timeout for the console</td>
<td>numeric value in seconds</td>
<td>“Changing the security authorization timeout feature” on page 415</td>
</tr>
<tr>
<td><code>&lt;BMC_PARM ID=&quot;AFF_TIMEOUT_SECS&quot; VALUE=&quot;1800&quot;/&gt;</code></td>
<td>idle timeout period for affinity tasks</td>
<td>unique numeric value in seconds</td>
<td>“Changing the idle timeout for affinity tasks” on page 416</td>
</tr>
<tr>
<td><code>&lt;BMC_PARM ID=&quot;HFS_DATASET&quot; VALUE=&quot;hlq.HFS&quot;/&gt;</code></td>
<td>HFS data set name</td>
<td>PDSE data set name for storing the HFS data</td>
<td>“Changing the HFS server-side storage data set name” on page 416</td>
</tr>
<tr>
<td><code>&lt;BMC_PARM ID=&quot;ALLOW_NETCMD&quot; VALUE=&quot;YES&quot;/&gt;</code></td>
<td>enable or disable network browser command interface</td>
<td>YES (default), NO or AUTHORIZE</td>
<td>“Enabling or disabling the network browser command interface” on page 417</td>
</tr>
</tbody>
</table>
Creating a started task procedure

After creating the startup configuration member, you must create a started task procedure for that startup member.

To create a started task procedure

1. Locate the #UIM member in the UIM sample library.

2. Create a new #UIM member by copying the #UIMx member to your system procedure library and giving the new member the name that you selected for the startup member (see step 2 on page 402).

Figure 68 shows the #UIM member.

Figure 68  #UIM member (part 1 of 2)

```plaintext
//uimx PROC M=uimx, <----- NAME OF CONFIGURATION MEMBER
//             ENV=
//---------------------------------------------------------------
//uimx EXEC PGM=UIMMAIN, +
//             ACCT=(acct), <--- SPECIFY ACCOUNTING INFO +
//             REGION=0K, <--- SPECIFY REGION SIZE +
//             TIME=1440, +
// PARM=(' -C &M &ENV -L =B =CNFTRACE =VERSION')
//*
//** COMMON COMMAND-LINE PARAMETERS:
//**
//** -C MMMMMM CONFIGURATION FILE MEMBERNAME
//**
//** -P 9999 TCP LISTENER PORT NUMBER
//**
//** -L LOG MESSAGES AND TRACE VIA SUBTASK
//**
//**- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
//** ENVIRONMENT VARIABLES TO CONTROL EXECUTION:
//**
//** =SOUT= SPECIFY THE SYSOUT CLASS FOR DYNAMICALLY ALLOCATED
//** LOG FILES (IE. =SOUT=X)
//**
//**- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
//** SAS/C RUNTIME LIBRARY PARAMETERS:
//**
//** =CNFTRACE PRINT DIAGNOSTICS DUE TO TCP/IP CONFIGURATION FAILURES
//**
//** =VERSION PRINT RUNTIME LIBRARY RELEASE INFORMATION TO SYSTERM
//*
//---------------------------------------------------------------
```
Creating a started task procedure

Chapter 14 Administering and operating subsystems for console-enabled functions

3 Edit the new #UIMX member by changing the variables that are listed in Table 79.

Table 79  #UIMX member variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Accepted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>uimx</td>
<td>name of the started task procedure and the startup configuration member</td>
<td>name that you gave to the #UIMX member when you copied it to your system procedure library (step 2 on page 404)</td>
</tr>
<tr>
<td>bmc.uim.load</td>
<td>library that contains the UIM Server and product execution code</td>
<td>valid data set name</td>
</tr>
<tr>
<td>bmc.pch.load</td>
<td>library that contains your product code</td>
<td>valid data set name</td>
</tr>
<tr>
<td>bmc.uim.content</td>
<td>library that contains code and files that are downloaded to the client during installation of the console</td>
<td>valid data set name</td>
</tr>
<tr>
<td>bmc.uim.config</td>
<td>library that contains common UIM Server, console code, and product execution parameters that are used during initialization of the UIM Server</td>
<td>valid data set name</td>
</tr>
</tbody>
</table>
Setting up the HFS data set

After creating the startup configuration member and the started task procedure, you can allocate and initialize the HFS data set. This server-side storage data set stores user preferences and dynamic configuration information on the UIM Server. During installation, the hlq.HFS member in the SAMP library was created and customized with your site specific information. You can submit the customized data set, or you can customize a copy of the data set member in the sample library.

You can share the HFS data set between all UIM Servers that are on the host, or you can create an HFS data set for each UIM that is on the host.

Allocating the HFS data set

After creating the startup configuration member and the started task procedure, you can allocate the HFS data set. During installation, the hlq.HFS member in the SAMP library was created and customized with your site specific information. You can submit the customized data set, or you can customize a copy of the data set member in the sample library.

To customize a copy of the data set member

1. Locate the #DEFHFS member in the UIM sample library.

   Figure 69 shows the #DEFHFS member. hlq in this member is the high-level qualifier that you specified during installation.

2. Edit the #DEFHFS member by changing the variables that are listed in Table 80.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Accepted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT</td>
<td>device for placing data sets</td>
<td>see your site standards</td>
</tr>
<tr>
<td>DSN</td>
<td>high-level qualifier</td>
<td>see your site standards</td>
</tr>
</tbody>
</table>

3. Save the edited #DEFHFS member with a new name.

4. Submit the DEFHFSJC member JCL.
Initializing the HFS data set

Before you can share connections in a sysplex, you must initialize the HFS data set that you allocated. During installation, the HFSLOAD data set is created and customized with your site-specific information.

To submit a copy of the customized data set member

1. Locate $C41LHFS in the UIM sample library data set.

Figure 70 shows the default $C41LHFS member.

```
//**--------------------------------------------------------------
//** Load the BMC HFS PDSE with SAMP library members.
//** Optionally convert previous BMC HFS HostList.xml if found.
//**--------------------------------------------------------------
//LOADHFS EXEC PGM=UIMHFSL,REGION=OK,
// PARM='=version $UIMHFSL $UIMHFST'
//** - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
//** UIMHFSL parameters:
//**   memname Samplib control cards member, default is $HFSLOAD.
//**   -t $HFSLOAD is a Load of default properties files
//**--------------------------------------------------------------
//STEPLIB DD DISP=SHR,DSN=?????????.LOAD
//**
//** SAS/C DD'S
//** SYSTERM DD SYSOUT=* 
//** SYSPRINT DD SYSOUT=* 
//** STGRPT DD SYSOUT=* 
//**
//** STANDARD JOB DD'S
//** SYSDUMP DD SYSOUT=* 
//** HFSPDSE DD DISP=SHR,DSN=?????????.HFS 
//** SAMP DD DISP=SHR,DSN=?????????.SAMP 
//** CONT DD DISP=SHR,DSN=?????????.CONTENT 
//**
```
2 Edit the #LOADHFS member, and change ?????????? to the high-level qualifier according to your site standards.

3 Save the edited member as HFSLOAD.

**NOTE**
When performing step 3, you overwrite the customized data set that was created during installation.

4 Submit the HFSLOAD member JCL.

---

**Enabling and disabling password caching**

By default, when you log on to the console or when you create connections, the console caches the password. However, you can enable and disable the password caching.

**To enable or disable password caching**

1 Locate member #UPDADM in the SAMP library.

Figure 71 shows the default member #UPDADM.

**Figure 71** Default member #UPDADM (part 1 of 2)

```plaintext
//*---------------------------------------------------------------
//*                Load the BMC HFS PDSE with SAMP library member to update the
//*                Password Caching setting.
//*---------------------------------------------------------------
//UPDADM  EXEC PGM=UIMHFSL,REGION=OK, PARM='=b =version $UPDADM'
//*   memname   Samplib control cards member, default is $HFSLOAD.
//*             - $UPDADM is an update of Password cache member only
//*             - t        Activate tracing to SYSPRINT
//*---------------------------------------------------------------
//STGLIB DD DISP=SHR,DSN=?????????.LOAD
//*                  SAS/C DD'S
//SYTERM  DD SYSOUT=*                 
//SYSPRINT DD SYSOUT=*                
//STGRPT  DD SYSOUT=*                 
//*                  STANDARD JOB DD'S
```
Temporarily changing the UIM Server original configuration

The UIM Server is customized during installation. However, you can view or alter the original configuration of the UIM Server temporarily. For information about changing the configuration settings permanently, see “Permanently changing the UIM Server original configuration” on page 412.

You can temporarily change the following UIM Server configuration options:

- authorization security timeout
- tracing

2. Edit member #UPDADM, and change ?????????? to the high-level qualifier according to your site standards.

3. Save the edited member as UPDADMIN.

4. Locate member $ADMIN in the SAMP library.

   Figure 72 shows the default member $ADMIN.

5. Perform one of the following actions:

   - To disable password caching, set AllowPasswordCaching=false.
   - To enable password caching, set AllowPasswordCaching=true.

6. Save $ADMIN.

7. Submit the member UPDADMIN JCL.
Changing the security authorization timeout feature

You can change the security authorization timeout feature temporarily for consoles that communicate with the UIM Server. The change will remain effective until the UIM Server is stopped.

**NOTE**
Performing this task changes the timeout feature temporarily for all consoles that communicate with the UIM Server.

**To change the timeout feature temporarily**

1. Access the BMC UIM Server Commands web page as described in “Accessing the BMC UIM Server Commands web page” on page 395.

2. Click **Display Active Users**.
   The UIM Server Active User Display page is displayed.

3. In the **Inactivity Time Out** box, type a value (in minutes or seconds) representing the amount of time that the console can remain inactive without timing out.

4. Choose a unit of time for the console timeout feature by selecting the option button for **Seconds** or **Minutes**.

5. Apply your changes by clicking **Change**.

6. Return to the BMC UIM Server Commands web page by clicking **Back to UIM Server Commands**.

**Enabling or disabling the overall tracing option**

You can enable or disable the overall tracing option temporarily for the UIM Server. The change remains effective until the UIM Server is stopped or until you change it.

Trace data is written to the TRCLOGDD. To view trace data, review the contents of the TRCLOGDD.
To enable or disable the overall tracing option temporarily

1 Access the BMC UIM Server Commands web page as described in “Accessing the BMC UIM Server Commands web page” on page 395.

2 On the BMC HTTP Server Commands Web page, click Internal Trace - Display Trace Status/Modification.

The Trace Indicator Status page is displayed. The status of the tracing option is shown in the Overall Trace Indicators section.

3 In the Overall Trace Indicators section, select either Active or Inactive.

- If the overall tracing option is disabled and you want to enable it, click Inactive in the Overall Trace column.

  Inactive changes to Active, indicating that the overall tracing option has been enabled for the UIM Server.

- If the overall tracing option is enabled and you want to disable it, click Active in the Overall Trace column.

  Active changes to Inactive, indicating that the overall tracing option has been disabled for the UIM Server.

4 Return to the BMC HTTP Server Commands Web page by clicking Back to HTTP Server Commands.

Enabling or disabling specific tracing options

You can enable or disable specific tracing options temporarily for the UIM Server. The change remains effective until the UIM Server is stopped or until you change it.

Trace data is written to the TRCLOGDD. To view trace data, review the contents of the TRCLOGDD.

To enable or disable specific tracing options temporarily

1 Access the BMC UIM Server Commands web page as described in “Accessing the BMC UIM Server Commands web page” on page 395.

2 On the BMC HTTP Server Commands Web page, click Internal Trace - Display Trace Status/Modification.
The Trace Indicator Status page is displayed. The status of the tracing option is shown in the Overall Trace Indicators section.

3 In the Overall Trace Indicators section, ensure that the tracing option is set to Active.

If the overall tracing option is set to Inactive, click Inactive in the Overall Trace column. Inactive changes to Active, indicating that the overall tracing option has been enabled for the UIM Server.

**NOTE**
The overall trace option must be Active before you can enable or disable specific tracing options.

4 In the Trace Components Indicators section, find the category for the specific tracing option that you want to enable or disable:

- trace components
- trace actions

5 To enable or disable specific tracing options, perform one of the following tasks:

- If tracing is disabled for a specific option and you want to enable it, click Off in the Status column.

  Off changes to On, indicating that tracing has been enabled for that option.

- If tracing is enabled for a specific option and you want to disable it, click On in the Status column.

  On changes to Off, indicating that tracing has been disabled for that option.

6 Return to the BMC HTTP Server Commands Web page by clicking Back to HTTP Server Commands.

**Permanently changing the UIM Server original configuration**

The UIM Server is customized during installation. However, you can view or alter the original configuration of the UIM Server permanently by changing the values for variables in the startup and trace members of the configuration file. For information about changing the configuration settings temporarily, see “Temporarily changing the UIM Server original configuration” on page 409.
You can permanently change the following UIM Server configuration options:

- port number
- authorization security timeout
- affinity timeout
- server-side storage data set (HFS data set)
- tracing
- enable/disable network browser command interface

Each UIM Server requires a configuration member, called the startup member, that describes the unique characteristics of each server. This member is specified as a parameter in the UIM Server configuration file.

The sample library (hlq.SAMP) contains a template for the startup member named #NORMAL. The installation process customizes the #NORMAL member, gives it the same name as the started task procedure, and copies it to the hlq.CONFIG data set.

Figure 73 shows the #NORMAL member template.

```
<BMCHTTP>
  <BMC_PARM ID="PORT" VALUE="9999" />
  <BMC_PARM ID="AUTH_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="HFS_DATASET" VALUE="hlq.HFS" />
  <BMC_PARM ID="ALLOW_NETCMD" VALUE="YES" />
</BMCHTTP>
```

The editable variables in the #NORMAL member are defined in Table 81.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Accepted Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;BMC_PARM ID=&quot;PORT&quot; VALUE=&quot;9999&quot; /&gt;</td>
<td>port value for the UIM Server</td>
<td>unique numeric value that is between 1 and 65535</td>
<td>“Changing the port number” on page 414</td>
</tr>
<tr>
<td>&lt;BMC_PARM ID=&quot;AUTH_TIMEOUT_SECS&quot; VALUE=&quot;1800&quot; /&gt;</td>
<td>timeout for security authorization</td>
<td>numeric value in seconds</td>
<td>“Changing the security authorization timeout feature” on page 415</td>
</tr>
</tbody>
</table>
Changing the port number

The port number for the UIM Server is the address of a TCP/IP application, in this case the UIM Server, on a z/OS image. The UIM Server has one port number that clients use to contact the UIM Server. You can change the port number globally for all consoles that communicate with the UIM Server.

To change the port number

1. Edit your startup configuration member.

   **NOTE**

   The startup member name is typically the same as the started task procedure name for the UIM Server.

2. In your startup configuration member, find the PORT variable.

   The default port number is 9999.

   The PORT variable is displayed as follows:

   ```xml
   <BMC_PARM ID="PORT" VALUE="9999" />
   ```

3. Change the value of BMC_PARM ID="PORT" from 9999 to a unique numeric value between 1 and 65535.
Changing the security authorization timeout feature

The console is equipped with a timeout security feature. This feature controls the amount of time that all consoles which communicate with the UIM Server can remain inactive before security authorization expires. This value is set during installation. You can change the timeout feature permanently for all consoles that communicate with the UIM Server.

To change the security authorization timeout feature temporarily, see “Changing the security authorization timeout feature” on page 410.

To change the timeout feature permanently

1. Edit your startup configuration member.

   **NOTE**

   The startup member name is typically the same as the started task procedure name for the UIM Server.

2. From your startup configuration member, find the AUTH_TIMEOUT_SECS variable.

   The default number of seconds is 1800.

   The AUTH_TIMEOUT_SECS variable is displayed as follows:

   ```xml
   <BMC_PARM ID="AUTH_TIMEOUT_SECS" VALUE="1800" />
   ```

3. Change the value of BMC_PARM ID="AUTH_TIMEOUT_SECS" from 1800 to any numeric value in seconds.

   **WARNING**

   Check with your TCP/IP administrator to ensure that you are entering a unique port number. If you do not enter a unique port number, program errors may occur.
Changing the idle timeout for affinity tasks

Affinity timeout is the amount of time that the task is held between requests for the affinity. When the task is inactive for the defined period, the affinity is no longer valid and the task is available for other work.

To change the idle timeout for affinity tasks

1 Edit your startup configuration member.

**NOTE**
The startup member name is typically the same as the started task procedure name for the UIM Server.

2 From your startup configuration member, find the AFF_TIMEOUT_SECS variable.

   The default number of seconds is 1800.

   The AFF_TIMEOUT_SECS variable is displayed as follows:

   ```xml
   <BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800"/>
   ```

3 Change the value of BMC_PARM ID="AFF_TIMEOUT_SECS" from 1800 to any numeric value in seconds.

Changing the HFS server-side storage data set name

The HFS server-side storage data set stores user preferences and dynamic configuration information on the UIM Server.

To change the HFS data set name

1 Edit your startup configuration member.

**NOTE**
The startup member name is typically the same as the started task procedure name for the UIM Server.

2 From your startup configuration member, find the HFS_DATASET variable.
Enabling or disabling the network browser command interface

The HFS_DATASET variable contains the data set name to use for the UIM Server server-side storage data set.

The HFS_DATASET variable is displayed as follows:

```
<BMCPARM ID="HFS_DATASET"
          VALUE="hlq.HFS" />
```

3 Change the value of the high-level qualifier for HFS_DATASET from hlq to a value that meets your site standards.

Enabling or disabling the network browser command interface

The network browser command interface, also known as the BMC UIM Server Commands web page, displays UIM Server information and allows an administrator to make dynamic modifications to UIM Server settings.

You can enable or disable the network command interface. You can also provide an active authentication with the browse session. Once the variable ALLOW_NETCMD is set to AUTH, the user must log in using the following command in the web browser:

```
http://uimServerHostName:uimPortNumber/UIMLogon
```

If the logon is successful, the user can display the BMC UIM Server Commands web page (`http://uimServerHostName:uimPortNumber/htpcmd.html`). For more information about the BMC UIM Server Commands web page, see the instructions for operating the UIM Server in your product documentation.

To enable or disable the network browser command interface

1 Edit your startup configuration member.

2 From your startup configuration member, find the ALLOW_NETCMD variable.

   By default, the network browser commands are processed by the UIM Server, but they may be disabled by setting the ALLOW_NETCMD value to NO.

   The ALLOW_NETCMD variable is displayed as follows:

```
<BMCPARM ID="ALLOW_NETCMD"
          VALUE="YES" />
```
Enabling or disabling the overall tracing option

This product was shipped with the recommended tracing options preset. Each UIM Server requires a trace configuration member, called the TRACE member, that defines the tracing for each server. To change the overall tracing option temporarily, see “Enabling or disabling the overall tracing option” on page 410.

**NOTE**

BMC recommends that you change the trace configuration member only with direction from BMC Customer Support.

The sample library contains a trace configuration member named TRACE. During installation, the TRACE member (Figure 74) is copied to the hlq.CONFIG file.

**Figure 74  TRACE member (part 1 of 2)**

```xml
<BMCHTTP>
  <RRLOG VALUE="OFF"/>
  <TRACE VALUE="ON">
    <BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_WARNING" />
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_INFO" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_ENTRYEXIT" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_CONTROL" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_MEMORY" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_SOCKET" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_THREAD" -->
    <!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_WAIT" -->
    <BMC_PARM ID="TRACE_COMPONENT" VALUE="TRACECOMPONENT_SERVER" />
    <!-- BMC_PARM ID="TRACE_COMPONENT" VALUE="TRACECOMPONENT_SERVER_WL" -->
    <BMC_PARM ID="TRACE_COMPONENT" />
  </TRACE>
</BMCHTTP>
```
To change the overall tracing option permanently

1. Edit your trace configuration member.

2. From your trace configuration member, find the TRACE VALUE variable.

   Figure 74 on page 418 shows the trace configuration member.

3. To enable or disable the overall tracing option, perform one of the following tasks:

   - To enable the overall tracing option, type **ON** inside the quotation marks.
     
     For example:

     ```xml
     <TRACE VALUE="ON">
     </TRACE>
     </BMCHTTP>
     ```

   - To disable the overall tracing option, type **OFF** inside the quotation marks.
     
     For example:

     ```xml
     <TRACE VALUE="OFF">
     </TRACE>
     </BMCHTTP>
     ```

4. Verify that the TRACE VALUE has been enabled or disabled.
Enabling or disabling specific tracing options

The product was shipped with the recommended specific tracing options preset. This section describes how to change specific tracing options permanently.

**NOTE**

BMC recommends that you change the trace configuration member only with direction from BMC Customer Support.

To verify that the overall tracing option is enabled

1. Edit your trace configuration member.
   Figure 74 on page 418 shows the trace configuration member.

2. Ensure that the overall trace option is enabled.
   If the overall trace option is enabled, the variable is displayed as follows:

   ```xml
   <TRACE VALUE="ON">
   </TRACE>
   ```

3. If the overall trace option is not enabled, edit the variable as required to enable it.

To enable specific tracing options

1. From the list of specific tracing options, find the option that you want to enable.
   For example:

   ```xml
   <!-- BMC_PARM ID="TRACE_ACTION"
   VALUE="TRACEACTION_INFO" /-->
   ```

2. Remove the exclamation point, hyphens, and space (--) that are displayed between the opening bracket (<) and text (BMC_PARM).

