Energizer for IMS Connect, version 1.7
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This document contains detailed information about the BMC Software Energizer for IMS Connect product.

Architecture

The console and the User Interface Middleware (UIM) server are part of a multi-tier architecture. These tiers work together, and can vary, based on your site’s installation. The following topics are discussed in this section:

- UIM and console architecture (see page 12)
- About Energizer for IMS Connect (see page 13)

UIM and console architecture

The console and User Interface Middleware (UIM) Server provide a graphic user interface for BMC Software products.

The UIM server is a Transmission Control Protocol/Internet Protocol (TCP/IP) application that facilitates communication between consoles and the mainframe. All communication between the console on the consoles and the mainframe computer 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 the consoles.

The following figure describes the UIM server and the console architecture in a sample environment.
**UIM 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.

**About Energizer for IMS Connect**

Energizer for IMS Connect can be installed alone or as part of the BMC System Administration for IMS solution.

Energizer simplifies and enhances the capabilities of IMS Connect, a product that is an integral part of the IBM Web-enablement of IMS data. With Energizer, you can tailor how IMS Connect operates in your environment, and dynamically manage aspects of your IMS Connect environment without recycling IMS Connect.

Energizer uses the following components:

- UIM server
- Console (the graphical user interface)
Energizer for IMS Connect, version 1.7

Before you can install or launch the console, the UIM server must be running.

The following topics are covered in this section:

- Energizer terminology (see page 14)
- Energizer architecture (see page 15)
- How Energizer simplifies and enhances IMS Connect (see page 15)
- How IMS Connect works (see page 16)
- How Energizer works (see page 16)
- Energizer features and benefits (see page 17)

**Energizer terminology**

The following table lists terms that are unique to Energizer.

**Energizer terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</table>
| eLink          | Energizer address space that provides the communication link between the MVS operator console and the IMS Connects.  
                 | The eLink is used to change the environment and obtain system-related information.                                                       |
| Note           | You must use an eLink when entering Energizer commands from an IBM z/OS operator console.                                                |
|                | You can run Energizer for IMS without using an eLink address space. You do not need an eLink or eLink started task to use the ISPF or console interfaces. |
|                | You can run Energizer without running an eLink address space, by adding a host name and port number to the options for each IMS Connect.        |
| eGroup         | Unique grouping of IMS Connects that use the same load balancing method                                                                |
| WorkLoad       | Controls the number of messages passing through individual IMS Connects                                                                  |
| Governor       | DataStore Router uses the following components to route transactions:                                                                     |
|                | Affinity Manager ensures that messages that have unique processing characteristics are sent to the correct datastore.                    |
|                | Load Balancer routes messages based upon weights defined within the load balancing method that you selected.                             |
|                | Resource Status Checker verifies that the datastore is active before routing a transaction to it.                                         |
| DataStore      | Directs a message to the datastore that is best equipped to process it                                                                    |
| Router         | Exit Services Enhances IMS Connect functionality, such as dynamically add and reload exits and processing options, define security, and create and maintain exits without coding in assembler language |

Note
Energizer architecture

The following figure shows a graphic representation of the overview of the Energizer architecture.

Energizer architecture

Note

If you have installed and fully customized Energizer and if the eLink address space becomes unavailable—for example, it is on a different system and that system was IPLed—transactions are still processed. The DataStore Router, WorkLoad Governor, security, and exits continue to function as they did before the eLink became unavailable; however, you cannot dynamically reload exits or view statistics until you restart the eLink address space. When the eLink is started, you do not need to recycle IMS Connect.

How Energizer simplifies and enhances IMS Connect

To process messages with IMS Connect, you must write your own in-house exits. Without Energizer, exits must be written by using assembler language routines. Not only does this require assembler language expertise, it also requires time to write and maintain the exits. With limited in-house resources, writing and maintaining exits, configuring the best parameters, monitoring for potential problems, tracking system changes, and managing e-transactions are difficult and labor intensive. If in-house expertise or resources are lacking, many of these critical functions cannot be accomplished without system outages or degradation of performance.

Also, you can enhance exits to add to the functionality of the IMS Connect base code. Exits can perform a variety of functions — such as load tables or routing.

By using the console, you can use descriptive interactive dialog boxes to perform the following tasks:

- create and maintain message exits without writing assembler language routines
- define your existing message exits that were written in assembler language so you can use the advanced features of Energizer
dynamically reload exits and processing options without recycling IMS Connect
provide enhanced security at the IMS Connect level
route transactions and balance the workload among active datastores
view statistical information in charts or tabular format for transactions, exits, and datastores
prevent rogue applications and runaway transactions from overloading your system
locate where a problem occurs, understand the transaction workflow, or collect information about peak loads by specifying which tracing options to record

How IMS Connect works
IMS Connect uses TCP/IP socket calls or MVS program calls (LOCAL option) to allow clients to exchange messages with IMS datastores by using the IMS Open Transaction Manager Access (OTMA). IMS Connect can communicate with multiple clients and multiple datastores across a sysplex.

IMS Connect runs in its own address space as a job or as a started task. Because IMS Connect uses XCF services to communicate with IMS/OTMA, IMS Connect does not have to be present on the same MVS image as the datastore.

For more information about IMS Connect and message exits, see the IMS Connect documentation for IBM.

How Energizer works
Energizer expands the base functionality of IMS Connect and it is tightly integrated in the base code.

Based upon the Energizer features that you enable, Energizer performs the following actions:

- Dynamically activates and inactivates exits and message IDs:
  - If the exit and message ID are not active, the request is rejected.
  - If you have written your own exits, Energizer invokes the exits.
  - If Energizer security is enabled at the IMS Connect level, exit security can be handled as part of the virtual message exit processing.
- Calls the WorkLoad Governor to verify that the current message volume falls within the defined rates
  If the volume is too high, an error message is issued and messages over the limit are rejected.
- Handles DataStore Routing
  If routing is active, Energizer checks for affinities to determine acceptable datastores, then uses load balancing and datastore availability to choose the datastore that is best able to process the message.
- Records statistical and diagnostic information
• Handles ODBM Routing
  If ODBM routing is active, Energizer can load balance ODBM DRDA requests and provides
  ODBM / datastore availability.

Energizer features and benefits

Energizer uses the console to simplify Web-enabling your IMS legacy data and to access robust
Energizer features that are not available in IMS Connect. The following table lists the Energizer
features and benefits that you can use to protect your system, improve system performance, and
monitor what is happening in your system.

**Energizer features and benefits**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tbody>
<tr>
<td>Console</td>
<td>The console is a graphical interface which can be used to perform various tasks, such as:</td>
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<td>• Chart statistical information</td>
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<td></td>
<td>• Graphically view your configuration and active instances in the Navigation window</td>
</tr>
<tr>
<td></td>
<td>• Create and maintain message exits by using descriptive interactive dialog boxes</td>
</tr>
<tr>
<td></td>
<td>• Customize Energizer by using interactive dialog boxes</td>
</tr>
<tr>
<td>Reload exits and processing options</td>
<td>By dynamically reloading exits and processing options, Energizer improves system availability to your users. IMS Connect does not provide dynamic reloading.</td>
</tr>
<tr>
<td>without recycling IMS Connect</td>
<td>Energizer save time and money by freeing-up your high-end in-house talent to work on more critical issues.</td>
</tr>
<tr>
<td>Create and maintain message exits by</td>
<td>Energizer enhances existing IMS Connect security. For example:</td>
</tr>
<tr>
<td>using descriptive interactive dialog boxes</td>
<td>• User ID based validation and authentication</td>
</tr>
<tr>
<td></td>
<td>• IMS Connect authorization</td>
</tr>
<tr>
<td></td>
<td>• Transaction authorization</td>
</tr>
<tr>
<td></td>
<td>• OTMA Security Field Propagation</td>
</tr>
<tr>
<td>Enable security at the IMS Connect level</td>
<td>By enabling routing, you can use the advanced features of Energizer. For example:</td>
</tr>
<tr>
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<td>• Balance the workload and prevent messages from overloading a few datastores while not using others.</td>
</tr>
<tr>
<td></td>
<td>• When a datastore becomes inactive, automatically redistribute the work to active datastores. Without Energizer, IMS Connect would reject these messages.</td>
</tr>
<tr>
<td></td>
<td>IMS Connect does not provide routing capabilities.</td>
</tr>
<tr>
<td>Route transactions (DataStore Routing)</td>
<td>WorkLoad Governor</td>
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<tr>
<td>to the datastore best able to process them</td>
<td>Protect the availability of your datastores by specifying the number of transactions that pass through each IMS Connect. IMS Connect does not provide governing capabilities.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature</td>
<td>Benefit</td>
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<tr>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>View statistics</td>
<td>By providing statistical information, Energizer can help you improve system performance. For example:</td>
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<tr>
<td></td>
<td>- Monitor IMS Connect performance</td>
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<td>- Determine when the peak loads occur</td>
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<td>- Chart data to identify trends and to perform comparisons</td>
</tr>
<tr>
<td></td>
<td>- Export data to a file that can be used in a spreadsheet or a statistical program</td>
</tr>
<tr>
<td></td>
<td>IMS Connect does not provide statistics or a statistical view of your message throughput.</td>
</tr>
<tr>
<td>View diagnostics</td>
<td>Tracing (diagnostic feature of Energizer) helps you locate problems on your system. For example:</td>
</tr>
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<td>- Track message activity through message exits</td>
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<td>- Track historical (statistical) records that are created hourly</td>
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<td>- View statistical records that are created at the end of each specified routing cycle</td>
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<tr>
<td></td>
<td>- Display trace information on the console and print trace information in batch</td>
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<tr>
<td></td>
<td>IMS Connect does not provide diagnostic capabilities.</td>
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**Quick Start — Using Energizer with the ISPF interface**

This section provides an overview of the Energizer for *IMS Connect* ISPF interface. For more information about a panel or items on the panel, see online Help.

This section includes the following topics:

- Overview (see page 18)
- Getting Started (see page 26)
- Configuring Energizer (see page 29)
- Querying IMS Connects (see page 50)
- Energizer environment commands (see page 65)
- Issuing Energizer commands (see page 68)
- Verifying IMS connectivity (test transactions) (see page 78)
- Setting product authorization by CPU ID (see page 81)

**Overview**

To run this version of Energizer, you do not need to have the console installed. However, any changes that you make to the Options Library or its members will affect users who run Energizer with the console interface within the same Sysplex.
Creating eLinks

An eLink is the Energizer address space that provides the communications between the UIM server, the operator console, and the IMS Connects.

You do not need an eLink or an eLink started task to use the ISPF or console interfaces, but you do need an eLink to enter Energizer commands from an MVS operator console.

Securing access to the Energizer ISPF interface

When you use the ISPF interface to run Energizer, the IPRCMDS0 exit is required.

IPRCMDS0 processes Energizer commands. Energizer and IMS commands can be abbreviated to three characters. Therefore, to protect all forms of the command, use an asterisk wildcard character when creating rules for the resource that you specify on the IPRCMDS0 Virtual Exit panel. The rprefix.-EXE resource is available to control security to IMS Connect commands (ISPF option 3).