3. Remove the hyphens (--) that are displayed between the forward slash (/) and the closing bracket (>).

   The specific tracing option is enabled and is displayed as follows:

   ```xml
   <BMC_PARM ID="TRACE_ACTION"
   VALUE="TRACEACTION_INFO" />
   ```
To disable specific tracing options

1 From the list of specific tracing options, locate the option that you want to disable.

For example:

```
<BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_INFO" />
```

2 Type an exclamation point, two hyphens, and a space (!-- ) between the opening
bracket (<) and text (BMC_PARM).

3 Type two hyphens (-- ) between the forward slash (/) and the closing bracket (>).

The specific tracing option is disabled and is displayed as follows:

```
<!-- BMC_PARM ID="TRACE_ACTION" VALUE="TRACEACTION_INFO" -->
```

Enabling and disabling password caching

By default, when you log on to the console or when you create connections, the
console caches the password.

To enable or disable password caching

1 Locate member #UPDADM in the SAMP library.

Figure 75 shows the default member #UPDADM.

Figure 75 Default member #UPDADM (part 1 of 2)

```
//-- --------------------------------------------------------------
//-- /* Load the BMC HFS PDSE with SAMP library member to update the
//-- * Password Caching setting.
//-- */
//-- --------------------------------------------------------------
//UPDADM EXEC PGM=UIMHFSL,REGION=OK,
//-- PARM="b =version $UPDADM"
//-- memname Samplib control cards member, default is $HFSLOAD.
//-- - $UPDADM is an update of Password cache member only
//-- -t Activate tracing to SYSPRINT
//--
//-- --------------------------------------------------------------
//STEPLIB DD DISP=SHR,DSN=????????????.LOAD
```
2  Edit member #UPDADM, and change ????????? to the high-level qualifier according to your site standards.

3  Save the edited member as UPDADMIN.

4  Locate member $ADMIN in the SAMP library.

Figure 76 shows the default member $ADMIN.

5  Perform one of the following actions:

- To disable password caching, set AllowPasswordCaching to false.
- To enable password caching, set AllowPasswordCaching to true.

6  Save $ADMIN.

7  Submit the member UPDADMIN JCL.

Refreshing the UIM Server content

You can refresh the content of the UIM Server without shutting it down. You may need to refresh the content of the UIM Server when a new version is installed.
To refresh UIM Server content

1. Access the BMC UIM Server Commands web page as described in “Accessing the BMC UIM Server Commands web page” on page 395.

2. Click Display/Refresh Contents Directory.

   The MVS Content Index page is displayed.

3. On the MVS Content Index page, click Refresh Content Index.

4. Return to the BMC UIM Server Commands web page by clicking Back to UIM Server Commands.

Operating the BMCP subsystem

The BMCP subsystem establishes supervisory services for many BMC products. Because BMC products share a single BMCP subsystem, you can have only one copy of it on an operating system image.

Always use the latest version of the BMCP subsystem. Use the BCSCHECK program to determine whether an earlier version of the BMCP subsystem is installed on your system. For details about the BCSCHECK program, see the BMC Software Subsystems User Guide.

BMC recommends that the BMCP subsystem always remain active. However, you must terminate a subsystem to install maintenance modules for that subsystem.

For detailed information about the BMCP subsystem, see the BMC Software Subsystems User Guide.

Use one of the following methods to execute BMCP subsystem commands:

- Place the commands in a COMMNDxx member of SYS1.PARMLIB so that they are issued automatically during an IPL.

- Issue the commands from the operator console.

Table 82 lists BMCP subsystem commands. In the sample command, the started task procedure name used for the BMCP subsystem is BMCP. If you experience problems, review the system log to ensure that your commands completed successfully.
Operating the BCSS/CPC subsystem

Table 82  BMCP subsystem commands

<table>
<thead>
<tr>
<th>Task</th>
<th>Sample command</th>
</tr>
</thead>
<tbody>
<tr>
<td>start the BMCP subsystem</td>
<td><code>START BMCP</code> or <code>START bmcp, SUB=jesid</code> (if started from a non-shared library and the procedure library is the same as the subsystem identifier)</td>
</tr>
<tr>
<td>terminate the BMCP subsystem</td>
<td><code>BMCP SHUTDOWN</code></td>
</tr>
<tr>
<td>display the status of the BMCP subsystem</td>
<td><code>BMCP STATUS</code></td>
</tr>
</tbody>
</table>

The BCSS/CPC subsystem manages APF–authorized functions and performs processing for intercepted operating system requests. Only one public BCSS is allowed on an operating system image; however, you can have multiple private BCSSs. BMCP allows the public BCSS first access to an intercepted request and ensures that the appropriate BCSS receives control when required.

The console–enabled database products for IMS use the BCSS subsystem in conjunction with CPC technology. If CPC is installed with the BCSS subsystem, the products can share a BCSS subsystem with other BMC products. For more information about the CPC components of the BCSS subsystem, see “Understanding CPC components” on page 425.

Always use the latest version of the BCSS subsystem. Use the BCSCHECK program to determine whether an earlier version of BCSS is installed on your system. For details about the BCSCHECK program, see the BMC Software Subsystems User Guide.

BMC recommends that the BCSS/CPC subsystem always remain active. However, you must terminate a subsystem to install maintenance modules for that subsystem.

For detailed information about the BCSS subsystem, see the BMC Software Subsystems User Guide.

For information about executing BCSS/CPC commands, see “Executing BCSS/CPC subsystem commands” on page 425.
Understanding CPC components

Table 83 lists the CPC components of the BCSS subsystem.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>console</td>
<td>The console is the graphical user interface (GUI). The console runs on a client workstation under the Microsoft Windows operating system and communicates with the UIM Server through TCP/IP technology.</td>
</tr>
<tr>
<td>UIM Server</td>
<td>The UIM Server resides on the mainframe and handles communication between the console and BMC console-enabled mainframe products and features.</td>
</tr>
<tr>
<td>ADV server</td>
<td>The ADV server is the product server for various console-enabled functions and features. The products use the ADV server to communicate with the UIM server, ADV repositories, IMS subsystems, and IMS databases.</td>
</tr>
<tr>
<td>ADV repositories</td>
<td>The ADV repositories are VSAM data sets. The ADV repositories store information for various console-enabled functions and features.</td>
</tr>
<tr>
<td>BCSS/CPC subsystem</td>
<td>The BCSS subsystem manages APF-authorized functions and performs processing for intercepted operating system requests. If CPC was installed with BCSS, console-enabled BMC products for IMS can share a BCSS with other BMC products. Always use the latest version of the BCSS subsystem. To determine whether an earlier version of BCSS is installed on your system, use the BCSCHECK program. For more information about the BCSCHECK program, see the BMC Software Subsystems User Guide. BMC recommends that the BCSS/CPC subsystem always remain active. However, you must terminate a subsystem to install maintenance modules for that subsystem.</td>
</tr>
<tr>
<td>IMS subsystems</td>
<td>Console-enabled BMC products for IMS retrieve information about active IMS subsystems and the databases that are defined to the IMS subsystems. The information is used by the products during processing.</td>
</tr>
</tbody>
</table>

Executing BCSS/CPC subsystem commands

The BCSS/CPC subsystem must be active to start the products. Use one of the following methods to execute BCSS/CPC subsystem commands:

- Place the commands in a COMMANDxx member of SYS1.PARMLIB so they are issued automatically during an IPL.

- Place the commands in a BCSS/CPC commands data set so they are issued at BCSS/CPC startup. Member CPCxCMDS in CPCSAMP (if you chose non-merged libraries for your installation) or IMSAMP (if you chose merged libraries for your installation) contains sample BCSS/CPC commands. For information about non-merged and merged installation libraries, see the installation guide.
### Operating the ADV server

The ADV server provides the technology for communication among clients (TSO user address space and various console-enabled functions and features).

If a CPCxCMDS data set member contains the default CPC START ADV command, the ADV server automatically starts when you start the BCSS/CPC subsystem. For more information about the BCSS/CPC subsystem, see “Operating the BCSS/CPC subsystem” on page 424. If the BCSS/CPC subsystem does not automatically start the ADV server, you must correct the error and manually start the ADV server.

Although you can have multiple server address spaces on one operating system image, BMC recommends that you have as few address spaces as possible to avoid connectivity issues.

---

**TIP**

If you use the CPCxCMDS data set member, BCSS/CPC starts the ADV server automatically.

---

- Issue the commands from the operator console.

**Table 84** describes BCSS/CPC subsystem commands. In the sample command, the started task procedure name that is used for the BCSS/CPC subsystem is MXAP. If you experience problems, review the system log to ensure that your commands completed successfully.

**Table 84  BCSS/CPC subsystem commands**

<table>
<thead>
<tr>
<th>Task</th>
<th>Sample command</th>
</tr>
</thead>
<tbody>
<tr>
<td>execute started tasks for the BCSS/CPC subsystem from a JES2 PROCLIB shared by all operating system images.</td>
<td>S mxap</td>
</tr>
<tr>
<td>start the BCSS/CPC subsystem</td>
<td>START mxap,OPTION=REFRESH</td>
</tr>
<tr>
<td></td>
<td>START mxap,OPTION=NREFRESH</td>
</tr>
<tr>
<td>terminate the BCSS/CPC subsystem</td>
<td>mxap SHUTDOWN</td>
</tr>
<tr>
<td>display the status of the BCSS/CPC subsystem</td>
<td>mxap STATUS</td>
</tr>
</tbody>
</table>
Meeting JCL requirements

The installation procedure customized the ADV server JCL for you. You must modify your.system.proclib to reflect the system procedure library name where all members reside. The installation procedure does not automatically copy the customized procedures to your system procedure library.

The installation procedure performs the following actions:

- if load library is in the LINKLIST) removes the STEPLIB
- modifies hlq.CPCLIB (if you chose non-merged libraries for your installation) or hlq.IMLIB (if you chose merged libraries for your installation) to your product load library

For information about non-merged and merged installation libraries, see the installation guide.

Securing the ADV server

The user ID that is assigned to the ADV server address space must have the following authority:

- UPDATE/ALTER authority to create and update ADV repository data sets.

  The prefix for the VSAM data sets that make up the ADV repository data sets is specified in the CPCINI file REP control statement.

- READ authority to access the components that the Advisors or the DBA Toolkit analyze.

Authority is defined in RACF configuration.

APF authorizing the ADV server

The STEPLIB libraries must be APF authorized for the ADV server.
Operating the ADV server in a sysplex environment

In a sysplex environment, it is preferable that ADV server address spaces communicate with each other so that repository data can be shared. TSO users can access all repository data, regardless of the operating system image to which they log on. Historical data for the reorganization utilities is maintained in a single repository, regardless of the operating system image on which the utility executes.

The first ADV server address space that is started tries to initiate all of the functions that are required for the installed BMC products. When a second ADV server address space is started on a different operating system image, and the two servers are connected through CPC, the second server detects that all required functions are active in the first ADV server address space. If the first ADV server address space ends, the second ADV server address space automatically takes over and tries to initialize the required functions.

Migrating Advisor to a new level in a SYSPLEX environment

The following procedures explain how to migrate Advisor address spaces to a new version, release, or maintenance level in a SYSPLEX environment:

- You can migrate all address spaces in the SYSPLEX simultaneously. BMC recommends this procedure as the most straightforward and reliable.

- You can implement rolling maintenance by migrating the address spaces on one logical partition (LPAR) at a time. This procedure employs an automatically determined “master-slave” configuration, in which the master and slave systems can run at difference maintenance levels. The system that has the latest level is the master. New functionality might not be available until all systems in the configuration are upgraded. BMC supports but does not recommend this procedure because it is more complicated and difficult to manage. This procedure is not valid if the MASTER keyword is specified in your CPCxINI file.

**NOTE**

If a problem occurs during migration, you might need to use a fallback process to return to the previous level. The fallback procedure to use depends on whether you migrated the address spaced simultaneously or one at a time.

To migrate all address spaces simultaneously

1. Edit the JCL in member REPMAIN1 of the sample library.

   Change the statements as needed to ensure that they reflect your current environment and your organization’s standards.
2 Stop all Advisor address spaces in the SYSPLEX.

3 Run the DELUNLD and ALLUNLD step to allocate the unload file.

   Ensure that the unload file is allocated to a permanent DASD volume. Use the existing BMC load library for this step.

4 Run the REPBKUP step to create a unload file of your entire repository.

5 Save the current levels of your BMC load, script, content, and configuration libraries.

   The comments in the REPMAIN1 member indicate the names of these libraries.

6 Update the started-task procedures to point to the new levels of the BMC libraries.

   The comments in the REPMAIN1 member indicate the names of these procedures.

7 Start the address spaces.

   The CPC address space automatically upgrades all associated repositories.

**To fall back to the previous level if you migrated address spaces simultaneously**

1 Stop all Advisor address spaces in the SYSPLEX.

2 If required, restore the previous repositories:

   A Determine whether the new CPC address space automatically upgraded the repositories by checking the CPCLOG data set in the CPC address space.

   If no repository migration messages are present in the CPCLOG data set, you do not need to restore the previous repositories. Skip the following substeps, and continue with Step 3.

   B Run the REPDLET step in member REPBACK1.

   This step deletes all of the upgraded repositories. In this step, use the new levels of the BMC libraries. Make sure that the previously created unload file in REPMAIN1 is still available.

   C Run the REPRELD step in member REPBACK1.

   This step reloads the data back to the repositories in the old format. In this step, use the old levels of the BMC libraries.
3 Update the started-task procedures to point to the old level of the BMC libraries.

The comments in the REPBACK1 member indicate the names of these procedures.

4 Start the address spaces.

**To migrate address spaces on one LPAR at a time**

1 Edit the JCL in member REPMAIN2 of the sample library.

   Change the statements as needed to ensure that they reflect your current environment and your organization’s standards.

2 Run the DELUNLD and ALLUNLD steps to allocate the unload file.

3 Run the REPBKUP step to create an unload file of your entire repository.

   Ensure that the unload file is allocated to a permanent DASD volume. Use your existing BMC load library for this step.

4 Save the current level of your BMC libraries.

   The comments in the REPMAIN2 member indicate the names of these libraries.

5 Stop all Advisor address spaces that you are upgrading on this LPAR.

6 Verify that an address space on a different LPAR has taken over master responsibilities, as indicated in message BMC251857I.

7 Update the started-task procedures for this LPAR to point to the new level of BMC libraries.

   The comments in the REPMAIN2 member indicate the names of these procedures.

8 Start the address spaces that you previously stopped.

   If this is the first LPAR that is being upgraded in the master-slave configuration, the address spaces on this LPAR assume master responsibilities and automatically upgrade the repositories. At this point, the system with these repositories can work only if the address spaces on the upgraded LPAR are available or if the address spaces on a different LPAR in the master-slave configuration are upgraded to the same level of BMC libraries.
To fall back to a previous level if you migrated address spaces on one LPAR

1  Stop all (master and slave) Advisor address spaces in the SYSPLEX.

2  If required, restore the previous repositories:

   A  Determine whether the new CPC address space automatically upgraded the repositories by checking the CPCLOG data set in the CPC address space.

   If no repository migration messages are present in the CPCLOG data set, you do not need to restore the previous repositories. Skip the following substeps, and continue with Step 3.

   B  Run the REPDLET step in member REPBACK2.

      This step deletes all of the upgraded repositories. In this step, use the new levels of the BMC libraries. Make sure that the previously created unload file in REPMAIN2 is still available.

   C  Run the REPRELD step in member REPBACK2.

      This step reloads the data back to the repositories in the old format. In this step, use the old levels of the BMC libraries.

3  Update the started-task procedures to point to the old level of the BMC libraries.

   The comments in the REPBACK2 member indicate the names of these procedures.

4  Start the address spaces.

Executing ADV server commands

Table 85 lists ADV server commands. In the sample command, the started task procedure name that is used for the ADV server is MXAPADV. If you experience problems, review the system log to ensure that your commands completed successfully.

<table>
<thead>
<tr>
<th>Task</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>manually start the ADV server</td>
<td>MXAP CPC START ADV</td>
</tr>
<tr>
<td>manually stop the ADV server</td>
<td>MXAP CPC STOP ADV</td>
</tr>
</tbody>
</table>
## Operator commands

Table 86 lists common ADV server operator console command tasks. For additional commands, see Appendix A, “Using CPC operator commands.”

<table>
<thead>
<tr>
<th>Task</th>
<th>Command</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write all trace information to the specified SYSOUT class when the CPCTRACE data set is allocated.</td>
<td>CPCx CPC ADV TRACE SYSOUT (*)</td>
<td>“TRACE SYSOUT” on page 433</td>
</tr>
<tr>
<td>Write all trace information to the CPCTRACE data set.</td>
<td>CPCx CPC ADV TRACE SPILL(n)</td>
<td>“TRACE SPILL” on page 433</td>
</tr>
<tr>
<td>Write all log information to the specified SYSOUT class when the CPCLOG data set is allocated.</td>
<td>CPCx CPC ADV LOG SYSOUT (*)</td>
<td>“LOG SYSOUT” on page 434</td>
</tr>
<tr>
<td>Write all log information to the CPCLOG data set.</td>
<td>CPCx CPC ADV LOG SPILL(n)</td>
<td>“LOG SPILL” on page 434</td>
</tr>
<tr>
<td>Activate ADV server trace output.</td>
<td>CPCx CPC TRACE ACTIVE (Y)</td>
<td>“TRACE ACTIVE” on page 433</td>
</tr>
<tr>
<td>Deactivate ADV server trace output.</td>
<td>CPCx CPC TRACE ACTIVE (N)</td>
<td>“TRACE ACTIVE” on page 433</td>
</tr>
</tbody>
</table>
**CPCTRAZCE output**

ADV server diagnostic tracing is not normally required. It is controlled by the TRACE command in the CPC.xINI file and the TRACE operator command. The ADV server address space uses this SYSOUT data set for messaging and diagnostic information. If you do not specify the data set in the started task procedure, it is dynamically allocated.

**TRACE ACTIVE**

The following ADV server command activates ADVTRACE output (where CPCx is the BCSS/CPC subsystem identifier):

```bash
CPCx CPC ADV TRACE ACTIVE (Y)
```

The following ADV server command deactivates ADVTRACE output (where CPCx is the BCSS/CPC subsystem identifier):

```bash
CPCx CPC ADV TRACE ACTIVE (N)
```

**TRACE SYSOUT**

The following ADV server command writes all trace information to the specified SYSOUT class the next time that the ADVTRACE data set is allocated (where CPCx is the BCSS/CPC subsystem identifier):

```bash
CPCx CPC ADV TRACE SYSOUT(*)
```

Specify the SYSOUT class to be used the next time that the ADVTRACE data set is allocated.

**TRACE SPILL**

The following ADV server command writes all trace information to the ADVTRACE data set (where CPCx is the BCSS/CPC subsystem identifier):

```bash
CPCx CPC ADV TRACE SPILL(n)
```

Leave the SPILL specification blank to perform the spill immediately, or enter a number of lines following the SPILL function to override the SPILL keyword value in the CPCINI DD statement.

If you specify a number following the SPILL command, ADVTRACE is closed and reallocated after that number of records has been written to ADVTRACE. If you do not specify a value, the current ADVTRACE data set is closed and a new SYSOUT data set is opened. You can specify a number from zero through (10^{15}-1). If you specify zero, the data set is never spilled.
CPCLOG output

The ADV server journal is controlled by the LOG command in the CPCINI file and LOG operator command. The ADV server address space uses this SYSOUT data set for messaging and diagnostic information. If you do not specify the data set in the started task procedure, it is dynamically allocated.

LOG SYSOUT

The following ADV server command writes all log information to the specified SYSOUT class the next time that the ADVLOG data set is allocated (where CPCx is the BCSS/CPC subsystem identifier):

CPCx CPC ADV LOG SYSOUT(*)

Specify the SYSOUT class to be used the next time that the ADVLOG data set is allocated.

LOG SPILL

The following ADV server command writes all log information to the ADVLOG data set:

CPCx CPC ADV LOG SPILL(n)

Leave the SPILL specification blank to perform the spill immediately, or enter a number of lines following the SPILL function to override the SPILL keyword value in the CPCINI DD statement.

If you specify a number following the SPILL command, ADVLOG is closed and reallocated after that number of records has been written to ADVLOG. If you do not specify a value, the current ADVLOG data set is closed and a new SYSOUT data set is opened. You can specify a number from zero through (\(10^{15}-1\)). If you specify zero, the data set is never spilled.
### CPCxINI keywords

Table 87 lists supported CPCxINI keywords. The default CPCxINI sample member contains sufficient keywords for normal operations.