Identify the resource in the rules as shown in the following example:

To fully secure the use of the ISPF interface, shown in the following figure, change the IPRCMDS0 virtual exit as follows:

rprefix.-DIS*

- Make Password a REQUIRED field
- Select Enable userid authentication
- Select Enable IMS Connect authentication
- Select Enable transaction authentication
- Specify an IMS Connect resource

Exert from IPRCMDS0 virtual exit panel

<table>
<thead>
<tr>
<th>IRM security fields</th>
<th>Offset Status (offset=0 for default)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Userid . . . . . .</td>
<td>0____ REQUIRED (Always required)</td>
</tr>
<tr>
<td>Group . . . . . . .</td>
<td>0____ OPTIONAL (REQUIRED or OPTIONAL or NONE)</td>
</tr>
<tr>
<td>Password . . . . .</td>
<td>0____ REQUIRED (REQUIRED or OPTIONAL or NONE)</td>
</tr>
<tr>
<td>New password . . .</td>
<td>0____ OPTIONAL (OPTIONAL or NONE)</td>
</tr>
</tbody>
</table>

Select (type a '/') any of the following.
/ Enable userid authentication
/ Enable IMS Connect authentication
/ Enable transaction authentication

IMS Connect resource . NAME____ (used for IMS Connect authentication)
To enable IMS Connect authorization and transaction authorization, ensure that the options for any Connects have a security class name, and (optional) a resource prefix.

Create resource rules in the appropriate security class for the following resources:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rprefix.connres</td>
<td>Controls overall access to the IMS Connect</td>
</tr>
<tr>
<td>rprefix.-DIS</td>
<td>Controls access to display commands (ISPF options 2 and 3)</td>
</tr>
<tr>
<td>rprefix.-SET</td>
<td>Controls access to set commands (ISPF option 3)</td>
</tr>
<tr>
<td>rprefix.-REL</td>
<td>Controls access to reload commands (ISPF options 1 and 3)</td>
</tr>
<tr>
<td>rprefix.-RES</td>
<td>Controls access to reset commands (ISPF option 3)</td>
</tr>
<tr>
<td>rprefix.-EXE</td>
<td>Control security to IMS Connect commands (ISPF option 3)</td>
</tr>
<tr>
<td>rprefix.-LIST</td>
<td>Control security to IMS Connect List commands (ISPF options 2 and 3)</td>
</tr>
</tbody>
</table>

In the resource names, 'rprefix.' is the prefix from the Connect options and 'connres' is the IMS Connect resource from the IPRCMDS0 exit.

When you have performed all of the above actions, ISPF users are prompted for a password which is authenticated within IMS Connect.

⚠️ Note

If password is made optional, it still validates against the user ID.

Using the Energizer ISPF interface

This section covers the following topics, common functions of various panels.

- Displaying a selection list (see page 20)
- Using commands and action codes (see page 21)
- Using command line commands (see page 22)
- Using action codes (see page 24)

Displaying a selection list

This topic describes how to display a selection list.

When the plus sign (+) is displayed after a field on a panel (see the following figure), you can press the Prompt key (typically the PF4 key) to select from a list of values for that field or you can type the information.

Sample prompt for list
IMS Connect Options

Command ===> _________________________________________________________

Type Connect options. Scroll down for more options.

Started task name . . ______ +

Description . . . . . ________________________________________

Group name . . . . TXCEGRPT +(Use Prompt for list)

Router options name . ______ +

Exit options name . ______ +

Host name . . . . . . ________________________________________

Port number . . . . ____ (1 to 65535)

Using commands and action codes

You can enter Energizer commands on any command line, shown below. For more information about Energizer commands, see Issuing Energizer commands (see page 68).

Sample Commands and action codes

File Display Help

---------------------------------------------------------------------
Command ===> ________________________________________________ Scroll ===> PAGE

Options library . . : hlq.LIBRARY.IPR.OPTIONS

Commands: ADD COPY Locate Select SORT

Type one or more action codes. Then press Enter.
S=Display/Update C=Copy D=Delete I=Insert R=Reload

A Name     Type     Saved            User    Description
_ TXCGRPT  eGroup  05/09/06-13:16   USERN   TEST
_ TXCEGRPR eGroup  03/11/06-11:56   USERN   test egroup
D WXCELNKT eGroup  06/13/06-15:37   USERN   Egroup for wxc
_ ELINK2  eLink    04/25/06-13:46   USERN   tEST
_ TXCELNKT eLink    03/11/06-11:55   USERN   elink
D CONN2    Connect  05/09/06-13:16   USERN   Test
D WXCEGRPT Connect  02/16/06-17:25   USERN   Connect for wxc
_ TXCIC222 Connect  03/22/06-10:45   USERN   IMS Connect
_ TXCIC222 Connect  03/23/06-08:38   USERN   IMS Connect - IMS v9.1 version
_ TXCUMXT4 Exits  12/09/06-20:37   USERN   Exit Services Option
_ TXCUMXTA Exits  04/05/06-16:49   USERN   Exit Services Option
_ IMSB     IMS      02/16/06-16:36   USERN   IMS: IMSB
_ T81PIMS  IMS      12/09/06-19:56   USERN   IMS: T81PIMS
_ T71PIMS  IMS      12/09/06-19:56   USERN   IMS: T71PIMS
_ WXCRTR1  Router  05/20/06-10:21   USERN   tEST
Using command line commands

Many commands can be issued by typing them on the command line. The commands in this section are the most frequently used commands. For a complete list of commands, see the online Help Index or type INDEX on the command line.

Note

All Energizer commands (option 3 on the Primary menu) can be issued from the command line.

The following table lists commands that can be issued from the command line at any time.

Commands that are available from all panels any time

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABORT</td>
<td>Exits Energizer immediately; nothing is saved</td>
</tr>
<tr>
<td>ABOUT</td>
<td>Displays the ABOUT panel, which contains copyright information and current version, release, and maintenance levels</td>
</tr>
<tr>
<td>CANcel</td>
<td>Exits the current panel without processing any changes or saving your work</td>
</tr>
<tr>
<td>INdex</td>
<td>Displays the Help index that lists available commands</td>
</tr>
<tr>
<td>MESsage OR MSG</td>
<td>Displays message Help</td>
</tr>
</tbody>
</table>

The following table lists display commands that you can issue on the command line to update your ISPF profile options for Energizer. These options apply to your user ID only.

Display commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display OPtions</td>
<td>Update general options</td>
</tr>
<tr>
<td>Display COlors</td>
<td>Update colors</td>
</tr>
<tr>
<td>Display SETtings</td>
<td>Update ISPF settings</td>
</tr>
<tr>
<td>Display Keys</td>
<td>Update PFKEYS</td>
</tr>
<tr>
<td>Display PAnelid</td>
<td>Switch PANELID on/off</td>
</tr>
<tr>
<td>Display FKa</td>
<td>Switch PFKEY display on/off</td>
</tr>
</tbody>
</table>

The following table lists commands that can be issued under specific circumstances which are listed in the table.
Note

The commands in this table are available from the configuration member list but are not available when you are editing an configuration member.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRompt</td>
<td>Displays a list of options for an entry field that is followed by the plus (+) sign. The cursor must be in the entry field, or you must type the field name after the command.</td>
</tr>
<tr>
<td>SEnd</td>
<td>Sends an Energizer command to the last specified IMS Connect. The SEnd command is available except when editing Configuration options. The command must be specified with a parameter.</td>
</tr>
</tbody>
</table>

The following table lists commands that can be issued when a report is available. A report may be created from the following options on the Primary Menu:

- Query IMS Connect (option 2)
- Issue an Energizer command (option 3)
- Verify IMS Connectivity (option 4)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REView</td>
<td>Browses the last report</td>
</tr>
<tr>
<td>ROUTe</td>
<td>Routes the last report to a printer</td>
</tr>
<tr>
<td>SAVE</td>
<td>Saves the last report to a data set</td>
</tr>
</tbody>
</table>

The following table lists commands that can be issued on some panels when you are configuring options. These commands are usually listed on the panel when available.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD, Insert, NEW</td>
<td>Adds a new row to the table</td>
</tr>
<tr>
<td>COPY name</td>
<td>Makes a copy of the specified element</td>
</tr>
<tr>
<td>SAVE</td>
<td>Saves the changes that you made to the options data set so you can continue editing. You can specify a name, so you can save a copy of the option under another name.</td>
</tr>
</tbody>
</table>
The following table lists commands that can be issued when a list or table is displayed:

**Commands that are available from a list or table**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATE &lt;value&gt; &lt;field-name&gt;</td>
<td>Moves the cursor to a matching value in the table</td>
</tr>
<tr>
<td>REFresh (Query IMS Connect)</td>
<td>Refreshes the display by rereading the trace records</td>
</tr>
<tr>
<td>RESet (Query IMS Connect)</td>
<td>Resets selections, and clears filters and any reports</td>
</tr>
<tr>
<td>RESet (Verify IMS Connectivity)</td>
<td>Resets all options to their default values, and clears any report</td>
</tr>
<tr>
<td>SORT &lt;column-name&gt;</td>
<td>Sorts the table on the specified column</td>
</tr>
<tr>
<td></td>
<td>You can place the cursor on a column heading and press Enter to sort the table on that column. Sorting twice on the same column sorts the column in the reverse order.</td>
</tr>
</tbody>
</table>

The following table lists commands that can be issued when you are viewing a report from the Verify IMS Connectivity (option 4) panel.

**Commands that are available to view reports for Verify IMS Connectivity**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DETail</td>
<td>Switch to a detail report</td>
</tr>
<tr>
<td>NODETael</td>
<td>Switch to a summary report</td>
</tr>
<tr>
<td>REView</td>
<td>Switch between a detail and summary report</td>
</tr>
<tr>
<td>SUMMMy</td>
<td>Switch to a summary report</td>
</tr>
</tbody>
</table>

**Using action codes**

This topic describes how to use action codes.

When you are using action codes, you can select several members on which to perform an action. When the action is completed on one member, the next member that you selected is processed.

To bypass confirming the rest of the actions, select Do not confirm the action for the rest of the configuration session.

In the sample shown below, deletion was selected for several configuration members.

**Sample Confirm Options Module panel**
Confirm Delete Options Module

Command ===> _________________________________________________________

Select one of the following. Then press Enter.

_ 1. Delete CONN2
   2. Do not delete CONN2
   3. Cancel delete and all remaining selections

Select by typing a '/'.

_ Do not confirm deletes for the rest of this configuration session

(Use DISPLAY OPTIONS command to change confirm option permanently.)

Based on the action that you choose, one of the following results happens:

<table>
<thead>
<tr>
<th>Action</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1, and press Enter</td>
<td>deletes the member that is listed, and displays the next member that you have marked for deletion</td>
</tr>
<tr>
<td></td>
<td>If you selected Do not confirm deletes for the rest of this configuration session, all selected members are deleted. No further confirmation is displayed.</td>
</tr>
<tr>
<td>Type 2, and press Enter</td>
<td>does not delete the member that is listed; displays the information panel for the next member that you have marked for deletion</td>
</tr>
<tr>
<td>Type 3, and press Enter</td>
<td>cancels the delete for the member listed and all members that you have not already deleted</td>
</tr>
<tr>
<td>Do not confirm deletes for the rest of this configuration session</td>
<td>to enable, type a slash (/)</td>
</tr>
<tr>
<td></td>
<td>If you do not enable this feature, you must confirm the deletion of each member that you selected.</td>
</tr>
</tbody>
</table>

Accessing online Help

For information about a panel (or any item on a panel), use online Help.

To access online Help for a panel

1. Position the cursor on the command line.
2. Press the Help key (typically PF1.)
   The Help topic for the panel is displayed.

⚠️ Note

If a message is displayed on a panel, you may see a long message when you press Help. Press Help again to display the help topic. To display the Help topic immediately for a panel, type EXHELP on the command line.

To access online Help for items on a panel

1. Position the cursor on a data entry field.
   For action codes, position the cursor on the underscore (_) next to the item.
2. Press Help (typically PF1.)
   The Help topic that is displayed is based on the location of the cursor.

Getting Started

When you start Energizer, the Energizer logo panel is displayed.
To invoke the Energizer ISPF interface to perform an action:

1. Invoke the Energizer ISPF interface Step 1 (see page 27) from the Energizer logo panel, and press Enter.

**Energizer for IMS Connect - Primary Menu**

```
File  Display  Help
---------------------------------------------------------------
Energizer for IMS Connect - Primary Menu
More:    +

Select one of the following. Then press Enter.

  1. Configure Energizer
     Options library _______________________________
     Options module ______ (Blank or pattern for selection list)

  2. Query IMS Connect

  3. Issue Commands

  4. Verify IMS Connectivity (test transactions)
     Choose an IMS Connect for options 2, 3, or 4
     IMS Connect . ______ + (Blank or pattern for selection list)
     TCP/IP Host . ______________________________
     TCP/IP Port . ___

  5. Set BMC Software Product Authorization by CPU ID

'+' following an entry field indicates that the PROMPT action is available.
```

2. Perform an action from the Primary Menu, type the number for the action, and press Enter.
The following table lists the available actions and describes what each action does. **Description of actions on Primary Menu**
<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure Energizer</td>
<td>Configure the Energizer Options Library and members, by adding, updating, reloading, and deleting eLinks, eGroups, IMS Connects, IMS Systems, exits, and routing</td>
<td>Defining your site setup to enable Energizer (see page 128)</td>
</tr>
<tr>
<td>Query IMS Connects</td>
<td>Get transaction trace information, historical statistical information (hourly and by routing cycle)</td>
<td>Querying IMS Connects (see page 50)</td>
</tr>
<tr>
<td>Issue Commands</td>
<td>Display, reload, set, and reset options and exits and IMS Connect z/OS and OM Type-2 commands</td>
<td>Energizer environment commands (see page 65)</td>
</tr>
<tr>
<td>Verify IMS Connectivity (test transactions)</td>
<td>Verify connectivity by sending transactions and IMS commands to the specified IMS Connect</td>
<td>Verifying IMS connectivity (test transactions) (see page 78)</td>
</tr>
<tr>
<td>BMC Software Product Authorization by CPU ID</td>
<td>Set BMC Software product authorization load library</td>
<td>Setting product authorization by CPU ID (see page 81)</td>
</tr>
</tbody>
</table>

**Tip**

The following information on the Primary Menu applies to Querying Active IMS Connects, Energizer commands, and Verifying IMS Connectivity:

```
<table>
<thead>
<tr>
<th>IMS Connect</th>
<th>TCP/IP Host</th>
<th>TCP/IP Port</th>
</tr>
</thead>
</table>
```

If you do not enter an IMS Connect name when you select option 2, 3, or 4, the IMS Connect List panel Figure 2 (see page 28) is displayed. Before you can continue, you must select which IMS Connect configuration member to use. The list is constructed when Energizer reads the options library and tries to contact each IMS Connect. If you specify a host and port on the Primary Menu, that IMS Connect is contacted also.

With the IMS Connect List panel you can use the selected IMS Connect for this query only or use it as the default for all queries. The options library should contain a member for the selected IMS Connect. If no configuration member is found, default values are used.

**Sample IMS Connect List panel**
Configuring Energizer

This section provides information about configuring Energizer options library, and about creating eGroups, eLinks, IMS Connects, IMS systems, exits, and routing members. The following topics explain these functions:

- Adding eGroups (see page 31)
- Adding eLinks (see page 33)
- Adding IMS systems (see page 34)
- Adding IMS Connects (see page 35)
- Adding an ODBM Option module (see page 37)
- Adding exits (see page 38)
- Virtual Exit extensions options (VIRTEXIT) options (see page 43)
- Defining routing options (see page 45)

Before you begin

Before configuring Energizer, see the BMC System Administration for IMS Getting Started Guide for tips about types of information to collect and how to view configuration scenarios.

To configure the Energizer options library

1. On the Primary Menu, type 1.
   The cursor position changes so you can enter the Options Library name.
2. Type the Options library name.
3. Perform one of the following actions:
### Action Result

**Press Enter**

If the options library does not exist, the Figure 1 (see page 30) is displayed. You must define an Options Library before you can continue.

If the options library exists but no members have been defined, the Figure 1 (see page 30) is displayed.

If the library exists, the list of defined options Figure 2 (see page 30) is displayed.

**Press Tab and enter the Options module name**

If the options module exists, the specified options module is opened so you can make updates.

If the options module does not exist, the New Options panel Figure 2 (see page 30) is displayed.

---

**For more information about the Figure 3 (see page 31), see online Help.**

**Sample Options Library Create panel**

```
Options Library Create   Data set not cataloged
Command ===> _________________________________________________________

Type allocation criteria. Then press Enter to create a new library.

Data set information
   Data set name . . . . bmcnode.IPR.OPTIONS__________________________
   Volume serial . . . . ______ (optional)
   Generic unit . . . . ______ (optional)

Space information (for new data set)
   Block size . . . . 32760
   Units . . . . . . TRKS (BLKS, TRKS, or CYLS)
   Primary quantity . . 10__
   Secondary quantity . . 5__
   Directory blocks . . 50_

SMS information (for System Managed Storage only)
   Management class . . ______
   Storage class . . . . ______
   Data class . . . . ______
```

---

**For more information about the Figure 2 (see page 30), see online Help.**

**New Options panel**
New Options   No options found

Select one of the following types to create new options. Then press Enter.

1. eLink
2. eGroup
3. IMS
4. IMS Connect
5. Router
6. Exit Services
7. ODBM Routing

For more information about the Figure 3 (see page 31), see online Help.

Sample Configuration panel

Adding eGroups

eGroups are unique grouping of IMS Connects that use the same load balancing method.

This example assumes that no options have been defined.
Tip

Create eGroups before you define eLinks and IMS Connects. That way, when you define eLinks and IMS Connects, you can press the PROMPT key (typically PF4) and choose from the defined list of eGroups.

To create an eGroup, perform the following steps:

1. On the command line in the Configuration panel, type ADD.
   The New Options panel is displayed.
2. To define an eGroup, type 2 and press Enter.
   The eGroup Options panel is displayed. For more information about this panel, press the Help key.

**Default new eGroup Options panel**

```
Egroup Options
Command ===>
Type eGroup options.
Name . . . . . . . . . : DVT71GRP
Description . . . . . . . EGROUP FOR DVT71IMS
WTO descriptor codes . 7
WTO routing codes . . 11
Cycle time . . . . . . 60 (10-300 seconds)
Load balancing method. 2  1. Workload Manager (WLM)
                        2. Statistical
Message options.
  Uppercase option. Select (type a '/') if desired.
    _ Display all messages in uppercase only
Message number prefix. Select a product message prefix.
  1 1. BMCIPR (ex. BMCIPR123456E)
     2. IPR   (ex. IPR123456E)
     3. BMC   (ex. BMC123456E)
```

3. Enter information.
4. To save the information and exit, press END.
   An updated Configuration panel is displayed.
Adding eLinks

An eLink is the Energizer address space that provides the communications between the UIM server, the operator console, and the IMS Connects.

Note

You do not need an eLink or an eLink started task to use the ISPF or console interfaces, but you do need an eLink to enter Energizer commands from an MVS operator console.

To create an eLink, perform the following steps:

1. On the command line in the Configuration panel, type ADD.
   The New Options panel is displayed. For more information about this panel, see online Help.
2. To define an eLink, type 1 and press Enter.
   Screen 1 of the eLink Options panel, shown below, is displayed. For more information about this panel, see online Help.

   Default eLink Options panel

   eLink Options

   More: +

   Type eLink options. Scroll down for more options.

   Started task name. . . ______ +

   Description . . . . . _________________________________________

   Select one of the following. Then press Enter.
   _ 1. Add new eGroup. .
       2. Change list of existing eGroups:

   eLink VTAM LUNAME . . ______
   UIM server VTAM LUNAME
   WTO descriptor codes . 7_______________________________________
   WTO routing codes . . 11_______________________________________

   Select (type a '/') any of the following.
   _ Display all messages in uppercase only
   / Activate tracing for types selected below
   _ Activate journaling for types selected below
3. Enter information, and page down.
   Screen 2 of the of eLink options panel, shown below, is displayed. For more information about this panel, see online Help.

   **Default eLink Options panel (screen 2 of 2)**

   ![Energizer for IMS Connect, version 1.7 Page 34 of 34](image)

   **eLink Options**
   
   _ Reset all trace and journal selections below to default values

   Select which trace and journal types are to be collected.

<table>
<thead>
<tr>
<th>Type</th>
<th>Trace</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTL - address space control</td>
<td>. /</td>
<td>/</td>
</tr>
<tr>
<td>CMDS - commands</td>
<td>. . . . .</td>
<td>/</td>
</tr>
<tr>
<td>COMP - components</td>
<td>. . . . .</td>
<td>/</td>
</tr>
<tr>
<td>ERRS - errors</td>
<td>. . . . . .</td>
<td>/</td>
</tr>
<tr>
<td>SECS - security</td>
<td>. . . . . .</td>
<td>/</td>
</tr>
<tr>
<td>VTAM - VTAM</td>
<td>. . . . . .</td>
<td>/</td>
</tr>
<tr>
<td>XCFC - XCF control</td>
<td>. . . . . .</td>
<td>/</td>
</tr>
<tr>
<td>DISP - dispatcher</td>
<td>. . . . . .</td>
<td>_</td>
</tr>
<tr>
<td>JRNL - journal</td>
<td>. . . . .</td>
<td>_</td>
</tr>
<tr>
<td>LATCH - latchs</td>
<td>. . . . . .</td>
<td>_</td>
</tr>
<tr>
<td>STRG - storage</td>
<td>. . . . . .</td>
<td>_</td>
</tr>
<tr>
<td>TIMR - timers</td>
<td>. . . . . .</td>
<td>_</td>
</tr>
</tbody>
</table>

   Enter information and press **End**.
   An updated Configuration panel is displayed.

### Adding IMS systems

IMS systems are datastores.

**To add IMS systems, perform the following steps:**

1. On the command line in the Configuration panel, type **ADD**.
   The New Options panel is displayed.

2. To define an IMS system, type **3** and press **Enter**.
   The following panel is displayed. For more information about this panel, see online Help.

   **IMS Options panel**

   ![Energizer for IMS Connect, version 1.7 Page 34 of 34](image)
3. Enter information, and press End.
The IMS is added to the list on the Configuration panel.

Tip

You can create several IMS options at once by using the PROMPT key (typically PF4) in the Control Region Name field. When the System Proclib panel is displayed, enter the name of the system proclib containing the IMS started task names. From the list, select all control regions for which you want to create options. When you press Enter, all selections (except the last one selected), are processed to create new IMS options. You are returned to the IMS options panel to process the last selection.

Adding IMS Connects

IMS Connect is an IBM product that provides e-business access to IMS applications and data. If multiple IMS Connects are installed and you want to use the Energizer features, Energizer must be installed and active within each IMS Connect address space. The Energizer load library must be referenced in each IMS Connect started task.