**Table 87  CPCxINI keywords (part 1 of 7)**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>
| EMAIL   | ADDRESS   | no        | none    | specifies a maximum of five e-mail addresses to notify if one of the following problems is detected:  
  - A task that is scheduled by the CPC address space completes with a completion code value that is greater than the value of the JOBRC keyword.  
  - The number of extents for the repository has exceeded the value that is specified with the NUMEXTS keyword on the MIG command minus 1.  
  Specify ADDRESS(address1,address2,...address5), where each address value is a valid individual or group e-mail address. |
| EMAIL   | CLASS     | no        | A       | specifies the SYSOUT class defined for use with the SMTP |
| EMAIL   | FROMADDR  | no        | none    | specifies the e-mail address to include in the FROM field in e-mail messages about CPC-scheduled task activities |
| EMAIL   | JOBRC     | no        | 0       | specifies the lowest acceptable completion code for a task that has been scheduled by the CPC address space  
  Specify JOBRC(n), where n value is the lowest acceptable completion code. If a task completes with a completion code that is higher than this value, a message is sent to the e-mail addresses that are specified with the ADDRESS keyword. |
| EMAIL   | SUBSYS    | no        | SMTP    | specifies the subsystem name for the SMTP on the sysplex in which the console is located  
E-mail messages for CPC-scheduled task activities are directed to this SMTP. |
| ENV     | NAME      | yes       | none    | specifies the logical name of environmental services to be initialized in the server address space  
The name must be 1 to 8 characters. |
| ENV     | PARM      | no        | none    | 8-byte parameter field to be passed to the environment services initialization module |
### Table 87  CPCxINI keywords (part 2 of 7)

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>
| ENV     | PROGRAM | yes       | none    | identifies the program module to call to initialize the service.  
The program module is also called for each function connecting to these services. |
| GROUP   | CMDID   | yes       | none    | assigns a command identifier to the CPC address space.  
The required CMDID keyword on the GROUP command is created automatically during customization from values that are specified by using the Installation System. You should not change the value. |
| GROUP   | COLLDEFS| yes       | none    | identifies Advisor collector definitions.  
The required COLLDEFS keyword on the GROUP command is created automatically during customization from values that are specified by using the Installation System. You should not change the value. |
| GROUP   | CPCJOBNM| no        | Y       | specifies the job name to use for external tasks that the CPC address space schedules.  
Scheduled external tasks include repository backups, data collection, end-of-day processes, and so on.  
To use the job name of the CPC address space as the job name for scheduled external tasks, specify the CPCJOBNM(Y) keyword on the GROUP command (or omit the keyword from the command).  
To use the procedure (PROC) name as the job name for scheduled external tasks, specify the CPCJOBNM(N) keyword. |
| GROUP   | DESC    | yes       | none    | assigns a description to the CPC address space.  
The required DESC keyword on the GROUP command is created automatically during customization from values that are specified by using the Installation System. |
### Executing ADV server commands

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GROUP PROCNAME no none specifies a procedure name (other than the default IEESYSAS) to use for the tasks that are scheduled by the CPC address space.

Specify PROCNAME(name), where name is the 1- to 8-character procedure name to use for tasks. The specified name must identify an existing PROCLIB member that you have created by copying member IEESYSAS.

The GROUP command and required keywords in the CPCxINI file are created during customization from values that are specified by using the Installation System. If you use the PROCNAME keyword, add it to the existing GROUP command.

GROUP SCHDTASK no N determines how tasks will be scheduled from the Advisor address space when using the Advisor schedule process.

Specify SCHDTASK(N) to direct Advisor to submit scheduled tasks as started tasks. Advisor submits additional COLLECT jobs (required when processing more than 240 databases or areas) as batch jobs from the started task or the previous batch job.

Specify SCHDTASK(Y) to direct Advisor to submit scheduled tasks as batch jobs with the same job name as specified in the Maintain Parameters - Job Control window. Advisor schedules additional COLLECT jobs as batch jobs and submits them from the Advisor address space.

Specify SCHDTASK(M) to obtain the same results as SCHDTASK(Y), except use a suffix character (0-9) to replace the last character of the job name for COLLECT jobs. This suffix creates a unique job name, providing a greater degree of parallelism and shorter execution windows.

GROUP SERVDEFS yes none identifies ADV server definitions.

The required SERVDEFS keyword on the GROUP command is created automatically during customization from values that are specified by using the Installation System. You should not change the value.

### Table 87 CPCxINI keywords (part 3 of 7)

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>PROCNAME</td>
<td>no</td>
<td>none</td>
<td>specifies a procedure name (other than the default IEESYSAS) to use for the tasks that are scheduled by the CPC address space. Specify PROCNAME(name), where name is the 1- to 8-character procedure name to use for tasks. The specified name must identify an existing PROCLIB member that you have created by copying member IEESYSAS. The GROUP command and required keywords in the CPCxINI file are created during customization from values that are specified by using the Installation System. If you use the PROCNAME keyword, add it to the existing GROUP command.</td>
</tr>
<tr>
<td>GROUP</td>
<td>SCHDTASK</td>
<td>no</td>
<td>N</td>
<td>determines how tasks will be scheduled from the Advisor address space when using the Advisor schedule process. Specify SCHDTASK(N) to direct Advisor to submit scheduled tasks as started tasks. Advisor submits additional COLLECT jobs (required when processing more than 240 databases or areas) as batch jobs from the started task or the previous batch job. Specify SCHDTASK(Y) to direct Advisor to submit scheduled tasks as batch jobs with the same job name as specified in the Maintain Parameters - Job Control window. Advisor schedules additional COLLECT jobs as batch jobs and submits them from the Advisor address space. Specify SCHDTASK(M) to obtain the same results as SCHDTASK(Y), except use a suffix character (0-9) to replace the last character of the job name for COLLECT jobs. This suffix creates a unique job name, providing a greater degree of parallelism and shorter execution windows.</td>
</tr>
<tr>
<td>GROUP</td>
<td>SERVDEFS</td>
<td>yes</td>
<td>none</td>
<td>identifies ADV server definitions. The required SERVDEFS keyword on the GROUP command is created automatically during customization from values that are specified by using the Installation System. You should not change the value.</td>
</tr>
<tr>
<td>Command</td>
<td>Keyword</td>
<td>Required?</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>-----------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>GROUP</td>
<td>TIMEREGN</td>
<td>no</td>
<td>Y</td>
<td>specifies whether to include TIME=1440 and REGION=0M keywords in tasks that CPC spawns. Specify Y to include the keywords. Specify N to omit the keywords. If you specify N, the TIME and REGION keywords are required in the PROC member that is identified with the PROCNAME keyword in the GROUP command.</td>
</tr>
<tr>
<td>ID</td>
<td>DESC</td>
<td>no</td>
<td>none</td>
<td>up to 50-character description used to identify the CPC subsystem for the user interface</td>
</tr>
<tr>
<td>ID</td>
<td>NOTIFYID</td>
<td>no</td>
<td>none</td>
<td>specifies a maximum of four user IDs to notify upon startup or shutdown of the CPC address space</td>
</tr>
<tr>
<td>LOG</td>
<td>SPILL</td>
<td>no</td>
<td>0</td>
<td>number of lines to write to CPCLOG before automatically closing and reallocating a new SYSOUT data set</td>
</tr>
<tr>
<td>LOG</td>
<td>SYSOUT</td>
<td>no</td>
<td>*</td>
<td>SYSOUT class to use for the CPCLOG data set</td>
</tr>
<tr>
<td>MIG</td>
<td>AUTOEXP</td>
<td>no</td>
<td>N (no)</td>
<td>specifies whether the CPC address space automatically initiates expansion of a repository as needed. Specify AUTOEXP(Y) to expand a repository automatically. Use the recommended default AUTOEXP(N) to manually control the scheduling of repository expansion tasks (such as during times of low repository activity).</td>
</tr>
<tr>
<td>MIG</td>
<td>DATACLAS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS data class of the migration unload file and unsorted keys files</td>
</tr>
<tr>
<td>MIG</td>
<td>MGMTCLAS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS management class of the migration unload file and unsorted keys files</td>
</tr>
<tr>
<td>MIG</td>
<td>NUNITS</td>
<td>no</td>
<td>1</td>
<td>controls the number of DASD units to allocate for the migration unload file and unsorted keys files. Specify NUNITS((x)), where (x) is the number of units to allocate.</td>
</tr>
<tr>
<td>MIG</td>
<td>PREFIX</td>
<td>no</td>
<td>the value of the PREFIX keyword in the REP command</td>
<td>specifies an alternative UNLOAD prefix to use when repository data sets are migrated for revision changes or resizing. Specify a 1- to 26-byte data set name prefix.</td>
</tr>
<tr>
<td>MIG</td>
<td>PRIMCYL</td>
<td>no</td>
<td>50</td>
<td>controls the amount of primary space (in cylinders) to allocate for the migration unload file and unsorted keys files. Specify PRIMCYL((x)), where (x) is the number of cylinders to allocate.</td>
</tr>
</tbody>
</table>
### Executing ADV server commands

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**Table 87  CPCxINI keywords (part 5 of 7)**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIG</td>
<td>SECCYL</td>
<td>no</td>
<td>50</td>
<td>controls the amount of secondary space (in cylinders) to allocate for the migration unload file and unsorted keys files. Specify SECCYL(<em><strong>xxx</strong></em>), where <em><strong>xxx</strong></em> is the number of cylinders to allocate.</td>
</tr>
<tr>
<td>MIG</td>
<td>SAUTIL</td>
<td>no</td>
<td>Y</td>
<td>specifies whether the CPC subsystem performs repository expansions and software-level migrations by using the CPC SP repository maintenance utility (CPCSPUTI) or the standard CPC repository maintenance utility (CPCUTIL). Specify SAUTIL(Y) to use the SP utility. Specify SAUTIL(N) to use the standard repository utility. The default SAUTIL(Y) is recommended.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTNUMB</td>
<td>no</td>
<td>3</td>
<td>controls the number of sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTMCLS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS management class for sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTSCLS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS storage class for sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTDCLS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS data class for sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTUNIT</td>
<td>no</td>
<td>SYSDA</td>
<td>identifies the unit name for sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>SORTCYL</td>
<td>no</td>
<td>100</td>
<td>identifies the amount of space, in cylinders, for sort work files that can be dynamically allocated by the SP utility.</td>
</tr>
<tr>
<td>MIG</td>
<td>STORCLAS</td>
<td>no</td>
<td>none</td>
<td>identifies the SMS storage class of the migration unload file and unsorted keys files.</td>
</tr>
<tr>
<td>MIG</td>
<td>THRESHEXT</td>
<td>no</td>
<td>200</td>
<td>identifies the threshold value for maximum extents that is used during execution of the repository management EXPAND command. If you specify a value less than five, the original default value (200) is used. The maximum extents threshold used with the repository management EXPAND command is used exclusively as a repository management threshold. It is not related to the MAXM OSAM/VSAM Extents threshold defined in the console for user databases.</td>
</tr>
<tr>
<td>MIG</td>
<td>UNIT</td>
<td>no</td>
<td>none</td>
<td>identifies the UNIT name of the migration unload file and unsorted keys files.</td>
</tr>
<tr>
<td>MIG</td>
<td>VOLS</td>
<td>no</td>
<td>none</td>
<td>identifies the volume name of the migration unload file and unsorted keys files.</td>
</tr>
</tbody>
</table>
Table 87 CPCxINI keywords (part 6 of 7)

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REP</td>
<td>PREFIX</td>
<td>no</td>
<td>none</td>
<td>26-byte prefix to use when allocating repository data sets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>You must change this name to accommodate your environment.</td>
</tr>
<tr>
<td>REP</td>
<td>RECS(p,s)</td>
<td>no</td>
<td>1000,500</td>
<td>default REC values (primary allocation, secondary allocation) to use when defining new repository data sets</td>
</tr>
<tr>
<td>REP</td>
<td>VOLS(vol,...,vol6)</td>
<td>no</td>
<td>none</td>
<td>up to six default volumes to use when defining new repository data sets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>You must change this value to accommodate your environment.</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>DYNLINK</td>
<td>no</td>
<td>*</td>
<td>identifies the SYSOUT class to use for dynamic SCRIPT processing output (PTSPRINT)</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>SYSOUT</td>
<td>no</td>
<td>*</td>
<td>identifies the SYSOUT class to use for SCRIPT processing output (SCRIPTLS)</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>TRACE</td>
<td>no</td>
<td>N</td>
<td>indicates whether tracing for SCRIPT processing should be active</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>TRACEOUT</td>
<td>no</td>
<td>*</td>
<td>identifies the SYSOUT class to use for SCRIPT trace output (PTSPRPRT)</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>USERDSN</td>
<td>no</td>
<td>none</td>
<td>data sets where user-provided scripts reside</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This name can be anything you choose. However, if you do not have your own scripts, you should comment this statement.</td>
</tr>
<tr>
<td>SCRIPT</td>
<td>UTIDSN</td>
<td>yes</td>
<td>none</td>
<td>data set name where the MXA script modules reside</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This is the SCRIPTLB data set name that is downloaded from the distribution tape. You must change the high-level qualifier to match that of the environment in which you are running MXA.</td>
</tr>
<tr>
<td>START</td>
<td>MODE</td>
<td>yes</td>
<td>none</td>
<td>specifies that the server is private</td>
</tr>
<tr>
<td>START</td>
<td>NAME</td>
<td>yes</td>
<td>none</td>
<td>NAME(ALL) is used for all product functions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NAME(CPCSAMP) is used for all CPC sample functions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Any function can be started by operator command.</td>
</tr>
<tr>
<td>START</td>
<td>TYPE</td>
<td>yes</td>
<td>none</td>
<td>TYPE(FUNCTION) is used to specify which functions are started at CPC initialization.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TYPE(COM) is used to start the Comm Server in this address space.</td>
</tr>
<tr>
<td>TRACE</td>
<td>ACTIVE</td>
<td>no</td>
<td>N</td>
<td>identifies whether tracing is to be started when the server address space is initialized</td>
</tr>
</tbody>
</table>
You must specify the CPCINI control statement data set in the ADV started task procedure (CPCxADV). The control statement must contain 80-character fixed-length records. A command can have keywords and comments. Separators and continuation characters are supported. You can enter commands anywhere in positions 1 through 72 of the input statement (positions 73 through 80 are ignored). See the CPCINI sample member in the sample library for your solution or product.

### Table 87 CPCxINI keywords (part 7 of 7)

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Required?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE</td>
<td>SPILL</td>
<td>no</td>
<td>0</td>
<td>number of lines to write to CPCTRACE before automatically closing and reallocating a new SYSOUT data set</td>
</tr>
<tr>
<td>TRACE</td>
<td>SYSOUT</td>
<td>no</td>
<td>*</td>
<td>SYSOUT class to use for the CPCTRACE data set</td>
</tr>
<tr>
<td>XSYS</td>
<td>GROUP</td>
<td>yes</td>
<td>none</td>
<td>1 to 8-character cross-system group name; must be a unique XCF group within the SYSPLEX. All CPCxINI keywords must point to the same XSYS(GROUP) name.</td>
</tr>
<tr>
<td>XSYS</td>
<td>MASTER</td>
<td>no</td>
<td>none</td>
<td>specifies the operating system image on which to initiate the CPC master, regardless of the order in which CPC subsystems are started. Specify MASTER(xxxxxxxx). If a CPC subsystem is started on an operating system image other than the image specified by the MASTER keyword, it becomes a slave and cannot complete startup until the master initiates. If a slave CPC does not find a master within one hour, the slave terminates. If the image specified by the MASTER keyword terminates and a slave CPC is available, the slave CPC becomes the master. If the original master is restarted, the CPC that became the new master reverts to slave status. If you do not specify the MASTER keyword, the first CPC subsystem to be started becomes the master.</td>
</tr>
<tr>
<td>XSYS</td>
<td>THREADS</td>
<td>no</td>
<td>1</td>
<td>number of pipes to use per remote host</td>
</tr>
</tbody>
</table>
Troubleshooting UIM and console problems

This section discusses problems that pertain to the UIM server and the Database Management console.

The UIM server does not start because the OMVS segment is not defined

If the started task is missing a RACF OMVS segment, one of the following messages is displayed in the job log output when the UIM server start command is issued:

- message IEF695I, stating that the job name is assigned to the specified user
- message ICH408I, stating that the OMVS segment is not defined

In addition, message LSCX902 is displayed in the SYSTERM DD output and states that an operating system initialization error occurred.

To solve this problem, include a RACF OMVS segment for the UIM server address space.

To determine whether a started task is missing a RACF OMVS segment

1. Check the JES Message log for the following messages:
   - IEF695I START RGSTEMP WITH JOBNAME RGSTEMP IS ASSIGNED TO USER
   - ICH408I JOB(RGSTEMP ) STEP(RGSTEMP ) CL(PROCESS ) OMVS SEGMENT NOT DEFINED

2. Check the SYSTERM DD output for the following message:
   - LSCX902 **** WARNING **** ERRNO = EMVSINITIAL
     Generated in PFSCTL called from line . . .

If you find the preceding message, one of the following conditions exists:

- No RACF rule has assigned a user to the started task.
- A RACF rule has assigned a user to the started task, but the user does not have an associated OMVS segment.

The UIM server uses TCP/IP. TCP/IP requires UNIX system services, and a RACF OMVS segment must exist for the UIM server address space. To define an OMVS segment for a user of the started tasks, contact your security administrator.
UIM server does not start and displays message LSCX902 in SYSTERM DD

If the TCP/IP started task is not named TCPIP, when you issued the command to start the UIM server, message LSCX902 is displayed in the SYSTERM DD output and states that an error occurred.

To solve this problem, change the name of the TCP/IP started task name to TCPIP. The UIM server must be able to find the TCP/IP address space and tries to find the default name TCPIP, but it cannot because one of the following conditions exists:

- No TCP/IP address space with the started task name TCPIP exists because the address space has been given another name.
- Multiple TCP/IP address spaces exist, but none are named TCPIP.
- Multiple TCP/IP address spaces exist, but you do not want to use the started task named TCPIP.

To change the name of the TCP/IP started task name to TCPIP, perform one of the following tasks:

- Determine the name of the TCPIP file (TCPIP.DATA). This file is used by TCP/IP client address spaces to determine local TCP/IP configuration information.

  The local TCP/IP configuration information includes the name of the TCP/IP address space that is specified by the TCPIPUSERID parameter. The UIM server procedure must be updated to include a SYSTCPD DD statement that specifies the appropriate TCPIP.DATA file.

- Specify the TCP/IP address space name in a parameter to the UIM server by using the procedure parameter ENV as follows:

  //  ENV="=TCPIP_MACH=startedTaskName"

UIM server displays message LSCX902 in SYSTERM DD

When Interlink or CA TCPAccess is installed instead of IBM TCP/IP Stack and the command to start the UIM server is issued, message LSCX902 is displayed in the SYSTERM DD output and states that an error occurred.

To solve this problem, insert the TCPAccess LINKLIB as the first data set in the UIM server STEPLIB DD. The TCPAccess LINKLIB must be the first data set in the STEPLIB concatenation. Inserting the LINKLIB first provides the correct socket API interface modules.
UIM server displays message LSCX904 in SYSTERM DD

When the TCPIP PROFILE file specifies a reserved port number for a specific started task name that does not match the UIM server started task name and the command to start the UIM server is issued, the message LSCX904 is displayed and states that an access error occurred.

This error occurs because the port number that is specified for the UIM server in the TCPIP PROFILE file is reserved for a job name that does not match the job name associated with the UIM server.

To solve this problem, specify another port number for the UIM server, or correct the started task name.

To specify a different port number in the TCIP PROFILE file

1 Review the SYSTERM DD output for the following message:

   LSCX904 **** WARNING **** ERRNO = EACCES
   Generated in BIND called from line
   Unexpected failure in bind, reason code 744C7246

   If the message is in the SYSTEM DD output, the wrong name job name was used in the TCPIP PROFILE file.

2 Select another port number for the UIM server.

   Here is a sample entry in the TCPIP PROFILE file:

   8300 TCP STFTUIM : BMC UIM server

   This entry reserves the port number 8300 for the job named STFTUIM that is associated with the UIM server, and any other job trying to access that port number receives the EACCES error in the SYSTERM DD output.

WARNING

Insert only the LINKLIB library, not the LOAD library, because TCPAccess uses SAS/C. Using TCPAccess SAS/C may cause an incompatibility in the run-time modules.
Cannot launch the console installation

When you type the installation URL into your browser to install the console, you receive the following message:

Page cannot be displayed

The UIM server must be running to access the console installation page. Ensure that the UIM server on the host is started.

Cannot expand tree

The console launches, but you cannot connect to any of the hosts. The following message is displayed in the messages pane:

Unable to connect to host UIM server_host_name on port http_port_number

The UIM server on the host must be running for the console to connect to the host. Ensure that the UIM server is started.

Cannot access BMC product functions

You cannot access BMC product components or functions from the console. The following messages are displayed in the messages pane of the console:

■ Service not found
■ Class cast exception

The console files on your client are out of date with the console files that are located on the UIM server because the server was updated after you connected to it from your computer.