To define IMS Connects, perform the following steps:

1. On the command line in the Configuration panel, type ADD.
   The New Options panel, as shown below, is displayed.
2. To define an IMS Connect, type 4 and press Enter.
3. On screen 1 of the IMS Connect Options panel, shown below, enter the necessary information and page down to continue.
For more information about this panel, see the online Help.

IMS Connect Options panel (screen 1 of 2)

---

IMS Connect Options

More:  +

Type Connect options. Scroll down for more options.

Started task name... TESTIMSC +

Description .... Test IMS Connect Options

Group name ..... TXCEGRPT +(Use Prompt for list)
Router options name . GPFSYSMG +(Use Prompt for list)
Exit options name .. _______ +
Execute cmd member . _______ (in PROCLIB)
Host name ........ .................................................................
Port number ....... ____ (1 to 65535)

Exit Security Options
Security class name.. ______
Security application . ______
Resource prefix ... .................................................................

Governor Options
Transaction limit .. 0_______ (transactions per second)
Warning threshold .. 0_ (0 to 99 percent of transaction limit)
Cycle interval ....... 5_ (5-60 seconds)
Low warning limit .. 0_______ (transactions per second)

Select (type a '/') any of the following.
_ Cache security resource profiles
/ Activate tracing for types selected below
/ Activate journaling for types selected below
_ Pass IMS Connect data to the MAINVIEW Logger

---
4. On screen 2 of the IMS Connect Options panel, shown below, enter the necessary information, and press **End**.

**IMS Connect Options panel (screen 2 of 2)**

![IMS Connect Options panel](image)

**Journal Data Set Allocation Option**

1. Dynamic - Dynamically allocate new journal data set when needed
2. Reuse - Reuse pre-allocated journal data sets

**Dynamic Journaling Options**

Data set name prefix: ________________

- Append the default suffix (.Dyyyydd.Thhmmst.Snn) to Dynamic Journaling data set names

SMS Management class: ________ (For SMS managed data sets)
SMS Storage class: ________ (For SMS managed data sets)
SMS Data class: ________ (For SMS managed data sets)
Volume serial: ________
Generic unit: SYSDA___
Space units: CYL (TRK or CYL)
Primary quantity: 200__ (in above units)

Select which trace and journal types are to be collected.

- Reset all trace and journal selections below to default values

<table>
<thead>
<tr>
<th>Type</th>
<th>Trace</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTL - address space control</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>CMDS - commands</td>
<td>. . .</td>
<td>. . . .</td>
</tr>
</tbody>
</table>

**Note**

To display trace information that IMS Connect collects, select EVNT. To display the Event trace, see Viewing an Event trace (see page 61). To view trace data, see Trace and journal options (see page 210)

The IMS Connect is added to the Configuration panel.

**Adding an ODBM Option module**

You can add an ODBM option module.

For more information on how you can add and configure an ODBM Option module, please see the section "ODBM routing support in Energizer for IMS Connect"
Adding exits

Exit Services enhances IMS Connect functions.

For example, you can dynamically add and reload exits and processing options, define security, and create and maintain exits without having to code the exits in assembler language. The following exit types are available:

- Customer exits are written by using assembler language.
- Virtual exits are created and maintained only by using Energizer.

To add an Exit Services configuration member

1. On the command line in the Configuration panel, type ADD. The New Options panel is displayed.
2. To define a new Exit Services member, type 5 and press Enter. The Default Exits panel, as shown below, is displayed.

Default Exits panel

```
Default Exits
Command ===> ___________________________________

Select (type a '/') any of the following to add default exits. Then press Enter.

/ HWSJAVA0 default exit
  _ HWSSMPL0 default exit
  _ HWSSMPL1 default exit
/ IPRCMDS0 virtual exit
```

⚠️ Note

IMS Connect is shipped with HWSJAVA0, HWSSMPL0, and HWSSMPL1 exits. These customer exits were written by using assembler language. For more information about exits, see Message exits (see page 148). The IPRCMDS0 exit is required when you are using the ISPF interface. This exit processes Energizer commands. If MSGID strings conflict with other exits, you may change them.
3. To select the exits to add, type a slash (/) and press Enter.
   The Exit Services panel is displayed. For more information about this panel, see online Help.

**Sample Exit Services panel**

<table>
<thead>
<tr>
<th>Exit Services</th>
<th>Row 1 to 2 of 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt;</td>
<td>Scroll ===&gt; PAGE</td>
</tr>
<tr>
<td>Exit services name . .</td>
<td>Description . . . .</td>
</tr>
</tbody>
</table>

Type one or more action codes.
S=Update C=Copy D=Delete I=Insert T=Toggle-type A=Activate X=Deact
A Exit Type MSGID1 String MSGID2 String Routing Active
_ HWSJAVA0 CUSTOMER '*'HWSJAV'*'_____ A'*HWSJAV'*'_____ / 
_ IPRCMDS0 VIRTUAL 'IPRCMD-'_____ A'IPRCMD-'_____ / 
*********************************************************************************
HWSJAVA0 and IPRCMDS0 exits were added.

4. Enter the **Exit services** name.
5. *(optional)* Enter a **Description**.
6. Select an action code to update an exit, or press **End**.

**To update a customer exit**

1. From the Exit Services panel, press Tab until you reach the customer exit that you want to edit (for example, the HWSJAVA0 exit).
2. Type S, and press ENTER.
The Customer Exit Options panel, shown below, is displayed. For more information about this panel, see online Help.

**Default Customer Exit Options panel**

![Customer Exit Options panel]

Type the options for Customer (assembler) exits defined to IMS Connect.
Scroll down for more options and samples.

Customer exit name . : HWSJAVA0

Select (type a '/') any of the following.
/ Activate message routing for this exit
_ Return fullword message length
_ Call termination routine when exit is reloaded
_ Call initialization routine when exit is reloaded

String options           MSGID1 String       MSGID2 String
String . . . . . . . 'HWSJAVA'_________ A'HWSJAVA'________

String usage. Select one of the following.
1 1. Verify that the exit uses the above strings
  2. Override the strings coded in the exit with the above strings
  3. Ignore the above strings and use those coded in the exit

Sample strings (use quotes for mixed case)
Type EBCDIC strings like this . : '**SAMPLE**'
Type ASCII strings like this  . : A'SAMPLE*'    (use A')
Type hex strings like this  . . : X'2A63414D50C4452A' (use X')

3. Enter information, and press End.
The Exit Services panel is displayed.

**To update a virtual exit**

1. From the Exit Services panel, press Tab until you reach the virtual exit (for example, the IPRCMDS0 exit).
2. Type **S**, and press **Enter**.
   
   For more information about the panels, see online Help.
   
   Screen 1 of the Virtual Exit Options panel is displayed.

**Virtual Exit Options panel (screen 1 of 2)**
3. Enter information, and page down. 
   Screen 2 of the Virtual Exit Options panel is displayed.

**Virtual Exit Options panel (screen 2 of 2)**

<table>
<thead>
<tr>
<th>Virtual Exit Options</th>
<th>More:  -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other options</td>
<td></td>
</tr>
<tr>
<td>Maximum timeout.</td>
<td>____ (0.01 to 3600 seconds, blank for none)</td>
</tr>
<tr>
<td>User virtual exit name</td>
<td>__________</td>
</tr>
</tbody>
</table>

Virtual exit options for security checks within IMS Connect 
Select (type a '/') any of the following.
- Enable userid authentication
- Enable IMS Connect authentication
- Enable transaction authentication

<table>
<thead>
<tr>
<th>Virtual exit options for security checks within IMS Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>User virtual exit name: __________ (used for IMS Connect authentication)</td>
</tr>
</tbody>
</table>

Security exit name: __________ (your exit for additional checks)

Trusted IP address: ________________

Trusted IP list member: __________ (PROCLIB member containing IP addresses)

OTMA security options for security checks within IMS

<table>
<thead>
<tr>
<th>Default userid: __________ (passed to IMS if no userid in IRM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default group: __________ (passed to IMS if no group in IRM)</td>
</tr>
</tbody>
</table>

Security level to be used when /SECURE OTMA PROFILE used in IMS.
- 1. NONE  - no authentication within IMS
- 2. CHECK - IMS authenticates commands and transactions
- 3. FULL  - Same as CHECK plus dependent region checks

<table>
<thead>
<tr>
<th>Sample strings (use quotes for mixed case)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type EBCDIC strings like this: '<em>'SAMPLE</em>'</td>
</tr>
<tr>
<td>Type ASCII strings like this: 'A'<em>SAMPLE</em>'   (use 'A')</td>
</tr>
<tr>
<td>Type hex strings like this: X'2A63414D50C4452A' (use 'X')</td>
</tr>
</tbody>
</table>

4. Press **End**. 
The Exit Services panel is displayed.
To add a new exit

1. On the command line in the Exit Services panel, type **ADD**.
The New Exit panel is displayed.

   **New Exit panel**

   Select one of the following to create a new exit. Then press Enter.

   - 1. Customer exit
   - 2. Virtual exit
   - 3. HWGJAVA0 default exit
   - 4. HWSSMPL0 default exit
   - 5. HWSSMPL1 default exit
   - 6. IPRCMDS0 virtual exit

2. Enter the number of the exit to add, and press **Enter**.
   Based on the selection that you made, the Customer Exit Options panel or the Virtual Exit Options panel is displayed. For more information about the displayed panel, see online Help.

3. Add information, and press **End**.
The Exit Services panel is displayed.

**Virtual Exit extensions options (VIRTEXIT) options**

These options allows you to provide the name of a User Virtual Exit to be called from within the Virtual Exit.

This enables you to make minor changes to default processing without having to maintain a complete customer message exit. The user virtual exit must conform to the same conventions as a standard message exit.

The following figure shows the Virtual Exit Options panel:

**Virtual exit options panel**
Virtual Exit Options

Other options
  Maximum timeout . . . ___ (0.01 to 3600 seconds, blank for none)
  User virtual exit name ____________

Virtual exit options for security checks within IMS Connect
  Select (type a '/') any of the following.
    _ Enable userid authentication
    _ Enable IMS Connect authentication
    _ Enable transaction authentication

  IMS Connect resource . ____________ (used for IMS Connect authentication)
  Security exit name . ____________ (your exit for additional checks)
  Trusted IP address . ____________
  Trusted IP list member ____________ (PROCLIB member containing IP addresses)

OTMA security options for security checks within IMS
  Default userid . . . ________ (passed to IMS if no userid in IRM)
  Default group . . . ________ (passed to IMS if no group in IRM)
  Security level to be used when /SECURE OTMA PROFILE used in IMS.
    1. NONE - no authentication within IMS
    2. CHECK - IMS authenticates commands and transactions
    3. FULL - Same as CHECK plus dependent region checks

Sample strings (use quotes for mixed case)
  Type EBCDIC strings like this . : '*SAMPLE*'
  Type ASCII strings like this  . : A'*SAMPLE*' (use A')
  Type hex strings like this . . : X'2A63414D50C4452A' (use X')

The following, customizable user exits are contained in the macro $IPRHVEP which you can find in the sample library.

- IPRVEXT1
- IPRVEXT2

The following table describes the available commands:

**Virtual Exit User Exit commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELOAD OPTIONS TYPE (EXIT) ID(exit-options-name)</td>
<td>When the exit options are reloaded, and if any changes are made for a specific virtual exit that has a user virtual exit, it is reloaded and reinitialized.</td>
</tr>
</tbody>
</table>
Command | Description
--- | ---
RELOAD EXIT TYPE (VIRTUAL) ID(virt-exit-name) NEWNAME(user-exit-name) | This command allows a user exit for a virtual exit to be reloaded and reinitialized.

**Note**

The ID specifies the name of the virtual exit, but not the user virtual exit.

NEWNAME is optional and specifies the name of the user virtual exit. If not specified, the same exit from the virtual exit options is reloaded.

NEWNAME may be used to switch to a different user virtual exit, or to load a user virtual exit for the first time, if none was specified in the options.

A special keyword value NEWNAME("REMOVE") may be used to remove an existing user virtual exit.

DISPLAY EXIT TYPE (VIRTUAL) ID(virt-exit-name) | This command displays the virtual exit name and the IP list member name.

RELOAD EXIT TYPE (IPLIST) ID(virt-exit-name) NEWNAME(user-exit-name) 1 (see page 45) | This command allows an IP list for a virtual exit to be reloaded and reinitialized. Note that ID specifies the name of the virtual exit, not the member.

NEWNAME is optional and specifies the name of the PROCLIB member. If not specified, the same member from the virtual exit options is reloaded. NEWNAME may be used to switch to a different member, or to specify a member for a user virtual exit for the first time, if none was specified in the options.

A special keyword value NEWNAME("REMOVE") may be used to stop using an existing IP list.

DISPLAY EXIT TYPE (IPLIST) ID(virt-exit-name) 2 (see page 45) | This command will display the list of IP addresses currently being used for the virtual exit.

1. The IP list will be checked before performing security checking and may be used to alter what security checking is performed. Note that this list is checked after the Trusted IP address in the options. If an IP address matches the Trusted IP address, the message is allowed and the IP list is not checked.

2. Messages rejected by the IP list will receive a security violation reason code 220. If an ESM is returned a new flag (IPRESM_IPLIST mapped in $IPRHESM in the sample library) will be set to indicate that the rejection was due to the IP list.

**Defining routing options**

DataStore Routing directs a message to the datastore that is best equipped to process the message.

DataStore Router uses the following components to route transactions:

- Affinity Manager ensures that messages which have unique processing characteristics are sent to the correct datastore.
- Load Balancer routes messages that are based upon which are weights defined within the load balancing method that you selected.
To define routing options

1. On the command line, type **ADD**.
2. To define routing, type **6** and press **Enter**.
   For more information about this panel, press the **Help** key.

**Router Options panel**

```
Router Options
Type Router options.
  Router options name  : ROUTERA
  Description          : ROUTERA____________________________
Select one of the following. Then press Enter.
  _ 1. Add or update DataStores
  _ 2. Add or update Affinities
Select (type a '/') any of the following.
  / Activate affinity manager
  / Activate load balancing
  _ Display messages for DataStore state changes    - IMS V10 and above
Warn state weight multiplier     . . . 50_ (0-100 percent)    - IMS V10+
DataStore state change timer    . . . 0_ (0-60 minutes)     - IMS V10+
```

3. Enter information.
4. To add datastores, type 1 and press Enter.

⚠️ Note

The second option, Add or update Affinities, is not available until you have defined DataStores.

The following panel is displayed.
For more information about this panel, see online Help.

DataStore Definition panel

DataStore Definition

Type DataStore definition. Use ADD command to add another.

DataStore name . . . . ________ (as defined to IMS Connect)

Load balancing weight. ___ (0-100)

Select (type a '/') any of the following.
/ Activate DataStore
  Preferred DataStore

--------------------------------- OR ---------------------------------
  Import all DataStores from HWSCFG member in
  Proclib ____________
  Member _________ (Blank or pattern for selection list)

5. Enter the information, or Import all the DataStores from the IMS Connect HWSCFG member by entering the Proclib and Member information.
6. To add more datastores, type ADD on the command line.
7. To return to the Router Options panel, press End.
8. Perform one of the following steps:
   • To define affinities, type 2 to add or update affinities and press Enter.
   • If you do not have affinities to define, press End.

The router options are added to the Configuration panel.
9. Enter the affinity type and a value.
   The following panel is displayed.
   For more information about this panel, see online Help.

**Affinity Definition panel**

```
Affinity Definition

Select one of the following. Then press Enter.
_ 1. Update DataStore routing list
_ 2. Add data comparison rules

Affinity definition.

Type . . . . _ 1. TranCode (Value may be pattern using ? and *)
_ 2. User (Value is name of up to 8 characters)
_ 3. Group ( ' ' ' ' ' ' ' ' )
_ 4. ClientID ( ' ' ' ' ' ' ' ' )
_ 5. MsgID (Value is 'string', 'ascii', or X'hex')
_ 6. Port (Value is number 1-65535)
_ 7. DataStore (Value is name of up to 8 characters)

Value . . . ___________________
```

10. To update the DataStore routing list, type 1 and press **Enter**.
    The following panel is displayed.
    For more information about this panel, see online Help.

**Affinity - DataStores example**

```
Affinity - DataStores           Row 1 to 5 of 5
Commands: Locate SAVE SORT Select eXclude

Type . . . : TranCode
Value . . : DSP*

Select (type a '/') DataStores to be used when Affinity matches.
_ D71B
_ T61P
_ T71M
_ T71P
/ T81P
```

11. Type a slash (/) next to the DataStores that are to be used when an Affinity matches.
12. Press **End**.
    The Affinity Definition panel is displayed. For more information about this panel, see online Help.
13. To add data comparison rules, type **2** and press **Enter**.
   The following panel is displayed. For more information about this panel, see online Help.

   **Affinity Data panel**

   Affinity Data
   Type optional quoted string or hex string values to compare to the message:
   Offset . . . _____ (0-32767 offset in message - include LLZZ)
   Comparison . EQ (EQ,NE,GT,LT,GE,LE)
   Value . . .
   'string'__________________________________________________
   or X'hex' ________________________________________________
   Logical operator . . . AND (AND,OR)
   Offset . . . _____ (0-32767 offset in message - include LLZZ)
   Comparison . EQ (EQ,NE,GT,LT,GE,LE)
   Value . . .
   'string'__________________________________________________
   or X'hex' ________________________________________________

14. Enter information, and press **End**.
   The following panel is displayed.
   For more information about this panel, see online Help.

   **Sample Router Options Affinities panel**

   Router Options - Affinities     Row 1 to 5 of 5
   Router options name  : NAME
   Commands: ADD Locate SAVE Select
   Type one or more action codes.  (Type ADD as a command to add Affinity.)
   S=Display/Update  C=Copy  D=Delete  I=Insert  A=Activate  X=Deactivate
   A Type     Value       Route to these DataStores (... if more)  Data Active
   TranCode DSP* T81P T81P T81P T81P T91P T91P T91P T91P T91P T91P
   TranCode FP* T61P T71P T81P T81P T91P T91P
   DataStor T61P T81P T812 T813 T91P T912 T913
   DataStor T71M T61P T71P T81P T81P T91P T912 T913
   DataStor T71P T81P T812 T813 T91P T912 T913

15. Add more affinities as necessary, and press **End**.
   The Configuration panel is displayed.
Querying IMS Connects

This section provides information about how to query an active IMS Connect.

- Viewing a transaction trace (see page 51)
- Viewing a historical statistics trace (see page 55)
- Viewing a routing cycle statistics trace (see page 58)
- Viewing an Energizer commands trace (see page 60)
- Viewing an Event trace (see page 61)
- Viewing an active client list (see page 63)

To query IMS Connects

1. From the Energizer for IMS Connect - Primary Menu panel, type 2 and press Enter.
   One of the following panels is displayed:
   - If you did not enter IMS Connect information on the Primary Menu, the IMS Connect List panel is displayed.
     Select the IMS Connect to use by typing an S or a U, and pressing Enter.
     The Query IMS Connect panel is displayed.
   - If you entered the IMS Connect information on the Primary Menu, the Query IMS Connect panel is displayed.

Sample Query IMS Connect panel

```
Query IMS Connect
Command ===> _________________________________________________________________
Connect CONN1 + or Host ________________________________________ Port _____
```

Select one of the following options. Then press Enter.

1. Transaction trace Maximum trace records to process 1
2. Historical statistics trace (hour by hour)
3. Statistics trace (by routing cycle)
4. Energizer commands trace
5. Event trace
6. List clients

2. If the port number was not defined as part of the connection, enter the port number.
3. To move the cursor to the selection field, press Tab.
4. To perform an action on the Query IMS Connect panel, type the number of the action and press Enter.

The following table lists and describes what each action does.

**Query IMS Connect panel options**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction trace</td>
<td>Displays trace information that can help you solve problems</td>
<td>Viewing a transaction trace (see page 51)</td>
</tr>
<tr>
<td>Historical Statistics trace (hour by hour)</td>
<td>Displays hourly input message information; helpful in determining the WorkLoad Governor threshold</td>
<td>Viewing a historical statistics trace (see page 55)</td>
</tr>
<tr>
<td>Statistics trace (by routing cycle)</td>
<td>Displays information about the input messages by routing cycle</td>
<td>Viewing a routing cycle statistics trace (see page 58)</td>
</tr>
<tr>
<td>Energizer Commands trace</td>
<td>Displays Energizer commands that were issued</td>
<td>Viewing an Energizer commands trace (see page 60)</td>
</tr>
<tr>
<td>Event trace</td>
<td>Displays trace information for IMS Connect events</td>
<td>Viewing an Event trace (see page 61)</td>
</tr>
<tr>
<td>List clients</td>
<td>Displays information about clients that are currently active in the IMS Connect</td>
<td>Viewing an active client list (see page 63)</td>
</tr>
</tbody>
</table>

**Viewing a transaction trace**

Each transaction might comprise several messages.

Each line in the table, shown below, represents a single message. The type of message is indicated by the code in the Type column. Codes from input messages from the client begin with the greater than (>) symbol. Codes for output messages to the client begin with the less than (<) symbol.

**Sample transaction trace**
<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Type Client</th>
<th>Userid</th>
<th>Exit</th>
<th>DataStor</th>
<th>Transact</th>
<th>Response</th>
<th>Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>R81PXRF</td>
<td>PART</td>
<td></td>
<td>0.238772</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>R81I</td>
<td>PART</td>
<td></td>
<td>0.243580</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>###</td>
<td>PART</td>
<td></td>
<td>0.234691</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>####</td>
<td>PART</td>
<td></td>
<td>0.240851</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>##</td>
<td>PART</td>
<td></td>
<td>0.239520</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:00</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>#</td>
<td>PART</td>
<td></td>
<td>0.239265</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:05</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>R81PXRF</td>
<td>PART</td>
<td></td>
<td>0.239739</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:11</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>R81I</td>
<td>PART</td>
<td></td>
<td>0.245302</td>
<td></td>
</tr>
<tr>
<td>06/03/10 15:11:13</td>
<td>SYM35M02 RIHJER</td>
<td>HWSSMPL0</td>
<td>###</td>
<td>PART</td>
<td></td>
<td>0.235579</td>
<td></td>
</tr>
</tbody>
</table>

To filter a display

To filter on a specific client, such as SYM35M02, type a unique portion of the client name (SYM35) under the Client heading and press Enter. Only entries that begin with SYM35 are displayed.

⚠️ Note

Filtering criteria remain in effect until you delete the criteria or issue the RESET command.
1. Type an **S** next to each timestamp that you want included in the report.
   You can scroll to select more time stamps.