To update the console files on the client

1. Exit the console.
2. Launch the console.

If the console files on your personal computer are out of date, the UIM server detects the out-of-date files when you restart the console and the Update the Local Client Files window is displayed.
3 Click **Update Local Client**, and follow the on-screen prompts.

An installation program launches and immediately updates the console files on the client. The console launches.

---

## Connection failures between the console and the UIM server

The console client does not successfully connect to the UIM server. This situation might occur when you are installing the console, making a web browser (HTTP) connection, or making a console request.

The console client might be on a separate TCP sub network from the UIM server host. A firewall or router might be denying access.

You must determine the point of connection failure by performing these steps:

1. Test whether your personal computer can determine the IP address for *YourHost*.

2. Determine whether the personal computer can access the target system by pinging *YourHost*.

3. If the ping command is unsuccessful, determine at what point the path fails.

### To test whether the IP address can be determined for *YourHost*

1. Type **`NSLOOKUP YourHost`**.

   - If the IP address was found, the IP address is displayed.
   - If the IP address was not found, an error message is returned.

   If the IP address is not found, the problems may be an incorrect domain name, an incorrect server name, an inappropriate update for name registrations, or an invalid system name request.

2. Access the system by using the IP address instead of the host name to test the connection. Use the following format:

   `http://IPAddress/htpinfo`

3. If the PC cannot connect, review the personal computer and IP configuration and make any needed adjustments.
To determine whether the PC can access the target system

To determine whether the PC can access the target system on which the UIM server is running, type `ping YourHost`.

- A successful ping indicates that you can access the target system and provides information about response time for the IP.

- An unsuccessful ping displays the error `Request timed out`. An unsuccessful ping might be the result of routers or firewalls between the personal computer and the target system that do not allow ping responses.

- If the ping fails, you must determine at what point the path fails, as described in the following task.

To determine at what point the path fails

Type `tracert YourHost` to determine at what point the path fails.

- In a successful trace, each line of output indicates the next connection point (hop) to the target. The time for each hop is displayed.

If the trace was unsuccessful, review the trace output to determine where it failed. You will see the error `Request timed out` after the first unsuccessful hop. Tracert (by default) attempts 30 hops before stopping.
Connection failures between the console and the UIM server
Chapter 15 Administering repositories for console-enabled functions

This chapter provides information about administering and maintaining the repositories that various console-enabled functions and features use for storing and retrieving data. These repositories are often referred to as Advisor repositories. The following information is included:

- **Overview**: 450
- **Learning about repositories**: 450
- **Backing up repository data**
  - Scheduling repository backups: 451
  - Using the backup batch utility: 453
- **Expanding the repository data group size**
  - Expanding repositories: 456
  - Keywords: 456
- **Maintaining repositories with the CPC SP utility**
  - Keywords for dynamic allocation of files: 458
  - Keywords for managing sort processing: 459
  - Executing the SP utility automatically: 459
  - Executing the SP utility in batch: 459
- **Purging repository data**
  - Learning about the PURGE function: 464
  - Scheduling repository purges: 466
  - Using the purge batch utility: 467
- **Synchronizing database registration information**
  - Using database registration synchronization versus database registration: 468
  - Scheduling database registration synchronization: 468
  - Using the database registration synchronization batch utility: 469
- **Importing repository data from a PDX**
  - JCL requirements: 472
  - DD statements: 472
  - Keywords: 473
- **Importing Fast Path repository data**
  - Considerations: 474
  - JCL requirements: 475
Repositories are essentially self-managing. The BMC database administration products for IMS automate repository backups, data purges, and database registration synchronization by using scheduled functions. By default, all functions are set to execute daily. If you do not want to use the suggested defaults, you must customize the schedules.

Learning about repositories

Data repositories are implemented as VSAM data sets. A master repository catalog keeps track of the VSAM data sets that are used for a subsystem. When you specify global parameters during initial setup, allocation and use of repository data sets are automated.

Repository data is organized into one of the following data groups:

- ANALYSIS—user settings and database state information
- ENVIRON—user settings and configuration data
- STATS—statistical and historical data
Backing up repository data

Backing up repository data provides the security of knowing your data is recoverable if loss or corruption occurs. Data that is backed up includes all data in ANALYSIS, ENVIRON, and STATS data groups.

BMC recommends that you back up repositories daily during a period of no activity. You can back up repositories by using the following methods:

- schedule repository backups to occur automatically (recommended)
- use the BMC backup batch utility
- use any standard VSAM backup and restore utility

**NOTE**
If you use a standard VSAM utility, updates to repositories are not permitted while the utility executes; access must be controlled manually.

Scheduling repository backups

You can use the repository backup function in the console to schedule automatic repository backups. You can set the frequency, the start time, and the end time for the function.

By default, repository backups are scheduled to occur daily between 1:00 A.M. and 4:00 A.M. If the backup does not start between 1:00 A.M. and 4:00 A.M., it is scheduled for the next execution of the backup function.

You can identify the output data set or GDG to contain the backup. At the host (SYSPLEX) level, define one of the following DD statements by using the DD Names parameter of the Job Control category in the Maintain Parameters window:

- The REPGDGBK statement identifies a GDG data set. You must also define the GDG model to which this statement refers.

- The REPBKUP statement identifies a non-GDG output data set.

If you do not define either of these DD statements, the default data set name is hlq.ssid.REPBKUP:

- *hlq* is the high-level qualifier of the repository, as defined in the CPCxINI file
- *ssid* is the subsystem ID of the CPC subsystem
To schedule the repository backup function, perform the following steps:

1. In the Navigation window, right-click the host connection object and choose Configuration=>Schedule Repository Backups.

The Schedule Repository Backups window (Figure 77) is displayed.

Figure 77  Schedule Repository Backups window
In the Schedule Repository Backups window, double-click the REP BACKUP function table row.

The Edit Schedule dialog box (Figure 78) is displayed.

**Figure 78  Edit Schedule dialog box**

![Edit Schedule dialog box](image)

In the Edit Schedule dialog box, specify parameters and click **Save**.

For more information about each parameter, including descriptions, valid values, and suggested defaults, see the online Help.

**Using the backup batch utility**

You can use the backup batch utility (CPCUTIL) for backing up repository data groups. The batch job uses standard unload and reload processes to back up repository data groups as an alternative to scheduling the REP BACKUP function in the console. Member CPCRUTIL in the sample library contains sample JCL.

The CPCUTIL reload function uses the unload file that is created by the CPCUTIL unload function to restore a data group. The repository unload/reload utility verifies that the data group name on the unload header record matches the data group name that is specified in the DATAGROUP keyword. The utility also compares the record count in the trailer record to the actual number of rows (records) that are inserted in the data group.
Using the backup batch utility

For information about keywords that are used with the backup batch utility, see “Keywords” on page 455.

Unloading repositories

To unload repositories, perform the following steps:

1 Specify the UNLOAD command in CPCSYSIN.

2 Modify CPCRUTIL in the sample library to back up a repository data group. To unload multiple data groups simultaneously, use the GROUP keyword.

The data set that is pointed to by UNLOADDSN must be preallocated, cataloged, and have the following attributes:

```
DCB=(DSORG=PS,RECFM=VB,LRECL=32756,BLKSIZE=32760)
```

3 Run the CPCUTIL unload function.

The BCSS/CPC server address space writes the data to the data set that is specified by the UNLOADDSN keyword. During unload, you have read access to data but update access is prohibited.

Reloading repositories

To reload repositories, perform the following steps:

1 Specify the RELOAD command in CPCSYSIN.

2 To restore data in a data group, modify CPCRUTIL in the sample library.

3 (optional) To reload multiple data groups simultaneously, use the GROUP keyword.

4 (optional) For the reload function only, stop the affected function and delete target data group VSAM clusters.

**NOTE**

When the data group has been restarted, the reload function can be restarted.

5 (optional) To expand data group size allocation, change data set names, or copy information to a different subsystem, run the CPCUTIL reload function.
### Keywords

Table 88 lists keyword options to use with the CPCUTIL backup utility. For sample JCL, see member CPCRUTIL in your sample library.

**Table 88 Backup batch utility keywords**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Commands</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>RELOAD</td>
<td>ALL</td>
<td>ALL, ANALYSIS, ENVIRON, STATS</td>
<td>Specify whether to back up or restore a group of repositories in a single execution.</td>
</tr>
<tr>
<td></td>
<td>UNLOAD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATAGROUP</td>
<td>RELOAD</td>
<td>none</td>
<td>datagroupname</td>
<td>Specify a data group to back up.</td>
</tr>
<tr>
<td></td>
<td>UNLOAD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDEX</td>
<td>(use with the DATAGROUP keyword)</td>
<td>none</td>
<td>indexname</td>
<td>Specify (with the DATAGROUP keyword) the index to use during unload or reload. The INDEX keyword is required only if the default index that is used to unload data has errors.</td>
</tr>
<tr>
<td>STOPFUNC</td>
<td>UNLOAD</td>
<td>N</td>
<td>Y, N</td>
<td>Specify whether to STOP the related function of the datagroup that the utility is processing. If you specify STOPFUNC(Y), you must specify RSTFUNC(Y) in the JOB or a manual restart of the function is required.</td>
</tr>
<tr>
<td></td>
<td>RELOAD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSTFUNC</td>
<td>UNLOAD</td>
<td>N</td>
<td>Y, N</td>
<td>Specify whether to restart the related function of the datagroup that the utility is processing. If you specify RSTFUNC(Y), the function is automatically restarted.</td>
</tr>
<tr>
<td></td>
<td>RELOAD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Expanding the repository data group size

You can use the expand batch utility (CPCUTIL) to increase space allocation automatically for repository data groups, based on analysis of the number of extents. The expand function can be run with the backup batch utility or can be run independently to increase repository space.

The expand function analyzes repository data groups to determine whether the maximum extents threshold has been violated. If the number of extents in a data group meets or exceeds the threshold, the function that is associated with the data group is stopped, the data group is rebuilt with an increased space allocation of 20 percent, and the function that is associated with the data group is restarted.

The default value of the maximum extents threshold that is used during execution of the repository management EXPAND command is 200. You can change the default threshold parameter THRESHEXT(XXX) in the CPCxINI file. If you specify a default value less than 5, the original default value (200) is used.

**NOTE**

The maximum extents threshold that is used with the repository management EXPAND command is used exclusively as a repository management threshold. The maximum extents threshold is not related to the Maximum OSAM/VSAM Extents threshold that is defined in the console.

Expanding repositories

To expand repositories, perform the following steps:

1. Specify the EXPAND command in CPCSYSIN.

2. To analyze the number of extents in a data group, modify CPCXUTIL in the sample library.

3. *(optional)* To analyze multiple data groups simultaneously, use the GROUP keyword.

4. Run the CPCUTIL expand function.
Keywords

Table 89 lists keyword options to use with the CPCUTIL expand utility. For sample JCL, see member CPCXUTIL in your sample library.

Table 89 Expand batch utility keywords

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Commands</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>RELOAD</td>
<td>ALL</td>
<td>ALL</td>
<td>Specify whether to back up or restore a group of repositories in a single execution.</td>
</tr>
<tr>
<td></td>
<td>UNLOAD</td>
<td></td>
<td>ANALYSIS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXPAND</td>
<td></td>
<td>ENVIRON</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STATS</td>
<td></td>
</tr>
<tr>
<td>DATAGROUP</td>
<td>RELOAD</td>
<td>none</td>
<td>datagroupname</td>
<td>Specify a data group to back up.</td>
</tr>
<tr>
<td></td>
<td>UNLOAD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXPAND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDEX</td>
<td></td>
<td>none</td>
<td>indexname</td>
<td>Specify (with the DATAGROUP keyword) the index to use during unload or reload. The INDEX keyword is required only if the default index that is used to unload data has errors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORCE</td>
<td>EXPAND</td>
<td>N</td>
<td>Y</td>
<td>Specify whether to expand the group or data group, regardless of the number of extents. If the FORCE keyword is not specified or if FORCE(N) is specified, the number of extents is analyzed to determine threshold violations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>PRIMREC</td>
<td>EXPAND</td>
<td>20%</td>
<td>1 through 99999</td>
<td>Specify the number of records in the primary allocation of the repository for the data group. If a value is not specified, the repository is increased by 20 percent.</td>
</tr>
<tr>
<td>SECREC</td>
<td>EXPAND</td>
<td>20%</td>
<td>1 through 99999</td>
<td>Specify the number of records in the secondary allocation of the repository for the data group. If a value is not specified, the repository is increased by 20 percent.</td>
</tr>
</tbody>
</table>
Maintaining repositories with the CPC SP utility

You can use the CPC stand-alone processing (SP) repository maintenance utility for the following purposes:

- to expand, reload, and perform other maintenance tasks for all types of CPC-managed repositories (including ADV, BRI, FP, and IPT repository types)
- to perform maintenance tasks against the repositories while the CPC subsystem is unavailable

By default, the SP utility is executed automatically whenever the CPC subsystem determines that a repository expansion or software-level migration of repositories is required. You can also request a batch execution of the SP utility as a batch program. The SP utility provides better performance than the standard CPC repository utility (program CPCUTIL) if your repositories are large (500,000 records or more).

Keywords for dynamic allocation of files

The SP utility dynamically allocates the following types of files during repository expansions and migrations:

- one file to contain unloaded repository records
- one file per index to contain unsorted index keys

When the SP utility is executed automatically and must create these files, it uses keywords that are specified on the MIG command in the CPC INI file. Table 90 lists relevant keywords.

Table 90 CPC INIT keywords for dynamically allocating files

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT</td>
<td>unit name</td>
</tr>
<tr>
<td>NUNITS</td>
<td>number of units to allocate</td>
</tr>
<tr>
<td>PRIMCYL</td>
<td>primary space allocation in cylinders</td>
</tr>
<tr>
<td>SECCYL</td>
<td>secondary space allocation in cylinders</td>
</tr>
<tr>
<td>MGMTCLAS</td>
<td>SMS management class</td>
</tr>
<tr>
<td>STORCLAS</td>
<td>SMS storage class</td>
</tr>
<tr>
<td>DATACLAS</td>
<td>SMS data class</td>
</tr>
</tbody>
</table>
Keywords for managing sort processing

To increase the efficiency of repository reloads, the SP utility internally sorts index keys. The utility dynamically allocates sort files for this purpose as the files are needed. Table 91 lists keywords that are relevant to managing the sort process. You can specify these keywords on the MIG command in the CPC INI file.

**Table 91  CPC INIT keywords for managing the sort process**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SORTNUMB</td>
<td>number of sort work files</td>
</tr>
<tr>
<td>SORTMCLS</td>
<td>sort work files management class</td>
</tr>
<tr>
<td>SORTSCLS</td>
<td>sort work files storage class</td>
</tr>
<tr>
<td>SORTDCLS</td>
<td>sort work files data class</td>
</tr>
<tr>
<td>SORTUNIT</td>
<td>sort work files unit name</td>
</tr>
<tr>
<td>SORTCYL</td>
<td>sort work files space allocation number in cylinders</td>
</tr>
</tbody>
</table>

Executing the SP utility automatically

By default, the SP utility is executed automatically whenever the CPC subsystem determines that a repository expansion or software-level migration of repositories is required. The recommended option is to use the default; the SP utility provides best performance and most reliable results.

The SAUTIL keyword of the MIG command in the CPC INI file controls whether the SP utility is used automatically. If persistent failures occur in the SP utility, you can specify SAUTIL(N) to disable the automatic execution of the SP utility and use the standard CPC repository utility instead.

Executing the SP utility in batch

The batch version of the SP utility is executed as program CPCSPUTI.

Requirements for executing the SP utility in batch

Before you execute program CPCSPUTI, ensure that you have a current backup of the repositories to be processed. The SP utility automatic deletes repositories as needed.

For most commands (except as documented in Table 93 on page 462), the repositories to be processed must be offline (the function that is associated with the specified data group must be stopped) or the CPC subsystem must be inactive (stopped).
You can use the following commands:

- To take a data group offline, issue the following command:

  `/bcssid CPC ADV STOP FUNCTION function`

  After the utility execution has completed successfully, issue the following command:

  `/bcssid CPC ADV START FUNCTION function`

- To stop the CPC, issue the following command:

  `/bcssid SHUTDOWN`

  After the utility execution has completed successfully, issue the following command:

  `/S bcssid`

### Sample JCL for executing the SP utility

Figure 79 shows example JCL for executing the SP utility in batch. Member CPCSPUTI of the sample library contains a commented sample.

#### Figure 79  JCL to execute the SP utility in batch

```
//SPUTIL   JOB (acct), 'SPECIAL REPOSITORY UTILITY', CLASS=A, REGION=0M
//STEP1    EXEC PGM=CPCSPUTI
/*
//STEPLIB  DD   DISP=SHR, DSN=bmcLoadLibrary
//CPCINI   DD   DSN=cpcIniLibrary(member), DISP=SHR
//UNLOAD   DD   DSN=unloadDataSet, DISP=(NEW, CATLG),
//  SPACE=(CYL,(50,50)), UNIT=SYSDA
//CPCSYSIN DD   * command keyword(value)
/*

```
JOB and EXEC statements for the SP utility

Specify the JOB statement according to standards for your organization. REGION=0M is recommended.

On the EXEC statement, specify PGM=CPCSPUTI.

DD statements for the SP utility

Table 92 lists DD statements that can be specified in the JCL for executing the SP utility in batch.

Table 92  DD statements for the SP utility

<table>
<thead>
<tr>
<th>DD statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td>The required STEPLIB DD statement identifies the library that contains the CPC executable load modules. If you are running the SP utility to migrate repositories to a new software level, this statement should point to the library that contains the new level of CPC modules.</td>
</tr>
<tr>
<td>CPCINI</td>
<td>The required CPCINI DD statement identifies the data set and member name of the INI file that contains the REP command (which identifies the high level prefix of the repositories that the utility processes) and the MIG command (which defines dynamic allocation and sort options).</td>
</tr>
<tr>
<td>UNLOAD</td>
<td>The UNLOAD DD statement identifies the unload file.</td>
</tr>
<tr>
<td></td>
<td>- If the utility is unloading the repository data (because you have specified the FUNLOAD command) into the unload file, specify the required UNLOAD DD statement to allocate and catalog a new data set with appropriate space parameters:</td>
</tr>
<tr>
<td></td>
<td>//UNLOAD DD DSN=dataSetName,DISP=(NEW,CATLG), // SPACE=(CYL,(nnn,nn)),UNIT=unitName</td>
</tr>
<tr>
<td></td>
<td>- If the utility is reloading repository data from the unload file (because you have specified the FRELOAD or FMIGR command), specify the required UNLOAD DD statement to allocate an existing data set:</td>
</tr>
<tr>
<td></td>
<td>//UNLOAD DD DSN=dataSetName,DISP=(SHR)</td>
</tr>
<tr>
<td></td>
<td>The SP utility can use an existing unload file that was created by the standard CPCUTIL utility.</td>
</tr>
<tr>
<td></td>
<td>- If you are running the SP utility for diagnostic purposes, you can omit the UNLOAD DD statement.</td>
</tr>
<tr>
<td>CPCSYSIN</td>
<td>The required CPCSYSIN DD statement defines a SYSIN-type data set to contain the commands and keywords that control utility functions.</td>
</tr>
</tbody>
</table>
CPCSYIN commands for the SP utility

Table 93 lists commands that you can specify in the CPCSYIN data set to control the SP utility. Commands can apply to all repositories or to repositories for specified data groups; for more information, see “CPCSYIN keywords for the SP utility” on page 463.

Table 93 CPCSYIN commands for the SP utility (part 1 of 2)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDELETE</td>
<td>Use the FDELETE command to delete repositories.</td>
</tr>
<tr>
<td>FDIAG</td>
<td>Use the FDIAG command to obtain diagnostic information about repository data sets in the specified data groups. This command produces the same VSAM statistical information that the FREPT command produces and, in addition, verifies pointers and produces a report on free space blocks. The utility issues error messages to indicate incorrect free space information, pointer verification problems, and thresholds that are exceeded for extents.</td>
</tr>
<tr>
<td>FMIGR</td>
<td>Use the FMIGR GROUP(ALL) command to migrate repositories to new revision levels. (Do not specify the DATAGROUP keyword for this command except at the request of BMC Customer Support.) In most cases, you should allow the CPC to perform the repository migration process automatically. To process the FMIGR command, the utility requires the CPC subsystem to be inactive. The migration is performed as follows:</td>
</tr>
<tr>
<td></td>
<td>■ The utility unloads all repository data to the file that is identified by the UNLOAD DD statement in the JCL.</td>
</tr>
<tr>
<td></td>
<td>■ The utility determines whether the revision level in the software DDEFs matches the DDEF level in the catalog for each repository. (The STEPLIB concatenation must contain the new software level). If the software revision level does not match the repository revision level, the utility rebuilds or migrates the repository to the new software level.</td>
</tr>
<tr>
<td></td>
<td>■ The utility updates the catalog with the new repository data set information.</td>
</tr>
<tr>
<td></td>
<td>If you must restore a repository after using the FMIGR command, you can use the FRELOAD GROUP(ALL) command, change the STEPLIB to the previous level of the software, and specify the original unload file.</td>
</tr>
</tbody>
</table>
Executing the SP utility in batch

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CPCSYSIN keywords for the SP utility

For all commands, you can specify one of the following keywords:

- **GROUP**(type) to process the indicated type of repositories:
  - ALL
  - ANALYSIS
  - ENVIRON
  - STATS

- **DATAGROUP**(dataGroupName) to process repositories for the specified data group

If you omit both of these keywords, the utility uses GROUP(ALL) by default.