   **Figure 2. Sample Report**

   Commands: ROUTe SAVE
   ******************************** Top of Data ***********************************
   READ input message from client Port=3545 IP=172.17.8.68 (MVSSYSMV.BMC.COM)
   Time: 06/03/10 15:11:00 Length: 500 Time in exit: 0.000046 seconds
   ********************************** Exit Results *******************************
   * IRM Header                                           Exit Results
   * MsgID:    '*SAMPLE*'                                 Output Length:    944
   * ClientID:  SYM35M02   Protocol:    CM1 Send-Commit   Clientid:    SYM35M02
   * DataStor:  R61P       Confirm:     No                Return Code:        0
   * Group:                Socket type: Transaction       Reason Code:        0
   * UserID:                Flow type: Default
   * TranCode:  PART       Return MFS:  No                User Exit RC:     N/A
   * LTERM:                Purge:       No                Router RC:          0
   * Timer: secs.     Syncpt:      No                Governor RC:        0
   ********************************** Router results  *******************************
   * TranCode:  PART       MsgID:   '*SAMPLE*'         First DataStor:   R81I
   * User:      UserID     Port:     11255             Affinity matched: None.
   * Group:                DataStor: R61P              # matching DS:    135
   * ClientID:  SYM35M02   Final DataStor:   R81I
   **********************************************************************
2. To view more of the report, page down.

**Figure 3. Sample Report**

<table>
<thead>
<tr>
<th>CM1 Message from Client (truncated ----- EBCDIC -----)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. 000001F4 00500000 5CE2C1D4 D7D3C55C <em>...4.&amp;..<em>SAMPLE</em></em></td>
</tr>
<tr>
<td>10. 00000000 00000000 E2E8D4F3 F5D4F0F2 <em>.........SYM35M02</em></td>
</tr>
<tr>
<td>20. 00200040 61C4C9E2 40404040 D9F6F1D7 <em>... PART R61P</em></td>
</tr>
<tr>
<td>30. 40404040 40404040 40404040 D9C9C8D1 * RlHJ*</td>
</tr>
<tr>
<td>40. C5D94040 40404040 40404040 5C5C5C5C *ER *****</td>
</tr>
<tr>
<td>50. 5C5C5C5C 019C0000 61C4C9E2 40D3E3C5 ****<em>.PART LTE</em></td>
</tr>
<tr>
<td>60. D9D440D9 F65C4040 40404040 40404040 <em>RM R6</em></td>
</tr>
<tr>
<td>70. 40404040 40404040 40404040 40404040 *</td>
</tr>
<tr>
<td>&lt;&lt;&lt;&lt; Above line repeats 5 times &gt;&gt;&gt;&gt;</td>
</tr>
<tr>
<td>D0. 40404040 40404040 40404040 *</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>----Message to IMS (truncated)----- ----- EBCDIC -----</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. 01400000 00000000 00000000 0000A0F0 <em>. .............0</em></td>
</tr>
<tr>
<td>10. 00000000 00000000 00000000 00010000 <em>............</em></td>
</tr>
<tr>
<td>20. 00480020 00000000 00000000 00000000 <em>............</em></td>
</tr>
<tr>
<td>30. 00000000 00000000 00000000 00000000 <em>............</em></td>
</tr>
<tr>
<td>40. 00000000 00000000 00000000 00000000 <em>............</em></td>
</tr>
<tr>
<td>50. 00000000 00000000 00000000 00040400 <em>............</em></td>
</tr>
<tr>
<td>60. 40404040 40404040 006AC614 0902D9C9 * ...F...RI*</td>
</tr>
<tr>
<td>70. C8D1C5D9 40404093 40404040 40404040 *HJER ..</td>
</tr>
<tr>
<td>80. 00000000 00000000 00000000 00000000 <em>............</em></td>
</tr>
<tr>
<td>&lt;&lt;&lt;&lt; Above line repeats 4 times &gt;&gt;&gt;&gt;</td>
</tr>
<tr>
<td>D0. 00000100 0000D9F8 F1C94040 *....R81I *</td>
</tr>
</tbody>
</table>
3. To view the rest of the report, page down.

**Figure 4. Sample Report**

IMS Connect control blocks:

```
-------------HWSEXPRM-------------- ----- EBCDIC -----  
0. D9C5C1C4 22068AE4 213EB5A0 22062080 *READ...U.......*
10. 000001F4 22063040 00000426 80000000 *...4        
20. D9C9C8D1 C5D9F240 00020DD9 AC110844 *RIHJER2 ...R...*

-------------SVT 21364688------------ ----- EBCDIC -----  
0. E2E5E340 F1F1F2F5 F5404040 C4C5D3C4 *SVT 11255   
10. E4D4D4E8 BE42E51B D6198DC1 00000000 *UUMY..V.O..A...*
20. 21368E80 21D3C4A0 00019488 21D48000 *. ..LD...mh.M.  
30. 21D22000 9DC5C3E5 00800000 00000000 *.K..REC....
40. 00000000 00000000 00000000 00000000 *         
50. 213806B0 BE42DE9D 00000000 00000000 *         
60. 21D1D270 00000000 00000000 00000000 *.J.K.........*
70. BE42E51B D619E341 00000000 00000000 *.V.O.T.......*
80. BE42E51B D619F181 *V.O.1a*

-------------CTTOKEN-------------- ----- EBCDIC -----  
0. E3C3D7C3 21D22000 00000000 21451890 *TCPC.K.........*
10. 21D2F000 A130A018 2BF70000 0004A000 *.KO....    
20. 00000000 00020DD9 AC110844 00000000 *         
30. 00000000 C8E6E2E2 D4D7D3F0 2147E100 *.....HWSSMP.
40. 000000426 *....*
```

To interpret trace data, see Trace and Journal commands (see page 75).

To change HEX dump format

1. From the action menu, select **Display=> Options**.
2. Page down to HEX dump format.
3. Type the number of the format to use.

To print or save a report

Use command line commands ROUTE and SAVE.

**Viewing a historical statistics trace**

The Historical Statistics Trace panel displays hourly trace information. Monitoring transaction throughput can help you establish a transaction threshold for the WorkLoad Governor. For more information about the WorkLoad Governor, see WorkLoad Governor (see page 206).
The first panel displays datastores and exits for which trace data is available. The ALL line references totals that include all datastores and exits. The DataStor - none line includes messages that did not get sent to a DataStore, possibly because of an error. All messages that are sent to that IPRCMDS0 exit are included in this category because the messages are Energizer commands that are processed in IMS Connect.

**Sample Historical Statistics Trace panel (hour by hour)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Rate/Sec</th>
<th>Total</th>
<th>Largest</th>
<th>Errors</th>
<th>Avg Resp. Time (sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td></td>
<td>10.62</td>
<td>152915</td>
<td>145</td>
<td>116</td>
<td>150</td>
</tr>
<tr>
<td>DataStor - none -</td>
<td></td>
<td>0.03</td>
<td>442</td>
<td>145</td>
<td>104</td>
<td>0</td>
</tr>
<tr>
<td>DataStor T61P</td>
<td></td>
<td>0.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DataStor T71P</td>
<td></td>
<td>0.48</td>
<td>6980</td>
<td>118</td>
<td>116</td>
<td>28</td>
</tr>
<tr>
<td>DataStor T81P</td>
<td></td>
<td>3.77</td>
<td>54262</td>
<td>118</td>
<td>116</td>
<td>164</td>
</tr>
<tr>
<td>DataStor T812</td>
<td></td>
<td>0.77</td>
<td>11102</td>
<td>118</td>
<td>116</td>
<td>28</td>
</tr>
<tr>
<td>DataStor T813</td>
<td></td>
<td>0.77</td>
<td>11138</td>
<td>118</td>
<td>116</td>
<td>164</td>
</tr>
<tr>
<td>DataStor T91P</td>
<td></td>
<td>3.24</td>
<td>46624</td>
<td>118</td>
<td>116</td>
<td>164</td>
</tr>
<tr>
<td>DataStor T912</td>
<td></td>
<td>0.78</td>
<td>11166</td>
<td>118</td>
<td>116</td>
<td>55</td>
</tr>
<tr>
<td>DataStor T913</td>
<td></td>
<td>0.78</td>
<td>11201</td>
<td>118</td>
<td>116</td>
<td>162</td>
</tr>
<tr>
<td>Exit HWSJAVA0</td>
<td></td>
<td>0.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Exit HWSSMPL0</td>
<td></td>
<td>1.84</td>
<td>26537</td>
<td>116</td>
<td>116</td>
<td>176</td>
</tr>
<tr>
<td>Exit IPRCMDS0</td>
<td></td>
<td>0.03</td>
<td>442</td>
<td>145</td>
<td>104</td>
<td>0</td>
</tr>
<tr>
<td>Exit SAMPLE01</td>
<td></td>
<td>2.88</td>
<td>41473</td>
<td>118</td>
<td>117</td>
<td>115</td>
</tr>
<tr>
<td>Exit SAMPLE02</td>
<td></td>
<td>1.34</td>
<td>19252</td>
<td>118</td>
<td>116</td>
<td>130</td>
</tr>
<tr>
<td>Exit SAMPLE1T</td>
<td></td>
<td>1.19</td>
<td>17193</td>
<td>118</td>
<td>116</td>
<td>201</td>
</tr>
</tbody>
</table>

The Avg Resp. Time column shows the average response time for CM0 and CM1 messages that are processed by a datastore. Response time starts when the first message is received by the READ exit and ends when the first response from the datastore is received by the XMIT exit.

**Note**

The following response times are not included in the average:

- response time for confirmation (ACK/NAK) message
- response time that is greater than an hour
- response time for SENDONLY, RESUME TPIPE, and SYNCH CALLOUT RESPONSE messages
To filter a display type
Enter the filtering criteria on the line below the column headings.

For example, to filter on exits, type a unique portion of the word exit, such as *EX*, under the Type heading and press *Enter*. Only exit information is displayed.

**Note**
Filtering criteria remain in effect until you delete the criteria.

To display intervals for one of the types
Type *S* next to the messages that you want displayed in the report, and press *Enter*.

**Sample Statistics Trace Interval panel**

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>----Input Messages----</th>
<th>---Avg Size----</th>
<th>Errors</th>
<th>Avg Resp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/02/09 13:55:35</td>
<td>2.57</td>
<td>9246</td>
<td>118</td>
<td>116</td>
</tr>
<tr>
<td>06/02/09 14:55:35</td>
<td>3.21</td>
<td>11573</td>
<td>118</td>
<td>116</td>
</tr>
<tr>
<td>06/02/09 15:55:36</td>
<td>3.74</td>
<td>13459</td>
<td>118</td>
<td>116</td>
</tr>
<tr>
<td>06/02/09 16:55:36</td>
<td>5.55</td>
<td>19984</td>
<td>118</td>
<td>116</td>
</tr>
</tbody>
</table>

To display a report

1. Position the cursor in the action field *Statistics Trace Interval panel (see page 56)* next to the Timestamp heading.
2. Type **S** next to the timestamps that you want displayed in the report, and press **Enter**. You can scroll and select multiple rows to include in a single report.

**Sample Query Report for exit HWSSMPL**

<table>
<thead>
<tr>
<th>Command ==&gt;</th>
<th>Scroll ==&gt; CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commands: ROUTe SAVE</td>
<td>Line 000000000 Cols 001 080</td>
</tr>
</tbody>
</table>

**************************************** Top of Data ****************************************

**Statistics for DataStor T81P** Last reset: 06/02/09 12:55:34.58

<table>
<thead>
<tr>
<th>One-hour interval ending</th>
<th>Current-Interval</th>
<th>Total-Since-Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Input</td>
<td>Output</td>
</tr>
<tr>
<td>Total messages</td>
<td>13459</td>
<td>13459</td>
</tr>
<tr>
<td>Average message size</td>
<td>116</td>
<td>73</td>
</tr>
<tr>
<td>Minimum message size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum message size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate (messages/second)</td>
<td>3.74</td>
<td></td>
</tr>
<tr>
<td>Peak rate (any 5 seconds)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average response time</td>
<td>0.020954</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exit function:</th>
<th>Current-Interval</th>
<th>Total-Since-Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>READ</td>
<td>XMIT</td>
</tr>
<tr>
<td>Total times function invoked</td>
<td>13459</td>
<td>13459</td>
</tr>
<tr>
<td>Exit completed RC=0</td>
<td>13459</td>
<td>13459</td>
</tr>
<tr>
<td>Exit completed RC=4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Governor suppressed message</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Router invoked for message</td>
<td>13459</td>
<td>34278</td>
</tr>
<tr>
<td>Router rejected message</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Messages load balanced</td>
<td>13459</td>
<td>34278</td>
</tr>
<tr>
<td>Messages matching affinity</td>
<td>1632</td>
<td>4327</td>
</tr>
<tr>
<td>Routing weight/goal</td>
<td>56/35%</td>
<td></td>
</tr>
</tbody>
</table>

**************************************** Bottom of Data ****************************************

**Viewing a routing cycle statistics trace**

The Routing Cycle Statistics panel, shown below, displays information about the input message (rate/cycle, total, and largest), average size (input and output), errors, and average response time by routing cycle.

**Sample Routing Cycle Statistics panel**
Commands: Locate SORT REFresh RESet

Statistics in this table are since last reset. From: 06/03/10 15:09:52

Type one or more action codes. Then press Enter. To: 06/03/10 15:20:06

S=Display Routing Cycle Intervals

Type one or more action codes. Then press Enter.

S=Display report

To filter a display type or name

Enter the filtering criteria on the line below the column headings.

For example, to filter on exits, type a unique portion of the word exit, such as EX, under the Type heading and press Enter. Only exit information is displayed.

⚠️ Note

Filtering criteria remain in effect until you delete the criteria or use the RESET command.

To display intervals for one of the types

Type S next to the items that you want displayed and press Enter.

Sample Statistics Trace interval

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>----Input Messages----</th>
<th>---Avg Size----</th>
<th>Errors</th>
<th>Avg Resp.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate/Sec    Total Largest</td>
<td>Input</td>
<td>Output</td>
<td>Time (sec.)</td>
</tr>
<tr>
<td>ALL</td>
<td>2.84        1744       144  106  1456   0  0.325452</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor - none -</td>
<td>0.16        96        144  106    0     0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor #</td>
<td>0.01        6        106  106   20     0  4.010340</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor ##</td>
<td>0.01        7        106  106   397   0  3.463068</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor ###</td>
<td>0.01        9        106  106   680   0  3.066610</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor ####</td>
<td>0.01        9        106  106   607   0  3.171971</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor R81I</td>
<td>2.61        1607      106  106  1479   0  0.252700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DataStor R81PXRF</td>
<td>0.02        10        106  106   812   0  2.854624</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td>2.68        1648      106  106  1456   0  0.325452</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R Commands: Locate Select SORT REFresh RESet

Type one or more action codes. Then press Enter.

S=Display report

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>----Input Messages----</th>
<th>---Avg Size----</th>
<th>Errors</th>
<th>Avg Resp.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate/Sec    Total Largest</td>
<td>Input</td>
<td>Output</td>
<td>Time (sec.)</td>
</tr>
<tr>
<td>06/01/30 15:11:21</td>
<td>5.19        431       144  106  1485   0  0.312053</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/01/30 15:13:06</td>
<td>7.34        609       144  105  1491   0  0.285449</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/01/30 15:14:51</td>
<td>0.07        6        144  106  1877   0  2.460685</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/01/30 15:16:36</td>
<td>0.54        45        144  106  1399   0  0.828095</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/01/30 15:18:21</td>
<td>0.01        1        144  106  1485   0  0.197307</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06/01/30 15:20:06</td>
<td>7.85        652       144  106  1411   0  0.320342</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To display a report

Type S next to the messages that you want displayed in the report, and press Enter.

Sample query report for exit

Commands: ROUTe SAVE

****************************** Top of Data ******************************

Statistics for ALL   Last reset: 06/03/10 15:09:52.17

83 second interval ending Current-Interval Total-Since-Reset
at 06/01/30 15:11:21 Input Output Input Output

Total messages . . . . . : 431 420 431 420
Average message size . . . : 106 1485 106 1485
Minimum message size . . . :                      104 1485
Maximum message size . . . :                      144 1485
Rate (messages/second) . . : 5.19                4.81
Peak rate (any 5 seconds) . . : 13.20
Average response time (sec.) . : 0.312053            0.312053

Exit function:

<table>
<thead>
<tr>
<th>Exit function</th>
<th>Current-Interval</th>
<th>Total-Since-Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>READ  XMIT</td>
<td>READ  XMIT</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Total times function invoked . . : 431 420 431 420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit completed RC=0 . . . : 420 420 420 420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit completed RC=4 . . . : 0 0 0 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governor suppressed message . . : 0 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Router invoked for message . . : 420 420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Router rejected message . . : 0 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messages load balanced . . : 420 420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messages matching affinity . . : 0 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Viewing an Energizer commands trace

The Energizer Commands Trace panel, shown below, displays Energizer commands that were issued.

Sample Energizer Commands Trace panel
To filter a display

To filter on user ID or command, enter the filtering criteria on the line below the column heading.

For example, to filter on a specific command, type a unique portion of the command (such as DIS for DISPLAY) under the Command heading and press Enter.

⚠️ Note

Filtering criteria remain in effect until you delete the criteria or use the RESET command.

To display a report

To display a report, type S next to the commands Sample query report for exit (see page 60) that you want included in the report.

Viewing an Event trace

The Event Trace panel, in the following figure, displays trace information that IMS Connect traces.

Sample Event Trace panel
Events Trace
Row 1 from 100

Command ===> Scroll ===> PAGE

Commands: Locate Select SORT REFresh RESET

Type one or more action codes. Then press Enter.

S=Display report

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Event</th>
<th>Event type</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>62</td>
<td>User message exit return</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>74</td>
<td>Write socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>12</td>
<td>Begin close socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>13</td>
<td>End close socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>72</td>
<td>Trigger event</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>11</td>
<td>End Accept socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>10</td>
<td>Begin Accept socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>60</td>
<td>Prepare for socket read</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>73</td>
<td>Read socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>61</td>
<td>User message exit entered</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>62</td>
<td>User message exit return</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>74</td>
<td>Write socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>12</td>
<td>Begin close socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>13</td>
<td>End close socket</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>72</td>
<td>Trigger event</td>
</tr>
<tr>
<td>_ 06/02/09 11:12:32</td>
<td>11</td>
<td>End Accept socket</td>
</tr>
</tbody>
</table>

To filter a display
To filter on an event or event type, enter the filtering criteria on the line below the column heading.

For example, to filter on event 10, type 10 on the line below the column heading and press Enter.

⚠ Note

Filtering criteria remain in effect until you delete the criteria or use the RESET command.

To display a report
To display a report type $ next to the events that you want included in the report.

Sample Query Report
For more information about interpreting event trace data, see Event trace and journal data (see page 305).

Viewing an active client list

You can use option 2.6 in the Energizer ISPF to tell the IMS Connect panel to display information about active OTMA and ODBM clients.

**Sample IMS Connect Clients panel**

<table>
<thead>
<tr>
<th>File</th>
<th>Display</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMS Connect Clients</th>
<th>Row 1 from 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commands: Locate Select Delete SORT REFresh RESet</td>
<td></td>
</tr>
<tr>
<td>Type one or more action codes. Then press Enter. Press Enter alone to refresh.</td>
<td></td>
</tr>
<tr>
<td>S=Display report D=Delete client</td>
<td></td>
</tr>
<tr>
<td>A ClientID Trans/Als-ODBM State</td>
<td>Wait secs Userid Port HWS IP Addr</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
<tr>
<td>RINGPF --YOU--</td>
<td>0 RINGPF 55102 172.24.48.133</td>
</tr>
<tr>
<td>ODB8F5C8 GPF4-GPF4DMOD</td>
<td>0 RINGPF 55104D 172.28.183.225</td>
</tr>
</tbody>
</table>

**To filter a display**

To filter on a client, enter the filtering criteria on the line below the column heading.

For example, to filter on ClientID REFF, type **REFF** on the line below the column heading and press **Enter**.
Note

Filtering criteria remain in effect until you delete the criteria or use the RESET command.

To display a report

To display a report, type S next to the clients that you want included in the report. Sample Query report for OTMA client

BMCIPA1011I HWS Port Number: 14210 EVENT Key: C4D53DCF781FB885
BMCIPA1011I Client ID: CCCC7
BMCIPA1011I Current State: CONN
BMCIPA1011I Time Waiting: 725 (Seconds)
BMCIPA1011I Tran ID: PART
BMCIPA1011I User ID: RIHWXC2
BMCIPA1011I Client Port Number: 15218 Family 2
BMCIPA1011I Client IP Address: 172.17.4.175
BMCIPA1011I Datastore: WXCB
BMCIPA1011I User Exit Name:
BMCIPA1011I
BMCIPA1011I
BMCIPA1011I Total Active Clients=0001 RECV=0000 CONN=0001 XMIT=0000 Other=0000
BMCIPA1099I Command processing complete
Complete status Message - Flags: IPRCMD RC=0

Sample Query report for ODBM client
**Energizer environment commands**

Use Energizer environment commands to view or change the Energizer environment.

With these commands, you can display settings, temporarily override settings in the options library (changes are discarded when IMS Connect is restarted), reload options and exits, and reset information.

This section covers the following topics:

- IMS Connect z/OS commands (see page 66)
- IMS Connect OM Type-2 Commands (see page 67)
- Energizer commands (see page 67)

**Energizer environment commands panel**
Energizer Commands

Connect GPFMICON + or Host SYSM                                     Port 49999

Select one of the following command categories. Then press Enter.

_  1. IMS Connect z/OS commands ...
_  2. IMS Connect OM Type-2 commands ...
_  3. Energizer Commands ...

The following table describes the choices available:

Energizer environment commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Connect z/OS commands</td>
<td>View and manage IMS Connect resources using the IMS Connect z/OS commands</td>
</tr>
<tr>
<td>IMS Connect Type-2 OM commands</td>
<td>View and manage IMS Connect resources using the Operations Manager type-2 commands.</td>
</tr>
<tr>
<td>Energizer Commands</td>
<td>View or change the Energizer environment using the Energizer for IMS Connect commands</td>
</tr>
</tbody>
</table>

IMS Connect z/OS commands

Use IMS Connect z/OS Commands to view and manage IMS Connect resources using IMS Connect z/OS commands.

The commands, shown below, are executed by issuing the Modify command to the IMS Connect. IMS Connect z/OS commands are grouped based on how they are used.

IMS Connect z/OS commands
IMS Connect z/OS Commands

Connect GPFM1CON + or Host SYSM                                     Port 49999

Select one of the following. Then press Enter. Wait 1 seconds for response

  1. Configuration changes ...
  2. General and client related commands ...
  3. Port, Datastore, and IMSPLEX commands ...
  4. ODBM, Alias, and Remote IMSCONN commands ...
  5. MSC commands ...