If you specify the DATAGROUP keyword, you can also specify the **INDEX**(indexName) keyword to process the specified index for the data group.

Table 93  CPCSYSIN commands for the SP utility (part 2 of 2)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
</table>
| FRELOAD | Use the FRELOAD command to reload repositories. The utility performs the reload as follows:  
- The utility ensures that the revision level in the software DDEFs matches the DDEF level in the catalog.  
- The utility reloads repository data from the file that is identified by the UNLOAD DD statement by using sequential processes.  
- For ESDS space control blocks, the utility builds the blocks before determining their contents. Then the utility updates ending space control blocks with information about the last free record.  
- The utility builds indexes by constructing and writing keys to unsorted key files. Then the utility sorts the keys and writes them sequentially to the indexes.  

You can use the utility to perform high-level and prefix renames by changing the prefix on the REP command in the CPCINI DD. The utility reloads the repositories with the new VSAM names and rename the data set names within the repository catalog. |
| FREPT | Use the FREPT command to obtain VSAM statistical information about repository data sets in the specified data groups. You can request this function while the CPC is active and functions own the specified data groups. |
| FUNLOAD | Use the FUNLOAD command to unload repository data when the CPC subsystem is not active. The utility stores the unloaded repository data in the file that is identified by the UNLOAD DD statement in the JCL.  
You can specify the PTRERROR(ACCEPT) keyword to ignore pointer errors during the unload process. |
Purging repository data

Purging repository data is a way to minimize storage requirements for repositories that store historical information about databases (the STATS data group).

**NOTE**

Repository purge processing does not apply to data for the Recovery Advisor function or the Monitor Recovery function. Because this data has no (or only limited) historic use, it is purged automatically.

BMC recommends that you purge data from repositories daily. You can purge repository data by using the following methods:

- schedule repository purges to occur automatically (recommended)
- use the BMC purge batch utility

Regardless of the method that you use, purges are based on repository management site values. These values are user-defined parameters that let you specify how long to retain statistical information.

When the purge function is executed, repository management site values are evaluated and data that is in excess of the specified site values is deleted from the repositories. For example, if the parameters specify to keep a maximum of 36 monthly records, all but the 36 most current monthly records are purged.

Learning about the PURGE function

The PURGE function helps you manage the size of the repositories by deleting older records.

The repositories store detail records that are evaluated when forecasting exceptions. Detail records are created for a full-function database, a HALDB partition, or a BMC Partition Database Facility (PDF) partition when the following utilities or functions are executed:

- MAXM REORG/Online for IMS
- MAXM REORG/EP for IMS
- MAXM REORG/EP for IMS with Online/Defrag Feature
- MAXM REORG/EP Express for IMS
- UNLOADPLUS/EP
- LOADPLUS/EP
- SECONDARY INDEX UTILITY/EP
Learning about the PURGE function

- POINTER CHECKER PLUS
- Online Defrag (produces the largest records that require the most space)
- Database Advisor FF COLLECT (executed on a schedule that is specified in days or is executed on-demand)

Detail records are created for Fast Path areas and are written in the repository when the following utilities or functions are executed:

- Fast Path Analyzer/EP
- Fast Path Online Analyzer/EP
- any other function in which the Analyze function is also executed (Reorg, Reload, Change, and so on)
- Database Advisor FP COLLECT (executed on a schedule that is specified in days or is executed on demand)
- Database Advisor FP SPACE COLLECT (executed on a schedule that is specified in hours)

When the PURGE function is executed, the amount of data that is purged depends on the values of the following parameters (which are edited by selecting Configuration => Maintain Parameters => Repository Management):

- The Maximum Monthly Records parameter value controls the cumulative summary of detail records that are written the first day of the month. The default value is 25.
- The Maximum Yearly Records parameter controls the cumulative summary of monthly records that are written the first day of the year. The default value is 7.
- The Maximum Stats Detail Records parameter controls the maximum number of detail records that are kept for a database, partition, or area (excluding records that are created by the FP SPACE COLLECT function). The default value is 10.
- The Detail Record Retention (days) parameter controls the number of days that detail records are retained. The default value is 32.

The PURGE function deletes detail records for a database, partition, or area if either of the following conditions occurs:

- The date of the detail record is older than the number of days that is specified for the Detail Record Retention (days) parameter.
- The repository contains more detail records than the number that is specified for the Maximum Stats Detail Records parameter (excluding records that were created by the FP SPACE COLLECT function).
The PURGE function deletes all detail records with a date/timestamp that is older than the date/timestamp of the detail record which meets the Maximum Stats Detail Records value.

For example, if the value of the Maximum Stats Detail Records parameter is 50 and the value of the Detail Record Retention (days) parameter is 25, the PURGE function deletes the following records:

- detail records with dates that are older than 25 days
- detail records (including the ones that were created by the FP SPACE COLLECT function) with dates/timestamps that are older than the fiftieth detail record

**Scheduling repository purges**

You can automate repository purges by scheduling the purge function in the console to run on a routine basis. You can set the frequency, the start time, and the end time for the function.

---

**NOTE**

When the PURGE function is executed, an internal function is scheduled to purge (delete) data from the repository. The PURGE function should be scheduled to execute after a repository backup.

By default, the purge function is scheduled to occur daily between 1:00 A.M. and 4:00 A.M. If the purge function does not start between 1:00 A.M. and 4:00 A.M., it is scheduled for the next execution of the function.

To schedule the purge function, perform the following steps:

1. In the Navigation window, right-click the IMSPLEX object and choose Configuration => Schedules.

2. In the Schedules window, double-click the PURGE function table row.

3. In the Edit Schedules dialog box, specify parameters and click Save.
Using the purge batch utility

You can use the purge batch utility to purge repository data from the STATS data group as an alternative to scheduling the PURGE function in the console. Member CPCRPURG in the sample library contains sample JCL.

Figure 80 shows sample purge JCL.

**Figure 80  Sample purge JCL**

```
/*
//PREPURG EXEC PGM=DLIAPURG
//STEPLIB DD DISP=SHR,DSN=BMC.DBU.LOAD
//MDALIB DD DISP=SHR,DSN=DYNAMLIB.DSN
//RECON1 DD DISP=SHR,DSN=RECON1.DSN
//RECON2 DD DISP=SHR,DSN=RECON2.DSN
//RECON3 DD DISP=SHR,DSN=RECON3.DSN
//TEMPDSN DD DSN=&&TEST,DISP=(,PASS,DELETE).UNIT=SYSDA,
//   SPACE=(CYL,(1,1))
//PURGE EXEC PGM=DLIADVIS
/*
//STEPLIB DD DISP=SHR,DSN=BMC.DBU.LOAD
//SYSPRINT DD SYSOUT=* 
//SYSIN DD DSN=&&TEST,DISP=(OLD,DELETE)
/*
```

Synchronizing database registration information

For Database Advisor, synchronizing database registration information with the information that is stored in the repositories ensures that repository data reflects only the most current state of databases.

The database registration synchronization function compares the current state of a database with registered database information and determines whether data has been added, deleted, or changed. If any information is different, Database Advisor synchronizes the information by updating the repositories with current state information. All updates are reported to the CPCLOG.
BMC recommends that you synchronize database registration information daily. You can synchronize database registration information by using one of the following methods:

- schedule database registration synchronization to occur automatically (recommended)
- use the BMC database registration synchronization batch utility

The only difference between methods is that the batch utility provides an option to report the differences to the CPCLOG without updating repositories automatically with current state information.

**Using database registration synchronization versus database registration**

The difference between synchronizing database registration information and registering databases with Database Advisor is that database registration synchronization is more of a product administration function that should be run on a routine basis. Synchronization allows Database Advisor to add, change, and delete information from the repositories so that the repositories reflect all (and only) current information. When you register a database with Database Advisor by selecting the Register object menu command, information is added only to the repositories.

**Scheduling database registration synchronization**

You can automate database registration synchronization by scheduling the function in the console to run on a routine basis. You can set the frequency, the start time, and the end time for the function.

By default, the database registration synchronization function is scheduled to occur daily between 1:00 A.M. and 4:00 A.M. If the synchronization function is not complete by 4:00 A.M., the function stops and resumes (where it stopped) the next day at 1:00 A.M.

To schedule the database registration synchronization function, perform the following steps:

1. In the Navigation window, right-click the IMSPLEX object and choose Configuration => Schedules.
2. In the Schedules window, double-click the DBSYNCH function table row.
3. In the Edit Schedules dialog box, specify parameters and click **Save**.

### Using the database registration synchronization batch utility

You can use a batch utility (CPCBATCH) to synchronize database registration information as an alternative to scheduling the DBSYNCH function in the console. Member CPCRUTIL in the sample library contains sample JCL.

### JCL requirements

**Table 94** lists DD statements that are required for execution of the database registration synchronization batch utility.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEC</td>
<td>Specify PGM=CPCBATCH.</td>
</tr>
<tr>
<td>STEPLIB</td>
<td>Describe the CPC library containing the CPC load library.</td>
</tr>
<tr>
<td>CPCSYSIN</td>
<td>Define the data set containing control statements for commands and keywords that execute CPC batch functions.</td>
</tr>
<tr>
<td>CPCLOG</td>
<td><em>(optional)</em> Specify where you want the CPC message log.</td>
</tr>
</tbody>
</table>

**Figure 81** shows sample JCL for the database synchronization batch utility.

**Figure 81** Database registration synchronization batch utility sample JCL

```plaintext
//JOBCARD JOB
//GENJCL EXEC PGM=CPCBATCH
//STEP LIB DD DISP=SHR,DSN=BMCCPC.XXX.LOAD
//JCLPDS DD DISP=SHR,DSN=BMCCPC.GENJCL.CNTL
//CPCSYSIN DD *
  SYNCHDB RECON_DSN(yourims.RECON1) -
    UPDATE(Y)
/*
```

**NOTE**

For details about CPCSYSIN control statement syntax, see “CPCSYSIN control statement syntax” on page 470.
Keywords

Table 95 lists keywords that are used to control processing.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Commands</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECON_DSN</td>
<td>SYNCHDB</td>
<td>none</td>
<td>(RECON1 data set name)</td>
<td>Specify the RECON data set name for the IMS system to synchronize.</td>
</tr>
<tr>
<td>UPDATE</td>
<td>SYNCHDB</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to update the repositories with current state information. Specify N to report differences only.</td>
</tr>
</tbody>
</table>

CPCSYSIN control statement syntax

The control statement data set must have the ddname CPCSYSIN and must contain 80-character fixed-length records. A command can have keywords and comments, separated where necessary with separators and continuation characters (if statements continue to the next line). You can enter commands anywhere in positions 1 through 72 of the input statement (positions 73 through 80 are ignored).

Commands

The control statement must begin with a valid command. A separator must follow a command.

Keywords

Keywords follow a command and invoke options. All keywords are non-positional. You specify a keyword with a value following it in parentheses. The keyword value can be any character string up to 255 characters. All alphanumeric and special characters are allowed.

Comments

Comments consist of an alphanumeric character string beginning with a slash-asterisk (/*) and ending with an asterisk-slash (*/). Comments cannot start in position 1 of an input statement.

Separators

When you require a separator, use a blank, a comma, or a comment. More than one separator is allowed between keywords. Do not use a separator between a keyword and its value.
Continuation characters

Valid continuation characters are the plus sign (+) and the minus sign (-). Use them to continue control statements and comments that do not fit on a single line of input. The continuation character must be the last nonblank character. Use the continuation characters as follows:

- Use the plus sign (with no spaces before it) to continue values for a single keyword to a second line (or subsequent lines). The plus sign deletes leading separators from the continued line.

- Use the minus sign (with a space before it) to continue a list of keywords for a single command. The minus sign does not delete leading separators from the continued line.

Importing repository data from a PDX

The DLIARPDX utility imports data from a PDX into the Advisor repositories. The utility is a conversion tool that lets you move your historical data to the repositories, so that the features in Database Advisor and the DBA toolkit can start making decisions immediately that are based on that data.

Auto Configure must be run in the console before the data from a PDX is imported. The import utility checks the repositories to ensure that a database is registered and that history data has been requested before a repository imports data. This check ensures that obsolete data which may reside in the PDX is not imported to the repository.

A PDX may contain data for one or more IMS systems and for one or more types of utilities. The user must choose the data to import. The repositories identify data for a particular IMS system by means of the RECONs that the system uses. The PDX identify data for a particular IMS by IMS ID. The user is responsible for providing the RECON1 data set that corresponds to the IMS IDs which are being imported.

The import utility is intended to run once for any specified type of data. If you try to import the same data twice, inserts to the repository fail. Repository data is not updated or replaced.
JCL requirements

Member #MXAIMP in the sample library contains JCL to import PDX data into the repositories. Figure 82 shows the required JCL.

Figure 82 Importing repository data JCL

```
//DLIARPDX EXEC PGM=DLIARPDX
//STEPLIB DD DISP=SHR,DSN=your.BMC.LOADLIB
//SYSPRINT DD SYSOUT=* 
//CPCLOG DD SYSOUT=* 
//RECON1 DD DISP=SHR,DSN=your.RECON1 
//PDX DD DISP=SHR,DSN=your.PDX 
//PLUSIN DD * 
```

Table 96 lists DD statements that can be used to import data.

**Table 96 Database importation batch utility JCL statements**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td><em>(optional)</em> Specify the data set name of the BMC load library where DLIARPDX resides.</td>
</tr>
<tr>
<td>CPCLOG</td>
<td><em>(optional)</em> Specify where to store messages regarding the success or failure of the job.</td>
</tr>
<tr>
<td>SYSPRINT</td>
<td><em>(optional)</em> Specify where to store messages regarding the data read from the input PDX.</td>
</tr>
<tr>
<td>RECON1</td>
<td>Specify the RECON1 data set that corresponds to the IMS IDs in the PDX that is being imported.</td>
</tr>
<tr>
<td>PDX</td>
<td>Specify the input PDX from which you want to import data. The data in the PDX is not deleted or altered.</td>
</tr>
<tr>
<td>PLUSIN</td>
<td><em>(optional)</em> Specify input control cards.</td>
</tr>
</tbody>
</table>

Required control cards are exactly the same as the cards that are used to extract data from a PDX. For control card requirements and examples, see the *IMS Database Supplemental Utilities Reference Manual*. 
Keywords

The FUNC keyword is required. To import more than one type of data in the same run, you can specify multiple control cards. The IMSID keyword is optional and limits imported data to data from just the specified IMS system. The user must specify the IMS ID which corresponds to the RECON1 DD that is specified in the JCL. As an option, you can specify a particular DBD to be imported or limit the amount of data, based on dates.

The only output from DLIARPDX is a list (in the CPCLOG) of which PDX extract records were imported to the repository and which records were rejected.

Importing Fast Path repository data

The MXA_FASTPATH_IMPORT subcommand (included in the Fast Path PFPEPR00 repository maintenance utility) is used with the PROCESS_EPR command to import data from the Fast Path repository into Advisor repositories. This subcommand lets you move historical data to the Advisor repositories, providing Database Advisor and the DBA Toolkit with access to more data for greater forecasting and analysis capability.

Database Advisor stores data by the IMS system. Advisor repositories identify data for a particular IMS system by using the RECONs that the system uses. You must provide the RECON data set name that represents the group or IMS ID for the data that is being imported.

The MXA_FASTPATH_IMPORT subcommand lets you select the data to be imported from the Fast Path repository. You can select data by using any of the following criteria:

- Fast Path repository group
- DBD name
- area name, date, or both
- range of dates that the data was collected

**NOTE**

The import process may run only once for any selected data. If you try to import a record after it has been imported successfully, the record is not selected for processing again. As a result, the previously inserted repository data is not updated or replaced.
Data that is selected by the import process is stored as History Space records and Performance records (detail records for the area and summary records for the database). This information is displayed in the Database History report and the Area History report. For more information, see the *Database Products for IMS Advisors and Toolkit User Guide* and the online Help.

For each record that is selected by the import process, a message indicates whether or not the record was imported successfully. These messages are generated from the PFPEPR00 batch utility when the MXA_FASTPATH_IMPORT subcommand is used with the PROCESS_EPR command.

For more information about the Fast Path repository, the PFPEPR00 batch utility, and the PROCESS_EPR command, see the *Fast Path Offline Suite User Guide*.

### Considerations

The following considerations apply to the import of Fast Path repository data to Advisor repositories:

- For the Fast Path repository import process to work, a connection must be made to the appropriate Advisor Cross Product Connectivity (CPC) address space. If a connection is not made to the Advisor repository, the import process fails.

  During the connection process, message BMC11006I is generated, indicating whether or not the CPC logon was successful:

  ```
  BMC11006I *.*: CPC LOGON from/to xxxx completed successfully - date time
  ```

  **NOTE**

  The job for the import process must run on the same operating system image where the Advisor started task is running.

- Fast Path records that are selected during the import process are imported into the Advisor repository that the program connects to.

- BMC recommends that the DBD or area of the records to be imported be registered within the Advisor repository. If the DBD or area is not registered, the data that is imported for the unregistered databases is deleted when the Purge utility is run and cannot be viewed in Database Advisor.
JCL requirements

Figure 83 is an example of the JCL that is required to import Fast Path data into Advisor repositories by using the PROCESS_EPR command with the MXA_FASTPATH_IMPORT subcommand.

Figure 83  Importing Fast Path repository data JCL

```
//PFPEPR00 EXEC PGM=PFPEPR00
//STEPLIB DD DISP=SHR,DSN=PF.PLOAD
//         DD DISP=SHR,DSN=IMS.RESLIB
//PFPSYSIN DD *
  PROCESS_EPR REPOSITORY_DSNAME='PFP.PFPEPR'
  MXA_FASTPATH_IMPORT
    STATISTICS,
    RECON_DSNAME=recon-dsname,
    [SELECT_GROUP=group-mask,]
    [SELECT_DBD=dbdname-mask,]
    [SELECT_AREA=areaname-mask,...),]
    [SELECT_DATE=(start-date],[stop-date]),]
```

DD statements

Table 97 lists DD statements that can be used to import Fast Path repository data.

Table 97  Fast Path database importation JCL statements

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td>Specify the data set name of the IMS RESLIB library and the BMC load library where PFPEPR00 resides. The STEPLIB DD statement identifies the libraries containing Fast Path/EP load modules (the Fast Path/EP library that was allocated and unloaded during installation) and the IMS RESLIB. The statement also identifies any libraries that are used for dynamic allocation. Note: All data sets in this concatenation must be APF authorized.</td>
</tr>
<tr>
<td>PFPSYSIN</td>
<td>Specify the PFPSYSIN DD statement to identify the input control statement data set that specifies Fast Path/EP functions. The PFPSYSIN DD statement can be specified as a standard SYSIN file, a sequential data set, or a PDS member.</td>
</tr>
</tbody>
</table>
Commands and subcommands

Table 98 lists commands and subcommands that can be used to import Fast Path repository data.

Table 98  Fast Path database importation batch utility commands and subcommands

<table>
<thead>
<tr>
<th>Command or subcommand</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCESS_EPR</td>
<td>Use the PROCESS_EPR command to specify the Fast Path repository data set to be processed by the import utility.</td>
</tr>
<tr>
<td>MXA_FASTPATH_IMPORT</td>
<td>Use the MXA_FASTPATH_IMPORT subcommand to import data from the selected Fast Path repository catalog data set to Advisor repositories.</td>
</tr>
</tbody>
</table>

Keywords

Table 99 lists keywords and parameters that can be used with the MXA_FASTPATH_IMPORT subcommand to import Fast Path repository data into the Advisor repositories.

Table 99  Fast Path database importation batch utility keywords (part 1 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPOSITORY_DSNAME</td>
<td>Specify the name of the Fast Path repository to import data from. This keyword identifies the name of the Fast Path repository to be processed by the PROCESS_EPR command.</td>
</tr>
<tr>
<td>STATISTICS</td>
<td>Specify this parameter to import statistics from the Fast Path repository to Advisor repositories.</td>
</tr>
<tr>
<td>RECON_DSNAME</td>
<td>Specify the data set name that is used for RECON1, RECON2, or RECON3 within the IMS subsystem, containing the databases to be imported. The RECON data set name is used to form part of the key for Advisor repository records. If the RECON data set is not found in the Advisor repository, the following message is generated:</td>
</tr>
<tr>
<td></td>
<td>BMC110409E RECON_DSNAME=&quot;dsname&quot; is not found in MXA repository - return code=returncode</td>
</tr>
<tr>
<td></td>
<td>As a result, processing terminates and no data import is performed.</td>
</tr>
<tr>
<td>SELECT_GROUP</td>
<td>(optional) Select the repository records where the repository group matches the specified 1-character to 4-character group mask. Wildcard characters * and ? can be included.</td>
</tr>
<tr>
<td>SELECT_DBD</td>
<td>(optional) Select the repository records where the database name matches the specified 1-character to 8-character dbdname mask. Wildcard characters * and ? can be included.</td>
</tr>
</tbody>
</table>
DLIAXTRC is a utility that extracts data from the repositories and produces a file in the same format as the PDX Extract utility, DBUXRPT1. Although the extract file is in the same format, the data content differs slightly because the EXTRACT keyword controls the extract file format. You may run the extract utility as often as you want. The data in the repositories is not affected by running an extract.

Member #MXAEXT in your sample library contains JCL to extract data from the repositories. Figure 84 shows required JCL.

Table 100 lists DD statements that can be used to extract data.

### Table 99  Fast Path database importation batch utility keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT_AREA</td>
<td><em>(optional)</em> Select the repository records where the area name matches the specified 1-character to 8-character areaname mask. Wildcard characters * and ? can be included.</td>
</tr>
<tr>
<td>SELECT_DATE</td>
<td><em>(optional)</em> Select the Fast Path repository records where the run date falls between the start date and the stop date. If the start date is omitted, the default format 0000.000 is used. If the stop date is omitted, the default format 9999.366 is used.</td>
</tr>
</tbody>
</table>

### Extracting repository data

Table 100 lists DD statements that can be used to extract data.

Table 100  Database extraction batch utility JCL statements (part 1 of 2)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td><em>(optional)</em> Specify the data set name of the BMC load library where DLIAXTRC resides.</td>
</tr>
<tr>
<td>CPCLOG</td>
<td><em>(optional)</em> Specify where to store messages regarding the success or failure of the job.</td>
</tr>
<tr>
<td>RECON1</td>
<td>Specify the RECON1 data set that corresponds to the IMS environment from which you want to extract data.</td>
</tr>
</tbody>
</table>
Table 100  Database extraction batch utility JCL statements (part 2 of 2)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDXOUT</td>
<td>Specify the output extract data set. This is a VB data set with a logical record length up to 320. The block size may be any value greater than 324.</td>
</tr>
<tr>
<td>PLUSIN</td>
<td>Specify input control cards.</td>
</tr>
</tbody>
</table>

Figure 85 shows a sample control card.

Figure 85  Extracting repository data control card sample

```
PDXTRACT FUNC(function) +
    DBD(dbdname) +
    DBGROUP(dbgroup) +
    EXTRACT(PDXCOMP) + or
        (EXPANDED) +
    DATE(LAST) or
        (YYMMDD(from,to))
```

Table 101 lists keywords that are used to control extraction processing.

Table 101  Database extraction batch utility keywords (part 1 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDXTRACT</td>
<td>Specify the command verb.</td>
</tr>
<tr>
<td>FUNC</td>
<td>Identify the type of data to extract. The following values are valid:</td>
</tr>
<tr>
<td></td>
<td>RELOAD</td>
</tr>
<tr>
<td></td>
<td>LOAD</td>
</tr>
<tr>
<td></td>
<td>UNLOAD</td>
</tr>
<tr>
<td></td>
<td>PTRCHK</td>
</tr>
<tr>
<td></td>
<td>SECINDEX</td>
</tr>
<tr>
<td></td>
<td>DBSCAN</td>
</tr>
<tr>
<td></td>
<td>SPACE</td>
</tr>
<tr>
<td></td>
<td>VOLUME</td>
</tr>
<tr>
<td>DBD</td>
<td>(optional) Specify the DBD from which to extract data. If this keyword is omitted, data is extracted for all DBDs.</td>
</tr>
<tr>
<td>DBGROUP</td>
<td>(optional) Specify the database group for which to extract data. If this keyword is omitted, data is extracted for all DBDs.</td>
</tr>
</tbody>
</table>
The PDXOUT data set contains data that has been extracted from the repositories. There is no SYSOUT type of output.

If HALDB and PDF data is not extracted, the extract file is in the same format as an extract file from a PDX. Record layouts for this data are in sample library member DBUCOBEK or SASSTATS. Data content during extraction from a repository is different, compared to extraction from a PDX.

Table 102 lists data content differences.

Table 101 Database extraction batch utility keywords (part 2 of 2)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>(optional) Specify the dates for which data is extracted. The following formats are valid:</td>
</tr>
<tr>
<td></td>
<td>- LAST—extract data from the last occurrence of the data type that is requested</td>
</tr>
<tr>
<td></td>
<td>- YYMMDD(from,to)—extract data within the date range that is specified</td>
</tr>
<tr>
<td></td>
<td>The date is specified in Gregorian format. The to field is optional.</td>
</tr>
<tr>
<td>EXTRACT</td>
<td>(optional) Specify the file format of the extracted data file. The following values are valid:</td>
</tr>
<tr>
<td></td>
<td>- PDXCOMP—produces an extract file in the same format as data from a PDX. HALDB and PDF data is not broken down at the partition level.</td>
</tr>
<tr>
<td></td>
<td>- EXPANDED—produces HALDB and PDF data at a partition level, as well as other fields and records that are only available from the repositories. The resulting extract file has the partition name as part of the key of every record. All other fields are shifted 8 bytes to the right.</td>
</tr>
<tr>
<td></td>
<td>If this keyword is omitted, the extracted data file is in the PDXCOMP format.</td>
</tr>
</tbody>
</table>

The PDXOUT data set contains data that has been extracted from the repositories. There is no SYSOUT type of output.

If HALDB and PDF data is not extracted, the extract file is in the same format as an extract file from a PDX. Record layouts for this data are in sample library member DBUCOBEK or SASSTATS. Data content during extraction from a repository is different, compared to extraction from a PDX.

Table 102 Extracting repository data differences (part 1 of 2)

<table>
<thead>
<tr>
<th>Record type</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>all types</td>
<td>position 1</td>
</tr>
<tr>
<td></td>
<td>There are fewer record types in the repository. All types of load data are record type RS. All types of unload data are record type US. All types of pointer checker data are record type KS. All types of secondary index data are record type XB.</td>
</tr>
<tr>
<td></td>
<td>position 3</td>
</tr>
<tr>
<td></td>
<td>The IMS ID is blank. The IMS ID is not stored in the repository.</td>
</tr>
<tr>
<td>13, 14, 16, 21, 25, 51</td>
<td>not produced</td>
</tr>
<tr>
<td></td>
<td>The data in these records is not stored in the repository.</td>
</tr>
<tr>
<td>20</td>
<td>FSE fields starting in position 163 are blank. This data is not stored in the repository.</td>
</tr>
<tr>
<td>22</td>
<td>Fields SYNCHN12, SYNCHN13, SYNCHN14, and SYNCHN15 are blank.</td>
</tr>
<tr>
<td>30</td>
<td>FSE fields starting in position 125 are blank. This data is not stored in the repository.</td>
</tr>
</tbody>
</table>
Cleaning up repository data

You can clean up repository data by using a batch utility (CPCBATCH) with the PURGE command. This utility cleans up orphan records and historical data of unregistered DBDs in the repository.

JCL requirements

Table 103 lists JCL statements for the database clean up batch utility.

Table 103 Database cleanup batch utility JCL statements

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEC</td>
<td>Specify PGM=CPCBATCH.</td>
</tr>
<tr>
<td>STEPLIB</td>
<td>Describe the CPC library containing the CPC load library.</td>
</tr>
<tr>
<td>CPCSYSIN</td>
<td>Define the data set containing control statements for commands and keywords that execute CPC batch functions.</td>
</tr>
<tr>
<td>CPCLOG</td>
<td><em>(optional)</em> Specify where you want the CPC message log.</td>
</tr>
</tbody>
</table>

Figure 86 shows sample JCL for the database cleanup batch utility.

Figure 86 Database cleanup batch utility sample JCL (part 1 of 2)

```plaintext
//JOBCARD JOB
//CLEANDB1 EXEC PGM=CPCBATCH,TIME=1439
//STEPLIB DD DISP=SHR,DSN=BMC.LOAD
//CPCSYSIN DD *
PURGE RECON_DSN(YOUR.RECON1) -
```
Table 104 Database cleanup batch utility keywords (part 1 of 3)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECON_DSN</td>
<td>PURGE</td>
<td>none</td>
<td>(RECON1 data set name)</td>
<td>Specifies the RECON data set name for the IMS system to clean up.</td>
</tr>
<tr>
<td>DBDNAME</td>
<td>PURGE</td>
<td>none</td>
<td>DBD name</td>
<td><em>(optional)</em> If DBDNAME is specified, the database is unregistered and the requested information is deleted with the orphaned information. If you would like a general cleanup of the repository (all orphaned records removed) do not use DBDNAME or DBGROUP keywords.</td>
</tr>
<tr>
<td>PARTNAME</td>
<td>PURGE</td>
<td>none</td>
<td>partition name or area name</td>
<td><em>(optional)</em> Specifies the partition or area name for which to delete information in the database. If the database is partitioned or Fast Path and no partition or area name is specified, all information for the database is deleted.</td>
</tr>
<tr>
<td>AREANAME</td>
<td>PURGE</td>
<td>none</td>
<td>area name</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**

For details about CPCSYSIN control statement syntax, see “CPCSYSIN control statement syntax” on page 470.
### Table 104  Database cleanup batch utility keywords (part 2 of 3)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBGROUP</td>
<td>PURGE</td>
<td>none</td>
<td>group name</td>
<td><em>(optional)</em> Specifies a DB group to delete information about. The DBGROUP keyword removes registration related records for all databases in the group. If you would like a general cleanup of the repository (all orphaned records removed) do not use DBGROUP or DBDNAME keywords.</td>
</tr>
<tr>
<td>OPINFO</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete OPINFO type records. The OPINFO keyword removes JCL generation parameters for the selected objects. If you do not want to delete OPINFO type records, specify N.</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete THRESHOLD type records. The THRESHOLD keyword removes thresholds set for the selected objects. Note: Recovery Advisor thresholds are not removed. To remove them, use the BRI_OBJECTS keyword. If you do not want to delete THRESHOLD type records, specify N.</td>
</tr>
<tr>
<td>ADV_SETTINGS</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete ADV_SETTINGS type records. The ADV_SETTINGS keyword removes analysis and data collection type settings for the selected object. If you do not want to delete ADV_SETTINGS type records, specify N.</td>
</tr>
<tr>
<td>BASE_VALUES</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete BASE_VALUES type records. The BASE_VALUES keyword removes base value records for the selected object. If you do not want to delete BASE_VALUES type records, specify N.</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete EXCEPTION type records. The EXCEPTION keyword removes exception records for the selected object. Note: Recovery Advisor thresholds are not removed. To remove them, use the BRI_OBJECTS keyword. If you do not want to delete EXCEPTION type records, specify N.</td>
</tr>
</tbody>
</table>
### Cloning repository data

The cloning process is a batch feature that you can use to duplicate parameters (threshold values, goals and site values) for multiple IMSPLEXes which have similar database or partition structures.

The cloning process offers the following methods for using established parameters:

- You can clone data within the same Advisor system to a new IMSPLEX.
- You can export data to a sequential data set and then import the sequential data to a different Advisor system and IMSPLEX.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Default</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HISTORY</td>
<td>PURGE</td>
<td>N</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete HISTORY type records. The HISTORY keyword removes historical data for the selected object. If you do not want to delete HISTORY type records, specify N.</td>
</tr>
<tr>
<td>BRI_OBJECTS</td>
<td>PURGE</td>
<td>Y</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete BRI_OBJECT type records. The BRI_OBJECTS keyword removes Recovery Advisor thresholds and exceptions for the selected object. If you do not want to delete BRI_OBJECT type records, specify N.</td>
</tr>
<tr>
<td>GROUPLEVEL</td>
<td>PURGE</td>
<td>N</td>
<td>Y, N</td>
<td><em>(optional)</em> Specify Y to delete GROUPLEVEL records when all records below it are deleted. If you perform a general clean up with GROUPLEVEL(Y), all group level records for groups that are not an owning group are deleted. The GROUPLEVEL option is not used when a DBGROUP or DBDNAME are specified because if the DBGROUP or DBDNAME are specified records are checked before deletion and the check is for the DBDNAME and PARTNAME only. If you do not want to delete GROUPLEVEL records, specify N.</td>
</tr>
</tbody>
</table>

#### Table 104 Database cleanup batch utility keywords (part 3 of 3)

**Keyword** | **Command** | **Default** | **Accepted values** | **Description**
--- | --- | --- | --- | ---
HISTORY | PURGE | N | Y, N | *(optional)* Specify Y to delete HISTORY type records. The HISTORY keyword removes historical data for the selected object. If you do not want to delete HISTORY type records, specify N. |
BRI_OBJECTS | PURGE | Y | Y, N | *(optional)* Specify Y to delete BRI_OBJECT type records. The BRI_OBJECTS keyword removes Recovery Advisor thresholds and exceptions for the selected object. If you do not want to delete BRI_OBJECT type records, specify N. |
GROUPLEVEL | PURGE | N | Y, N | *(optional)* Specify Y to delete GROUPLEVEL records when all records below it are deleted. If you perform a general clean up with GROUPLEVEL(Y), all group level records for groups that are not an owning group are deleted. The GROUPLEVEL option is not used when a DBGROUP or DBDNAME are specified because if the DBGROUP or DBDNAME are specified records are checked before deletion and the check is for the DBDNAME and PARTNAME only. If you do not want to delete GROUPLEVEL records, specify N. |
Unload backups

The cloning process is physical; consequently, minimal validation is performed on the data that is cloned. BMC recommends that you unload the IMSPLEX data groups before performing either method of the cloning process. The following data groups should be unloaded:

- If you are cloning site values, you should unload the following data groups:
  - OP_INFO
  - OP_DSNLIST
  - OP_VARS
  - OP_PROD

- If you are cloning threshold values, you should unload the THRESHOLD_VALUES data group.

Clone method

The clone method occurs within a single Advisor system. Data group information is read from IMSPLEXA data groups and is inserted into IMSPLEXB data groups. IMSPLEXA and IMSPLEXB cannot be the same.

The clone method process includes the following steps:

1. The information in IMSPLEXB data groups is deleted.
2. The information in IMSPLEXA data groups is read.
3. Mask information is applied.
4. Data group information that was copied from IMSPLEXA data groups is inserted into IMSPLEXB data groups.

NOTE

Mask commands are provided to alter the database group name, the database name, and the partition name of the data that is cloned or exported.
Export/import method

To perform the export/import method, Advisor systems that are involved in the process must be operational and you must have completed Auto Configure for those systems. The Advisor system being exported from and subsequently being imported to may be the same Advisor system.

The export/import method is performed by exporting information from IMSPLEXA data groups and importing the information into IMSPLEXB data groups.

The export/import method process involves the following steps:

1. The export batch job connects to the IMSPLEXA Advisor system.
2. IMSPLEXA data group information is read and is written to a physical sequential data set. The physical sequential data set is used as input for the import process.
3. The import batch job connects to the IMSPLEXB Advisor system.
4. The information in IMSPLEXB data groups is deleted (if INCLUDE and EXCLUDE commands are not present).
5. Mask information is applied.
6. Data group information that was exported from IMSPLEXA data groups is inserted into IMSPLEXB data groups in its entirety or by selected values (using INCLUDE and EXCLUDE commands).

Return codes and messages

Table 105 lists return codes for the cloning process.

<table>
<thead>
<tr>
<th>Return Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>successful completion</td>
</tr>
<tr>
<td>8</td>
<td>indicates a parameter error on the supplied CPCSYSIN or a missing DD statement</td>
</tr>
<tr>
<td>16</td>
<td>result of a communication failure with the Advisor address space or an undetermined I/O error processing the IMSPLEX data group</td>
</tr>
</tbody>
</table>
The following sample messages are generated after successful performance of the export/import method:

BMC251837I 11 records imported into data group 'THRESHOLD_VALUES'
BMC251837I 6 records exported from data group 'OP_INFO'

The following sample messages indicate syntax errors in the cloning process:

NO TORECON OR FROMRECON WAS SPECIFIED TERMINATING
RECONS CANNOT BE THE SAME NAME ON A CLONE, UTILITY IS TERMINATING

### JCL requirements

Figure 87 shows sample JCL for the clone method (PGM=CPCTCLON).

#### Figure 87  Sample JCL for the clone method

```plaintext
//Jobname JOB (ACCT#).Name,MSGCLASS=X,CLASS=Q,
 //          NOTIFY=&SYSUID
 //*
//Stepname EXEC PGM=CPCTCLON
//STEPLIB DD DISP=SHR,DSN=BMC.LOAD
//SYSUDUMP DD SYSOUT=* 
//CPCLOG DD SYSOUT=* 
//CPCTRACE DD SYSOUT=* 
//CPCMSG DD SYSOUT=* 
//BMCMSG DD SYSOUT=* 
//CPC$xxxx DD DUMMY 
//CPCSYSIN DD * 
CLONE FROMRECON(xxxxxxxx.RECON1) +
   TORECON(yyyyyyyy.RECON1) +
   DGNAME(THRESHOLD_VALUES) 
MASK OLDDBDNAME(CUSTOMER) NEWDBDNAME(CUSTXXXX) 
MASK OLDDBDNAME(CUSTOME1) NEWDBDNAME(CUSTYYYY) 
MASK OLDDBGROUP(CUSTOME*) NEWDBGROUP(****YYYY) 
MASK OLDDBGROUP(ALL) NEWDBGROUP(ZZZZ) 
/*
```

The following DD statement requirements apply to the clone method:

- CPC$xxxx DD can be used to override the default and connect to a specific Advisor system.

- CPCSYSIN DD is for the command input.

---

*Database Products for IMS Configuration Guide*
Figure 88 shows sample JCL for the batch export job (PGM=CPCTCLON).

**Figure 88  Sample JCL for the batch export job**

```java
//Jobname         JOB   (ACCT#),Name,MSGCLASS=X,CLASS=Q,
//                NOTIFY=&SYSUID
//*
//CPCTEST EXEC PGM=CPCTCLON
//STEPLIB DD DISP=SHR,DSN=BMC.LOAD
//SYSUDUMP DD SYSOUT=*  
//CPCLOG DD SYSOUT=*  
//CPCTRACE DD SYSOUT=*  
//CPCMSG DD SYSOUT=*  
//BMCMSG DD SYSOUT=*  
//CPC$xxxx DD DUMMY
//CPCSYSIN DD *
//EXPORT FROMRECON(xxxxxxxx.RECON1)   +
//  TORECON(yyyyyyyy.RECON1)        +
//  DGNAME(THRESHOLD_VALUES)
/*
//CPCEXPRT DD DSN=xxxxxxxx.clonthre.EXPORT,DISP=(NEW,CATLG),
//  UNIT=xxxxxx,SPACE=(CYL,(5,1)),DCB=(BLKSIZE=15000)
```

The following DD statement requirements apply to the batch export job:

- CPC$xxxx DD can be used to override the default and connect to a specific Advisor system.
- CPCSYSIN DD is for the command input.
- CPCEXPRT DD describes the physical sequential data set to which data is written.

**Figure 89  Sample JCL for the batch import job (part 1 of 2)**

```java
//Jobname         JOB   (ACCT#),Name,MSGCLASS=X,CLASS=Q,
//                NOTIFY=&SYSUID
//*
//CPCTEST EXEC PGM=CPCTCLON
//STEPLIB DD DISP=SHR,DSN=BMC.LOAD
//SYSUDUMP DD SYSOUT=*  
//CPCLOG DD SYSOUT=*  
//CPCTRACE DD SYSOUT=*  
//CPCMSG DD SYSOUT=*  
//BMCMSG DD SYSOUT=*  
//CPC$xxxx DD DUMMY
//CPCSYSIN DD *
//IMPORT FROMRECON(RCNBHM.RWS.R71.RECON1)   +
//  TORECON(DBU.QA.SMK1.RECON1)        +
//  DGNAME(THRESHOLD_VALUES)
```

Figure 89 shows sample JCL for the batch import job (PGM=CPCTCLON).
The following DD statement requirements apply to the batch import job:

- **CPC$xxxx DD** can be used to override the default and connect to a specific Advisor system.
- **CPCSYSIN DD** is for the command input.
- **CPCIMPRT DD** is the physical sequential data set that is created during the export process.

**Commands and keywords**

The cloning process uses the following commands:

- CLONE
- EXPORT
- IMPORT

Commands must start in a column other than one. Only one command and its associated mask can be executed per batch step. Table 106 lists keywords for CLONE, EXPORT, and IMPORT commands.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Commands</th>
<th>Accepted values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROMRECON</td>
<td>CLONE</td>
<td>RECON data set name</td>
<td>name of the RECON data set from which IMSPLEX data is being copied</td>
</tr>
<tr>
<td></td>
<td>EXPORT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMPORT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TORECON</td>
<td>CLONE</td>
<td>RECON data set name</td>
<td>name of the RECON data set to which IMSPLEX data is being copied</td>
</tr>
<tr>
<td></td>
<td>EXPORT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMPORT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DGNAME</td>
<td>CLONE</td>
<td>THRESHOLD_VALUES,</td>
<td>name of the data group to be copied or inserted</td>
</tr>
<tr>
<td></td>
<td>EXPORT</td>
<td>OP_INFO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMPORT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 89 Sample JCL for the batch import job (part 2 of 2)

```plaintext
INCLUDE DBGROUP(ALLDB) DBDNAME(CUSTOMER) PARTNAME(*)
EXCLUDE DBGROUP(ALLDB) DBDNAME(DBD1) PARTNAME(*)
MASK OLDDBDNAME(CUSTOMER) NEWBDNAME(CUSTXXXX)
MASK OLDDBDNAME(CUSTOME1) NEWBDNAME(CUSTYYYY)
MASK OLDDBGROUP(CUSTOME*) NEWDBGROUP(****YYYY)
MASK OLDDBGROUP(ALL) NEWDBGROUP(ZZZZ)
/
//CPCIMPRT DD DSN=xxxxxxxxx.clonthre.EXPORT,DISP=SHR
```
Commands can have more than one related mask command. The keywords are in pairs with an old and new mask. Table 107 lists keywords for the MASK command.

### Table 107 MASK command keywords

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Accepted Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLDDBDNAME</td>
<td>DBD name or *</td>
<td>DBD name of the existing DBD</td>
</tr>
<tr>
<td>NEWDBDNAME</td>
<td></td>
<td>DBD name of the new DBD</td>
</tr>
<tr>
<td>OLDBGROUP</td>
<td>database group name or *</td>
<td>Database group name of the existing database group</td>
</tr>
<tr>
<td>NEWDBGROUP</td>
<td></td>
<td>Database group name of the new database group</td>
</tr>
<tr>
<td>OLDPARTNAME</td>
<td>partition name or *</td>
<td>Partition name of the existing partition</td>
</tr>
<tr>
<td>NEWPARTNAME</td>
<td></td>
<td>Partition name of the new partition</td>
</tr>
</tbody>
</table>

The asterisk (*) in Table 107 is used in the following ways:

- On OLD keyword entries, an asterisk indicates that any character is acceptable in that position.
- On NEW keyword entries, an asterisk indicates that the field should remain the same when the data is altered.

All entries must be the entire name or must be filled in by asterisks. An ending asterisk does not act as a suffix selection for all characters following that point.

The IMPORT command has related commands that let you include and exclude data being imported, based on database group name, DBD name, and partition name. Table 108 lists commands that can be used with the IMPORT command.

### Table 108 IMPORT commands

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Accepted Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCLUDE</td>
<td>database group name</td>
<td>Name of the database group, DBD, and partition to include in the import process</td>
</tr>
<tr>
<td></td>
<td>DBD name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>partition name or *</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCLUDE</td>
<td>database group name</td>
<td>Name of the database group, DBD, and partition to exclude from exported data during the import process</td>
</tr>
<tr>
<td></td>
<td>DBD name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>partition name or *</td>
<td></td>
</tr>
</tbody>
</table>

For INCLUDE and EXCLUDE commands, all parameters (database group name, DBD name, and partition name) must be present in the following format:

INCLUDE DBGROUP(x) DBDNAME(x) PARTNAME(x)
EXCLUDE DBGROUP(x) DBDNAME(x) PARTNAME(x)
If a parameter is not required, specify an asterisk (*). The parameters can be masked. For example, DBD1, DBD2, and DBD3 can be specified as DBDNAME(DBD*).

If IMPORT is specified without INCLUDE or EXCLUDE statements, all existing data in the receiving data group is deleted before the new data is inserted. If an EXCLUDE or INCLUDE statement is used with the import, the existing data is not deleted and the data that is used is inserted or replaced.
# Using CPC operator commands

This appendix describes the Cross Product Connectivity (CPC) operator commands that you can use to control the CPC address space. The following topics are included:

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<td>CLEAR LOCK</td>
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<td>DISPLAY FUNCTION</td>
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<td>DISPLAY GROUP</td>
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<tr>
<td>DISPLAY INITI</td>
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</tr>
<tr>
<td>DISPLAY LOCKS</td>
<td>500</td>
</tr>
<tr>
<td>DISPLAY MODULE</td>
<td>501</td>
</tr>
<tr>
<td>DISPLAY STORAGE</td>
<td>501</td>
</tr>
<tr>
<td>DISPLAY XSYS</td>
<td>502</td>
</tr>
<tr>
<td>DUMP STORAGE</td>
<td>503</td>
</tr>
<tr>
<td>DYNTRACE</td>
<td>504</td>
</tr>
<tr>
<td>FREE DDNAME</td>
<td>505</td>
</tr>
<tr>
<td>GLBLPING</td>
<td>506</td>
</tr>
<tr>
<td>LIST CLIENT</td>
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</tr>
<tr>
<td>LIST CONNECTIONS</td>
<td>507</td>
</tr>
<tr>
<td>LIST DATAGRPS</td>
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</tr>
<tr>
<td>LIST DATASETS</td>
<td>509</td>
</tr>
<tr>
<td>LIST FUNCTIONS</td>
<td>510</td>
</tr>
<tr>
<td>LIST GROUPS</td>
<td>511</td>
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<tr>
<td>LOG</td>
<td>512</td>
</tr>
<tr>
<td>MAINT</td>
<td>513</td>
</tr>
<tr>
<td>REFRESH INITI</td>
<td>514</td>
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<tr>
<td>REP</td>
<td>515</td>
</tr>
<tr>
<td>START FUNCTION</td>
<td>515</td>
</tr>
<tr>
<td>START SCRIPT</td>
<td>516</td>
</tr>
<tr>
<td>START TAKEOVER</td>
<td>517</td>
</tr>
<tr>
<td>START XSYS</td>
<td>517</td>
</tr>
<tr>
<td>STOP FUNCTION</td>
<td>518</td>
</tr>
<tr>
<td>STOP SCRIPT</td>
<td>518</td>
</tr>
</tbody>
</table>
Overview

All examples in this appendix refer to cpcx (which represents the name of the active CPC SSID) and to cpcxadv (which represents the name of the active CPC Advisor address space). The Advisor address space can also be running as another type of application (non-Advisor) and can have a different suffix than adv.

**Advisor server commands**

All commands in this section require the cpcx CPC adv prefix. The commands are used to display information or to affect an active adv address space.

--- **EXAMPLE**

The /CPCT CPC ADV START FUNCTION SOLUTION command starts the indicated solution function within the CPCTADV address space. The output of the processed command can be found in the CPCLOG output of the active CPCTADV address space that is specified in the command.
CLEAR LOCK

This command is used only in error situations. It clears (unlocks) one of the CPC locks that have not been properly freed. This problem can be a programming error. The DISPLAY LOCK command can be used to determine the current status of CPC locks.

Syntax

CLEAR | LOCK | lockname lockid {grpname}
CLR | 

lockname is one of the following lock names:
GROUP | ANCHOR | COMMBUF | UIBUF | LOG | TRACE | FUNCTION | BUFFER | GRPUI |

lockid is the current LOCKID value, which is usually the job name. Use CPCORIDE for override.

grpname is the group name that is required for FUNCTION and BUFFER locks.

Examples

/cpex CPC adv CLEAR LOCK GROUP testjob

BMC2519301 CLEAR Command for GROUP Lock Successful
CLR LOCK BUFFER CPCORIDE GEN
BMC2519301 CLEAR Command for BUFFER Lock Successful
COM

This command sets the COMLOG status and SPILL and SYSOUT values. The STATUS option displays the current settings.

Syntax

COM | SPILL
SPILL(nnn)
SYSOUT(x)
STATUS
LOG(Y/N)

nnn is the number of log records before spilling.

x is the SYSOUT class for the log

The LOG keyword controls whether CPC messages and replies are logged to the COMLOG data set.

Examples

/cpcx CPC adv COM STATUS

BMC251939I Current 'COM' Settings:
MODE:          PUBLIC
LOGGING ACTIVE:    Y
LOG SPILL LIMIT:  200,000
LOG SYSOUT CLASS: *
DISPLAY CLIENT

This command displays the details about a specific CPC client. A list of current clients can be obtained using the LIST CLIENTS command. The default is for this command to be GLOBAL and to report on all clients of this name for all connected systems. A LOCAL option reports for only the system on which the command is entered.

Syntax

DISPLAY | CLIENT | name [LOCAL]
DIS | CLI |

name is required and specifies the client or server name (1 to 8 characters).

Examples

/cpcx CPC adv DISPLAY CLIENT rdcxc LOCAL

BMC251834I Client 'RDCDXC' ASCB=00F63D80 TYPE=TSO LOGON=13:14:10.54 2000/08/09
BMC251835I TCB=0056FA60
BMC251892I CPCCONN=16D1FD70 Func=REPADMIN inactive
BMC251893I BUF=16D8BFA8 Msg Sent=0 Msg Recv=0

/cpcx CPC adv DISPLAY CLIENT dxcauti

BMC251918I Global command DISPLAY sent to SYSM GEN.
BMC251918I Global command DISPLAY completed.
BMC251927I Reply from SYSM/GEN for command DISPLAY CLIENT:
->BMC251834I Server 'DXCAUTI' ASCB=00E43700 TYPE=STC
   LOGON=12:39:28.79 2000/10/04
->BMC251835I TCB=004CB180 CONNECT LOG TRACE GROUP
BMC251927I Reply from SYSO/GEN for command DISPLAY CLIENT:
->BMC251834I Server 'DXCAUTI' ASCB=00E0E400 TYPE=STC
   LOGON=12:37:36.50 2000/10/04
->BMC251835I TCB=005D6BF8 CONNECT LOG TRACE GROUP
DISPLAY DATAGRP

This command displays the details for a specific repository data group. The name can be masked. Valid data groups can be obtained by using the LIST DATAGROUPS command. The default is for this command to be GLOBAL and to report on all data groups of this name for all connected systems. A LOCAL option reports for only the system on which the command is entered.

Syntax

DISPLAY | DATAGRP | grpname [LOCAL]
DIS | DG |

grpname is data group name (1 to 32 characters).

Examples

/cpcx CPC adv DISPLAY DATAGRP rep* LOCAL

BMC251869I 16C70F58, Datagroup List Start
BMC251870I 16E532F0,(VSAM Open Alloc) Group=REP_SAMPLE2
  Owner=SAMPLE2
BMC251871I Base DD=SAMP2 Dsn=RDCDXC.CPC.SAMP2.BASE
BMC251872I Indx DD=SAMP2K2 Dsn=RDCDXC.CPC.SAMP2.SAMP2K2 (Open Alloc)
BMC251872I Indx DD=SAMP2K1 Dsn=RDCDXC.CPC.SAMP2.SAMP2K1 (Open Alloc)
BMC251872I Indx DD=SAMP2K1 Dsn=RDCDXC.CPC.SAMP2.SAMP2K1 (Open Alloc)
BMC251870I 16C70EE8,(VSAM Open Alloc Util) Group=REPDEF_CATALOG
  Owner=REPADMIN
BMC251871I Base DD=CATLG Dsn=RDCDXC.CPC.CATLG.BASE
BMC251872I Indx DD=CATIDX Dsn=RDCDXC.CPC.CATLG.CATIDX (Open Alloc)
BMC251874I End of datagroup list
DISPLAY FUNCTION

This command displays the details for a specific CPC function. The name can be masked. The valid functions can be obtained using the LIST FUNCTIONS command. The GLOBAL option can be used to report on functions matching the name/mask for all connected systems.

**NOTE**

Remote system information is kept locally. The GLOBAL option provides redundant information and should be used only to verify local state data.

**Syntax**

```plaintext
DISPLAY | FUNCTION | function {GLOBAL}
DIS | FUNC |
```

*function* is function name (1 to 32 characters).

**Examples**

```plaintext
/cpcx CPC adv DISPLAY FUNCTION recon

  BMC251883I Function "ADV.RECON_HASH" active(Global)(88) on Local System "SYSP"
  BMC251884I Pgm="DLIARECN", Class="SRV", Scope= Global / Public
  BMC251885I Auto Restart= Yes(5 / 0), Wait for Repository=Yes(0)
  BMC251886I Messages Received/Processed= 27 / 27, Total Bytes=11070
  BMC251941I Repository Data Groups
  BMC251942I Data Group "RECON_HASH" - rows read 13, rows selected 13
  BMC251887I Message DDEF "REQUEST"
  BMC251855I Column "RECON_DATASET_NAME" - CHAR(0,44),NULLVAL(40)
  BMC251855I Column "HASH_VALUE" - INT(0,4),NULLVAL(00)
  BMC251855I Column "EXISTS" - CHAR(0,1),NULLVAL(40)
  BMC251850I    End of List
```
DISPLAY GROUP

This command displays information about all groups (local and remote) that match the specified group name (the group name can be masked).

Syntax

DISPLAY | GROUP | grpname
DIS | GRP |

grpname is the group name (1 to 8 characters). This name can be masked.

Examples

/cpcx CPC adv DISPLAY GROUP gen

BMC251882I Group "GEN" Active on Local System "SYSO"
BMC251883I Function "REPADMIN" active(Global)(88) on Local System "SYSO"
BMC251884I Pgm="CPCRMADM", Class="SRV", Scope= Local / Public...
BMC251851I Column "FIELD7" is CHAR(4,32767), NULLVAL(40)
BMC251850I End of List
DISPLAY INI

This command displays the status of INI file resources. It can be used to provide information about a resource that is preventing a REFRESH INI command from completing.

Syntax

DISPLAY | INI
DIS |

Examples

/cpcx CPC adv DISPLAY INI

BMC251913I TYPE FUNCTION Count 0
BMC251913I TYPE START Count 0
BMC251913I TYPE ENV Count 0
BMC251913I TYPE COM Count 0
BMC251913I TYPE XSYS Count 0
BMC251913I TYPE REP Count 0
BMC251913I TYPE ID Count 0
BMC251913I TYPE LOG Count 0
BMC251913I TYPE TRACE Count 0
BMC251913I TYPE SCRIPT Count 0
BMC251914I DISPLAY INI command completed.
DISPLAY LOCKS

This command displays the current status of CPC locks. The GLOBAL option reports the locks from all connected systems.

**Syntax**

DISPLAY | LOCKS {GLOBAL}
DIS | LOCK

**Examples**

/cpcx CPC adv DISPLAY LOCKS

```
BMC251920I CPCANCH Locks -
BMC251922I GROUP     Not Locked
BMC251922I ANCHOR    Not Locked
BMC251922I COMMBUF   Not Locked
BMC251922I UIBUF     Not Locked
BMC251922I LOG       Not Locked
BMC251922I TRACE     Not Locked
BMC251921I Group 'ADV' Locks -
BMC251922I FUNCTION  Not Locked
BMC251922I BUFFER    Not Locked
BMC251922I GRPUI     Not Locked
```
DISPLAY MODULE

This command displays the virtual storage location where a program module is loaded and, if possible, the assembly date/time and last BMC change ID.

Syntax

DISPLAY | MODULE | modname
DIS | MOD | modname

modname is the name of the program module.

Examples

\[/cpcx CPC adv DISPLAY MODULE cpccanch\]

BMC251830I Module ‘CPCCANCH’ loaded at 19EBE848 - 03/25/02-10.09

DISPLAY STORAGE

This command reports on CPC storage usage by subpool, program, or TCB. The DETAIL option writes the current storage control blocks (STOBLOCK) to CPCTRACE 805 records. TRACE must be active. A BLANK option results in the SUMMARY display.

Syntax

DISPLAY | STORAGE | ’ ’
DIS | STG | SUM
SUMMARY
DETAIL
PGM
PROGRAM
PGM=\textit{name}
PROGRAM=\textit{name}
TCB
TCB=\textit{tcb}
Examples

/cpcx CPC adv DISPLAY STORAGE

  BMC251902I Storage Stats: -- CUR -- -- HWM -
  BMC251903I SP 30 20K 525K
  BMC251903I SP 31 811K 811K
  BMC251903I SP 20 240K 241K
  BMC251903I SP 230 0 1920K
  BMC251903I SP 18 45K 77K
  BMC251903I SP 17 3K 10K
  BMC251903I SP 0 11K 15K
  BMC251903I SP 26 224 33K
  BMC251904I - - - - ASID 1128K 3052K

/cpcx CPC adv DISPLAY STORAGE DETAIL

  BMC251926I Storage details written to CPCTRACE

DISPLAY XSYS

This command displays information about requested cross-system connections.

Syntax

DISPLAY | XSYS | name
DIS | XS |

name is XSYS name (1 to 16 characters). This name can be masked
**Examples**

```
/cpcx CPC adv DISPLAY XSYS *
```

BMC251856I Active Remote Communication for Group "DXCGROUP":
BMC251857I Connection= "CPC@SYSO" <-> "DLQ"
BMC251858I Next Inbound Seqno= 0, Last Outbound Seqno= 0
BMC251890I Next XMAST Inbound Seqno= 0, Last XMAST Outbound Seqno= 0
BMC251888I Msgs in/out= 0 / 0
BMC251889I Bytes in/out= 0 / 0
BMC251857I Connection= "MASTER" <-> "MASTER"
BMC251858I Next Inbound Seqno= 0, Last Outbound Seqno= 0
BMC251890I Next XMAST Inbound Seqno= 0, Last XMAST Outbound Seqno= 0
BMC251888I Msgs in/out= 2 / 1
BMC251889I Bytes in/out= 3536 / 3960
BMC251857I Connection= "CPC@SYSO" <-> "CPC@SYSM"
BMC251858I Next Inbound Seqno= 0, Last Outbound Seqno= 0
BMC251890I Next XMAST Inbound Seqno= 2, Last XMAST Outbound Seqno= 1
BMC251888I Msgs in/out= 0 / 0
BMC251889I Bytes in/out= 0 / 0

**DUMP STORAGE**

This command dumps (lists) storage from the CPC server address space to the CPCTRACE data set. TRACE must be active.

**Syntax**

```
DUMP | address {.LLLL}
DU |
```

`address` is the address of storage to snap to CPCTRACE record 999.

`.LLLL` is an optional hex length of storage to snap (the default is 24 bytes).
**Examples**

/cpcx CPC adv DUMP STORAGE

DUMP 0BD1A500.200

BMC251914I DUMP command completed.

CPCTRACE:

WORK B00100 0F CPCCCMDP 999 SNAP 0BD1A500 0200
0BD1A500 0000 C3D7C3C1 D5C3C840 01008000 F1800400 00000000 . . .
0BD1A520 0020 B478E2BD 9A402D83 13E16218 00014F00 12674B68 . . .
0BD1A540 0040 00000000 00000000 00000000 00000000 D9C4C3C4 . . .
0BD1A560 0060 000000A4C 0000005A 00000000 E211C2D4 C3C3D7C3 . . .
0BD1A6E0 01E0 00000000 00000000 00000000 00000000 00000000 00000000 . . .

**DYNTRACE**

This command provides detailed diagnostic tracing information for a specified set of function modules. You should use this command only at the request and with the assistance of BMC Customer Support.

**Syntax**

DYNTR xxxxxxxx | OFF

Use the xxxxxxxx parameter to activate dynamic tracing for the specified function module.

Use the OFF parameter to deactivate dynamic tracing.

**Examples**

/cpcx CPC adv DYNTR xxxxxxxx

BMC251959I Dynamic Trace has been started for module CPCCINIT
FREE DDNAME

This command may be used in error situations to dynamically unallocate data sets that are allocated to a ddname which has not been properly freed because of a programming error. The LIST DATASETS ddname command can be used to determine the current status of those data sets allocated to a ddname.

**Syntax**

FREE | DDNAME | *ddname*

*ddname* is the ddname to free.

**Examples**

```
/cpcx CPC adv FREE DDNAME solutn

BMC251948I DDNAME SOLUTN Successfully unallocated.
```

```
/cpcx CPC adv FREE DDNAME solutn

BMC251949I FREE for DDNAME(SOLUTN) failed: Return code=X'00000010'
    Reason code=X'04380000'
```

Reason code X'04380000' means “ddname not found.” For more information, see the IBM documentation.
GLBLPING

This command verifies global command communications (PING).

**Syntax**

GLBLPING
GPING

**Examples**

/cpcx CPC adv GPING

BMC251918I Global command GLBLPING sent to SYSO GEN.
BMC251918I Global command GLBLPING sent to SYSI GEN.
BMC251918I Global command GLBLPING completed.
BMC251924I Global Command reply 00000003 of 00000003 from SYSO GEN.
BMC251924I Global Command reply 00000002 of 00000003 from SYSI GEN.
BMC251924I Global Command reply 00000001 of 00000003 from SYSM GEN.

LIST CLIENT

This command lists all active clients and servers for all connected systems. The LOCAL option reports active clients for only the system on which the command was entered.

**Syntax**

LIST | CLIENTS {LOCAL}
LIS | CLI
**Examples**

```
/cpcx CPC adv LIST CLIENTS
```

BMC251918I Global command LIST sent to SYSM GEN.
BMC251918I Global command LIST completed.
BMC251927I Reply from SYSM/GEN for command LIST CLIENTS:
->BMC251834I Client 'RDCDXC2' ASCB=00E45E80 TYPE=TSO
   LOGON=07:43:43.78 2000/10/05
->BMC251834I Server 'DXCAUTI' ASCB=00E45B80 TYPE=STC
   LOGON=07:36:26.89 2000/10/05
BMC251927I Reply from SYSO/GEN for command LIST CLIENTS:
->BMC251834I Client 'DXCSAMP2' ASCB=00E36200 TYPE=BAT
   LOGON=07:44:05.89 2000/10/05
->BMC251834I Client 'RDCDXC' ASCB=00E43280 TYPE=TSO
   LOGON=07:43:21.94 2000/10/05
->BMC251834I Server 'DXCAUTI' ASCB=00F70300 TYPE=STC
   LOGON=07:35:53.70 2000/10/05

**LIST CONNECTIONS**

This command lists all cross-system connections.

**Syntax**

```
LIST | CONNECTIONS
LIS | CONNS
```

**Examples**

```
/cpcx CPC adv LIST CONNECTIONS
```

BMC251856I Active Remote Communication for Group "DXCGROUP":
BMC251857I Connection= "CPC@SYSM" <> "DLQ"
BMC251857I Connection= "MASTER" <> "MASTER"
BMC251857I Connection= "CPC@SYSM" <> "CPC@SYSO"
BMC251857I Connection= "CPC@SYSM" <> "CPC@SYSI"
LIST DATAGRPS

This command lists data groups that are used for all connected systems. The LOCAL option reports the data groups for only the system on which the command was entered.

Syntax

```
LIST | DATAGRPS [LOCAL]
LIS | DGS
```

Examples

```
/cpcx CPC adv LIST DATAGRPS

BMC251918I Global command LIST completed.
BMC251927I Reply from SYSP/ADV for command LIST DATAGRPS:
  ->BMC251869I A3A9EE8,Datagroup List Start
  ->BMC251870I 1BEEDA20,(VSAM Open Alloc) Group=OP_VARS Owner=OP_INFO
  ->BMC251870I 1BEE1F80,(VSAM Open Alloc) Group=SOLUTION_RELATIONSHIPS
       Owner=SOLUTIONS
  ->BMC251870I 1BECE058,(VSAM Open Alloc) Group=IMSENV_DSNLIST Owner=IMSENV_INFO
  ->BMC251870I 1BE89D10,(VSAM Open Alloc) Group=DB_DATA Owner=DB_REGISTRY
  ->BMC251870I 1BE92FA8,(VSAM Open Alloc) Group=OP_PROD Owner=OP_INFO
  ->BMC251870I 1BE7E030,(VSAM Open Alloc) Group=SOLUTION_EXCEPTIONS
       Owner=SOLUTIONS
  ->BMC251870I 1BEE5518,(VSAM Open Alloc) Group=IMSENV_INFO Owner=IMSENV_INFO
  ->BMC251870I 1BE837D8,(VSAM Open Alloc) Group=DB_OWNER Owner=DB_REGISTRY
  ->BMC251870I 1BE3E098,(VSAM Open Alloc) Group=DSG_STATS Owner=DSG_INFO
  ->BMC251870I 1BEB3098,(VSAM Open Alloc) Group=DSSPACE_STATS
       Owner=DATASET_SPACE_USAGE
  ->BMC251870I 1BD5F180,(VSAM Open Alloc) Group=JOB_STATS Owner=JOB_INFO
  ->BMC251870I 1BDD5408,(VSAM Open Alloc) Group=SEGMENT_STATS
       Owner=SEGMENT_INFO
  ->BMC251870I 1BD5A60,(VSAM Open Alloc) Group=HDAM_ROOT_STATS
       Owner=HDAM_ROOT_INFO
  ->BMC251870I 1BD98210,(VSAM Open Alloc) Group=OP_DSNLIST Owner=OP_INFO
  ->BMC251870I 1BD7E190,(VSAM Open Alloc) Group=INDEX_STATS Owner=INDEX_INFO
  ->BMC251870I 1BD56B00,(VSAM Open Alloc) Group=DB_STATS Owner=DB_INFO
  ->BMC251870I 1BD03508,(VSAM Open Alloc) Group=COND_REORG_STATS
       Owner=CONDITION
  ->BMC251870I 1BBC2090,(VSAM Open Alloc) Group=ADV_EXCEPTION Owner=EXCEPTION
  ->BMC251870I 1BCCD9D0,(VSAM Open Alloc) Group=DB_GROUPS Owner=DB_GROUP
  ->BMC251870I 1B94A0,(VSAM Open Alloc) Group=SOLUTIONS Owner=SOLUTIONS
  ->BMC251870I 1B57C90,(VSAM Open Alloc) Group=RECON_INFO Owner=IMSENV_INFO
  ->BMC251870I 1B7A950,(VSAM Open Alloc) Group=DB_REGISTRY Owner=DB_REGISTRY
  ->BMC251870I 1BC54270,(VSAM Open Alloc) Group=DSG_INFO Owner=DSG_INFO
  ->BMC251870I 1BC41710,(VSAM Open Alloc) Group=DSSPACE_INFO
       Owner=DATASET_SPACE_USAGE
  ->BMC251870I 1BC2C808,(VSAM Open Alloc) Group=SCHEDULES Owner=SCHEDULE
  ->BMC251870I 1BC0910,(VSAM Open Alloc) Group=JOB_INFO Owner=JOB_INFO
  ->BMC251870I 1BB8058,(VSAM Open Alloc) Group=SEGMENT_INFO Owner=SEGMENT_INFO
```
LIST DATASETS

This command lists data sets that are allocated to all connected systems.

Syntax

LIST | DATASETS {ddname}
LIS | DS

ddname is an optional mask.

Examples

/cpcx CPC adv LIST DS STEPLIB

BMC251918I Global command LIST completed.
BMC251927I Reply from SYSP/ADV for command LIST DATASETS:
  ->BMC251946I DSNAME(BMC.DIST.DBULIB) allocated to DDNAME(STEPLIB+0)
  ->BMC251946I DSNAME(BMC.MXA.PASSWORD) allocated to DDNAME(STEPLIB+1)
LIST FUNCTIONS

This command lists all active functions for the local system. The GLOBAL option reports on active functions from all connected systems.

**NOTE**

Remote system information is kept locally. The GLOBAL option provides redundant information and should be used only to verify local state data.

**Syntax**

```
LIST | FUNCTIONS {GLOBAL}
LIS | FUNCS
```

**Examples**

```
/cpcx CPC adv LIST FUNCTIONS
```

BMC251883I Function "ADV.SCHEDULR" active(80) on Local System "SYSP"
BMC251883I Function "ADV.REPUTIL" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DBDXREF" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DBDINFO" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DISASSEM" active(80) on Local System "SYSP"
BMC251883I Function "ADV.PSBXREF" active(80) on Local System "SYSP"
BMC251883I Function "ADV.GROUPEX" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DISCOVER" active(80) on Local System "SYSP"
BMC251883I Function "ADV.EXECUTOR" active(80) on Local System "SYSP"
BMC251883I Function "ADV.POINTER_STATS" active(80) on Local System "SYSP"
BMC251883I Function "ADV.BASE_COLLECTOR" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DBUSEC" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DATASET_VOLUME_INFO" active(80) on Local System "SYSP"
BMC251883I Function "ADV.VOLUME_INFO" active(80) on Local System "SYSP"
BMC251883I Function "ADV.RECON_HASH" active(80) on Local System "SYSP"
BMC251883I Function "ADV.BASE_VALUES" active(80) on Local System "SYSP"
BMC251883I Function "ADV.ADV_SETTINGS" active(80) on Local System "SYSP"
BMC251883I Function "ADV.THRESHOLD_VALUES" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DATASET_ALLOCATION_INFO" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DATASET_EXTENT_INFO" active(80) on Local System "SYSP"
BMC251883I Function "ADV.SCHEDULE" active(80) on Local System "SYSP"
BMC251883I Function "ADV.DB_GROUP" active(80) on Local System "SYSP"
BMC251883I Function "ADV.EXCEPTION" active(80) on Local System "SYSP"
BMC251883I Function "ADV.CONDITIONAL_REORG" active(80) on Local System "SYSP"
LIST GROUPS

This command lists all groups that are known to this system and their status.

Syntax

LIST | GROUPS
LIS | GRPS

Examples

/cpcx CPC adv LIST GROUPS

BMC251882I Group "GEN" Active on Local System "SYSM"
BMC251882I Group "GEN" Active on Remote System "SYSO"
BMC251882I Group "GEN" Inactive on Remote System "SYSI"
BMC251850I End of List
This command sets CPCLOG SPILL, SYSOUT, and CONNECTMSG values. The STATUS option displays current settings. The CONNECTMSG option controls whether BMC251832 “connected/disconnected to function” messages are logged.

**Syntax**

LOG | SPILL
| SPILL(nnn)
| SYSOUT(x)
| STATUS
| CONNECTMSG(ON/OFF)

`nnn` is the number of log records before spilling.

`x` is the SYSOUT class for the log.

**Examples**

```
/cpcx CPC adv LOG STATUS

BMC251939I Current 'LOG' Settings:
DDNAME : CPCLOG
SPILL LIMIT: 25,000
SYSOUT CLASS:
LOG CONNECT/DISCONNECT MESSAGES: OFF
DDNAME : ADVMSG
SPILL LIMIT:
SYSOUT CLASS:
LOG CONNECT/DISCONNECT MESSAGES: OFF
```
MAINT

This command controls maintenance mode for the CPC address space. You can use this command to prevent new clients (BMC utilities) from logging on to the CPC address space and to stop the address space from scheduling new tasks. The primary purpose of this command is to reduce repository activity while repository maintenance, long PURGE processes, and similar functions are being performed.

While the CPC address space is in maintenance mode, utilities that attempt to log on are notified that the address space is unavailable and continue to execute without passing data to CPC.

**Syntax**

MAINT OFF | ON | ON(FORCE) | NOSCH | SCH

Use the OFF parameter to reactivate client communication and scheduling after the CPC address space has been placed in maintenance mode.

Use the ON parameter to prevent new clients from logging on to the CPC address space but wait until all connected clients have logged off before placing the address space in maintenance mode.

Use the ON(FORCE) parameter to prevent new clients from logging on to the CPC address space and place the address space in maintenance mode immediately, regardless of whether connected clients are still active. Connected clients continue to communicate with the address space.

Use the NOSCH parameter to prevent the CPC address space from scheduling tasks while allowing new clients to connect to the address space and connected clients to continue to communicate with the address space.

Use the SCH parameter to reactivate task scheduling for the CPC address space.

**Examples**

```
/cpcx CPC adv MAINT ON

BMC251672I CPC maintenance mode Scheduling/Job connect DEACTIVATED
```

```
/cpcx CPC adv MAINT OFF

BMC251672I CPC maintenance mode Scheduling/Job connect REACTIVATED
```
REFRESH INI

This command reloads (refreshes) the CPC INI file from the CPCINI DD card. The new values become effective when next referenced. If the command receives message BMC251916W, the command should be reissued. If the problem continues, use the DISPLAY INI command to determine which resource is held.

A REFRESH INI FORCE command can be used to override the held resource. This command should be used only in error situations.

Syntax

REFRESH | INI {FORCE}
REF |

The FORCE option is required when USE Count in non-zero (use DISPLAY INI).

Examples

/cpx CPC adv REFRESH INI

12:44:10.81  ID DESC(SMPE - IMS REORG ADVISOR)
12:44:10.81  GROUP CMDID(ADV) DESC(IMS REORG ADVISOR) +
12:44:10.81  SERVDEFS(ADVSRVDF) COLLDEFS(ADVCOLDF)
12:44:10.81  LOG SPILL(25000) SYSOUT(*)
12:44:10.81  TRACE SPILL(200000) SYSOUT(*) ACTIVE(N)
12:44:10.81  COM MODE(PRIVATE) LOG(Y) SPILL(200000) SYSOUT(*)
12:44:10.81  REP PREFIX(DBU.QA.MXAZ) RECS(1500) VOLS(DEVXXX,DEVXXX) +
12:44:10.81  LOG(Y) SPILL(200000) SYSOUT(*)
12:44:10.81  SCRIPT UTIDSN(DBU.SMPE.UTISCLIB) +
12:44:10.81  USERDSN(DBU.SMPE.UTISCLIB) +
12:44:10.81  SYSOUT(*) +
12:44:10.81  TRACE(Y) +
12:44:10.81  TRACEOUT(*)
12:44:10.81  * START UP SERVICES FOR UTI ENVIRONMENT
12:44:10.81  ENV NAME(DLI) PROGRAM(DLIGPC0)
12:44:10.81  * XSYS GROUP(DBUQA)
12:44:10.81  START TYPE(COM) MODE(PRIVATE)
12:44:10.81  *START TYPEFUNCTION) NAME(CPCSAMP)
12:44:10.81  START TYPEFUNCTION) NAME(ALL)
12:44:10.81  END OF INI FILE PROCESSING
12:44:10.81  BMC251915I REFRESH INI File Completed
This command sets the REPLOG status and SPILL and SYSOUT values. The STATUS option displays current settings. The LOG option controls whether repository requests are logged to the REPLOG data set.

**Syntax**

```plaintext
REP | SPILL
  | SPILL(nnn)
  | SYSOUT(x)
  | STATUS
  | LOG(Y/N)
```

*nnn* is the number of log records before spilling.

*x* is the SYSOUT class for the log.

**Examples**

```
/cpcx CPC adv REP STATUS
```

```
BMC251939I Current 'REP' Settings:
LOGGING ACTIVE:                      Y
LOG SPILL LIMIT:               200,000
LOG SYSOUT CLASS:                  *
```

**START FUNCTION**

This command starts a function on all connected systems. The LOCAL option starts the function only on the system on which the command was entered.

**Syntax**

```plaintext
START | FUNCTION | ALL {LOCAL}
STA | FUNC | CPCSAMP
  | function
```

*ALL* starts product and REP functions.

*CPCSAMP* starts CPC sample functions.

*function* starts a specific function (1 to 32 characters).
Examples

```
/cpcx CPC adv START FUNCTION solutions

BMC251918I Global command START completed.
BMC251927I Reply from SYSP/ADV for command START FUNCTION:
  ->BMC251914I START FUNCTION SOLUTIONS command completed.
BMC251894I Datagroup 'SOLUTIONS' available
BMC251894I Datagroup 'SOLUTION_EXCEPTIONS' available
BMC251894I Datagroup 'SOLUTION_RELATIONSHIPS' available
BMC251800I Function 'SOLUTIONS' initialized
```

START SCRIPT

This command starts SCRIPT.

Syntax

```
START | SCRIPT
STA | ...
```

Examples

```
/cpcx CPC adv START SCRIPT

BMC251854I "SCRIPT" component initialization completed
```
START TAKEOVER

This command manually activates waiting global functions on the local system.

When a global function is started and an instance of the function is already active on a remote system, the local instance waits for a takeover. Takeover can occur if the remote system fails. If the global function on the remote system is stopped (STOP FUNC command), this command can be used to take over to this local system.

Syntax

START | TAKEOVER
STA | TO

Examples

/cpcx CPC adv START TAKEOVER

BMC251852I Function 'REPADMIN' attempting global takeover
BMC251804W Function 'REPADMIN' initialization failed, function already active on remote system
BMC251852I Function 'REPADMIN' going to sleep, zzzzzzzzzzzzzzzz!
BMC251852I Function 'SAMPLE2' attempting global takeover
BMC251800I Function 'SAMPLE2' initialized

START XSYS

This command starts the cross-system interface.

Syntax

START | XSYS
STA |

Examples

/cpcx CPC adv START adv

... the cpcxadv address space is started...
STOP FUNCTION

This command stops the specified function on all connected systems. The LOCAL option stops the function only on the system on which the command was entered.

Syntax

STOP | FUNCTION | ALL {LOCAL}
STO | FUNC | function

ALL stops all active functions.

function stops a specific function (1 to 32 characters).

Examples

/cpcx CPC adv STOP FUNCTION solutions

BMC251918I Global command STOP completed.
BMC251927I Reply from SYSP/ADV for command STOP FUNCTION:
->BMC251914I STOP FUNCTION SOLUTIONS command completed.
BMC251894I Datagroup 'SOLUTIONS' unavailable
BMC251894I Datagroup 'SOLUTION_EXCEPTIONS' unavailable
BMC251894I Datagroup 'SOLUTION_RELATIONSHIPS' unavailable
BMC251820I FUNCTION SOLUTIONS subtask terminated, Return code=00000000, Reason=00000000

STOP SCRIPT

This command stops SCRIPT.

Syntax

STOP | SCRIPT
STO |

Examples

/cpcx CPC adv STOP SCRIPT

BMC251854I "SCRIPT" component termination completed
STOP XSYS

This command the stops cross-system interface.

Syntax

STOP | XSYS
STO |

Examples

/cpcx CPC adv STOP XSYS

BMC251842I Left XCF Group "MXAZ" as Member "CPCSYSP"
BMC251841I REMOTE COMMUNICATION SERVICES terminated
BMC251820I XSYS subtask terminated, Return code=00000000, Reason=00000000
BMC251894I Datagroup 'IMSENV_DSNLIST' unavailable
BMC251820I FUNCTION IMSENV_INFO subtask terminated, Return code=00000000, Reason=00
BMC251894I Datagroup 'OP_VARS' unavailable
BMC251820I FUNCTION OP_INFO subtask terminated, Return code=00000000, Reason=00
BMC251831I Appl. Server=MXAZADV(STC03487) (ADV) disconnected from CPC (MXAZ)
BMC251801C Peer-to-Peer communication termination failed. RC=00000009, Reason=0
BMC251854I "SCRIPT" component termination completed
BMC251803I COMMUNICATION SERVICES terminated
BMC251820I OBJ subtask terminated, Return code=00000004, Reason=00000000
BMC251820I COM subtask terminated, Return code=00000000, Reason=00000000
BMC251825I REPOSITORY SERVICES terminated
BMC251820I REP subtask terminated, Return code=00000000, Reason=00000000
BMC251502I MXAZ subsystem - ADV server address space ended. Return code is 00000000, Reason=00000000
TRACE

This command sets CPCTRACE SPILL, SYSOUT, and ACTIVE values. The STATUS parameter displays the current settings.

**Syntax**

TRACE | SPILL
| SPILL(nnn)
| SYSOUT(x)
| ACTIVE(y)
| STATUS

nnn is the number of trace records before spilling.

x is the SYSOUT class for the trace.

y is Y (active) or N (inactive).

**Examples**

/cpcx CPC adv TRACE STATUS

    BMC251939I Current 'TRACE' Settings:
    TRACING ACTIVE: Y
    SPILL LIMIT: 200,000
    SYSOUT CLASS: *

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This command starts a function on all connected systems. The LOCAL option starts the function only on the system on which the command was entered.

**Syntax**

```
START | FUNCTION | ALL {LOCAL}
STA | FUNC | CPCSAMP
| function
```

ALL starts product and REP functions.

CPCSAMP starts CPC sample functions.

`function` starts a specific function (1 to 32 characters).

**Examples**

```
/cpcx CPC adv START FUNCTION solutions

BMC251918I Global command START completed.
BMC251927I Reply from SYSP/ADV for command START FUNCTION:
->BMC251914I START FUNCTION SOLUTIONS command completed.
BMC251894I Datagroup 'SOLUTIONS' available
BMC251894I Datagroup 'SOLUTION_EXCEPTIONS' available
BMC251894I Datagroup 'SOLUTION_RELATIONSHIPS' available
BMC251800I Function 'SOLUTIONS' initialized
```
CPC subsystem and application commands

The commands in this section require the `cpcx` prefix. These commands control the startup and shutdown of the CPC subsystem and application server address spaces. The output of the processed command can be found in the JESMSGGLG output of the active CPC subsystem that is specified in the command.

START

This command starts an application server address space.

Syntax

```
START | name
```

`name` starts a specific application address space (3 to 4 characters).

Examples

```
/cpcx START adv
```

This command causes the CPCx subsystem to start the CPCxADV application address space.
STOP

This command stops an application server address space.

Syntax

STOP | name

name stops a specific application address space (3 to 4 characters).

Examples

/cpcx STOP adv

This command causes the CPCx subsystem to stop the active CPCxADV application address space.

SHUTDOWN

This command stops a CPC subsystem and all of its application server address spaces.

Syntax

SHUTDOWN

Examples

/cpcx SHUTDOWN

This command causes the CPCx subsystem to stop the application address spaces that are running under this subsystem. It also terminates the subsystem.
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