IMS Connect OM Type-2 Commands

Use IMS Connect Type-2 OM Commands to view and manage IMS Connect resources using IMS Connect type-2 commands

These commands are executed using the Operations Manager (OM) API. IMS Connect type-2 commands are grouped based on how they are used.

IMS Connect OM Type-2 Commands

Connect GPFM1CON + or Host SYSM                                     Port 49999

Select one of the following, then press Enter. Timeout after 10 seconds

  1. Configuration changes ...
  2. General and client related commands ...
  3. Port, Datastore, and IMSPLEX commands ...
  4. ODBM, Alias, and Remote IMSCONN commands ...
  5. MSC and ISC commands ...

Energizer commands

Choose Energizer Commands to view or change the Energizer environment using the Energizer for IMS Connect commands.

Energizer Commands panel
Energizer Commands

Connect GPFM1CON + or Host SYSM       Port 49999

Select one of the following command categories. Then press Enter.
You may also type any command (start with a '-' ) on any Command line.

__ 1. Quick Picks ... 
  2. Options ...
  3. Exits ...
  4. DataStores ...
  5. Router ...
  6. Statistics ...
  7. Trace and Journal ...
  8. Filters ...
  9. Favorites ...
 10. Status - IMS Connect ...
 11. ODBM ...

Issuing Energizer commands

This section provides information about how to display, reload, and reset options and exits by using Energizer commands.
To issue Energizer commands

1. From the Energizer for IMS Connect - Primary Menu (see page 27), type 3.3 and press Enter.

   One of the following panels is displayed:
   • If you did not enter IMS Connect information on the Primary Menu, the IMS Connect List panel (see page 29) is displayed.

   Select the IMS Connect to use by typing an S or a U, and pressing Enter.
   • If you entered IMS Connect information on the Primary Menu, the Energizer Command panel is displayed (a sample Energizer Commands panel is shown below).

Sample Energizer Commands panel

<table>
<thead>
<tr>
<th>File</th>
<th>Display</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Energizer Commands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connect GPFM1CON + or Host SYSM ___________________________ Port 49999

Select one of the following command categories. Then press Enter.
You may also type any command (start with '"') on any Command line.

__ 1. Quick Picks ...
  2. Options ...
  3. Exits ...
  4. DataStores ...
  5. Router ...
  6. Statistics ...
  7. Trace and Journal ...
  8. Filters ...
  9. Favorites ...
10. Status - IMS Connect ...
11. ODBM ...

2. Enter the host name and port number.
3. Type the number of the category that you want to be displayed. The following table lists available categories and describes what each one does.

**Energizer commands by category**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Picks</td>
<td>Lists the top frequently used Energizer commands</td>
<td>Quick picks commands (see page 70)</td>
</tr>
<tr>
<td>Options</td>
<td>Lists commands that are used to display, reload, and reset options</td>
<td>Options commands (see page 71)</td>
</tr>
<tr>
<td>Exits</td>
<td>Lists commands that are used to Activate/Deactivate, Override, display, reload, and reset exits</td>
<td>Exit commands (see page 72)</td>
</tr>
<tr>
<td>DataStores</td>
<td>Lists commands that are used to display, set, and reset DataStores</td>
<td>DataStore commands (see page 73)</td>
</tr>
<tr>
<td>Router</td>
<td>Lists commands that are used display and set router options</td>
<td>Router Options commands (see page 74)</td>
</tr>
<tr>
<td>Statistics</td>
<td>Lists commands that are used to display and reset statistics</td>
<td>Statistics commands (see page 74)</td>
</tr>
<tr>
<td>Trace and Journal</td>
<td>Lists commands that are used to display and set trace and journal options</td>
<td>Trace and Journal commands (see page 75)</td>
</tr>
<tr>
<td>Filters</td>
<td>Filters transaction and event tracing so that only selected transactions or events are traced</td>
<td>Filter commands (see page 76)</td>
</tr>
<tr>
<td>Favorites</td>
<td>Builds your list of frequently used commands</td>
<td>Favorite commands (see page 77)</td>
</tr>
<tr>
<td>Status - IMS Connect</td>
<td>The Energizer Commands Status - IMS Connect commands panel lists the commands that you can use to display information about clients that are currently active in IMS Connect</td>
<td>Viewing an active client list (see page 63)</td>
</tr>
<tr>
<td>ODBM</td>
<td>Energizer can provide detailed information about ODBM routing options and activities</td>
<td>Displaying ODBM routing information in the ISPF interface (see page 100)</td>
</tr>
</tbody>
</table>

**Quick picks commands**

This topic describes quick picks commands.

The Energizer Commands Quick Picks panel, shown below, lists the most frequently used Energizer commands. To issue a command, type the number of the command and press **Enter**.

To issue exit and datastore commands against specific exits or datastores, perform one of the following actions:

- Enter the name of the exit or datastore and press **Enter**.
- Press **PROMPT** and select from a list of names.
- Enter a pattern, such as HWS*.
By default, exit commands apply to all exits and datastore commands apply to all datastores.

**Energizer Commands - Quick Picks panel**

```
Energizer Commands - Quick Picks

Connect ________ + or Host _______________________________________ Port _____
More:     +

Select one of the following Energizer Commands. Then press Enter.

**General Display Commands**

1. -Display Options Type(Connect)  
2. -Display Options Type(Egroup)  
3. -Display Options Type(Router)  
4. -Display Options Type(Exit)  
5. -Display Router Type(Status)  
6. -Display Router Type(Affinity)  
7. -Display Group  
8. -Display Trace

**Commands for Exit . . . . * + (pattern allowed - replaces * below)**

17. -Display Exit Type(Summary) Id(*)  
18. -Display Exit Type(All) Id(*)  
19. -Display Exit Type(Options) Id(*)  
20. -Display Exit Type(Status) Id(*)  
21. -Display Exit Type(VIRTUAL) Id(*)

**Commands for DataStore. . * + (pattern allowed - replaces * below)**

27. -Display DS Type(Status) Id(*)  
28. -Display Router Type(DS) Id(*)

**Favorite Commands**

31. -SET JOURNAL STATE(SWITCH)

Options commands

The Energizer Commands Options panel, shown below, lists commands that are used to display, reload, and reset options.

To issue a command, type the number of the command and press **Enter**.

**Note**

For the Reload commands, you can enter the name of an alternate options member to load. For more information, see the online Help.

**Energizer Commands - Options panel**
### Energizer Commands - Options

**Connect GPF1CON + or Host SYSM**

Port 53104

Select one of the following Energizer Commands. Then press Enter.

<table>
<thead>
<tr>
<th></th>
<th>Command Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Options Type(Connect)</td>
</tr>
<tr>
<td>2</td>
<td>Display Options Type(Egroup)</td>
</tr>
<tr>
<td>3</td>
<td>Display Options Type(Router)</td>
</tr>
<tr>
<td>4</td>
<td>Display Options Type(Exit)</td>
</tr>
<tr>
<td>5</td>
<td>Display Options Type(ODBM)</td>
</tr>
<tr>
<td>6</td>
<td>Reload Options Type(Connect) Id() Member name. +</td>
</tr>
<tr>
<td>7</td>
<td>Reload Options Type(Egroup) Id()</td>
</tr>
<tr>
<td>8</td>
<td>Reload Options Type(Router) Id()</td>
</tr>
<tr>
<td>9</td>
<td>Reload Options Type(Exit) Id()</td>
</tr>
<tr>
<td>10</td>
<td>Reload Options Type(ODBM) Id()</td>
</tr>
<tr>
<td>11</td>
<td>Reset Security Type(Profiles)</td>
</tr>
</tbody>
</table>

#### Exit commands

The Energizer Commands Exits panel, shown below, lists commands that are used to activate/deactivate, display, reload, and reset exits.

To issue a command, perform one of the following actions:

- Type the number of the command, and press Enter.
- To issue a command against specific exits, enter the exit name, press the PROMPT key, or enter a pattern, such as HWS*.

**Energizer Commands - Exits panel**
### Energizer Commands - Exits

Connect GPFL13CON + or Host SYSM

Port 53104

More: +

Select one of the following Energizer Commands. Then press Enter.

1. Activate and Deactivate Exits ... Exit name: HWSSMPL0 +
2. Display Exit Type(Summary) Id(*)
3. Display Exit Type(All) Id(*)
4. Display Exit Type(Options) Id(*)
5. Display Exit Type(Status) Id(*)
6. Display Exit Type(Virtual) Id(*)
7. Display Exit Type(IPList) Id(*)
8. Display Stats Summary(Exit) Id(*)
9. Display Stats Detail(Exit) Id(*)
10. Reload Exit Type(Message) Id(*)
11. Reload Exit Type(Security) Id(*) Newname() New name . .
12. Reload Exit Type(Virtual) Id(*) Newname()
13. Reload Exit Type(IPList) Id(*) Newname()

---

### DataStore commands

The Energizer Commands DataStores panel, shown below, lists commands that are used to display, reset and set DataStores and routing options.

To issue a command, perform one of the following actions:

- Type the number of the command, and press Enter.
- To issue a command against specific datastores, enter the datastore name, press the PROMPT key, or a enter a pattern.

### Energizer Commands - DataStores panel

Connect _______ + or Host ___________ Port ____

Select one of the following Energizer Commands. Then press Enter.

1. Display DS Type(Status) Id(*) DataStore: * +
2. Display Router Type(DS) Id(*)
3. Display Stats Summary(DS) Id(*)
4. Reset Stats Type(DS) Id(*)
5. Set Router Type(DS) Id(*) State(Active)
6. Set Router Type(DS) Id(*) State(Inactive)
7. Set Router Type(DS) Id(*) Load(*) New Weight: (0-100)
Router Options commands

This topic describes router options commands.

The Energizer Commands Router panel, shown below, lists commands that are used display and set router options.

To issue a command, perform one of the following actions:

- Type the number of the command, and press Enter.
- To issue a command against a specific router member, Affinity Label, or DataStore Destination, enter the information on the lines provided.

### Energizer Commands - Router panel

```
Energizer Commands - Router

Connect ________ + or Host ___________________________ Port _____
Select one of the following Energizer Commands. Then press Enter.

1. -Display Router Type(Status)
2. -Display Router Type(Affinity)
3. -Set Router Type(Options) Lbmgt(Active)
4. -Set Router Type(Options) Lbmgt(Inactive)
5. -Set Router Type(Options) Afmgt(Active)
6. -Set Router Type(Options) Afmgt(Inactive)
7. -Set Router Type(Options) RdbMemb(*) New Router Member
8. -Set Router Type(Affinity) State(Act) Id(*) Affinity Label. 
9. -Set Router Type(Affinity) State(Inact) Id(*) 
10. -Set Router Type(Affinity) Id(*) Dest(*) DataStore Dest. .
```

Statistics commands

This topic describes statistics commands.

The Energizer Commands Statistics panel, shown below, lists commands that are used to display and reset statistics.

To issue a command, type the number of the command and press Enter.

### Energizer Commands - Statistics panel
Energizer Commands - Statistics

Connect GPF13CON + or Host SYSM                                     Port 53104
More:     +

Select one of the following Energizer Commands. Then press Enter.

1. -Display Stats Summary(Exit)
2. -Display Stats Detail(Exit) Id(All)
3. -Display Stats Summary(Tran)
4. -Display Stats Summary(DS)
5. -Display Stats Summary(Routing)
6. -Display Stats Summary(Alias)
7. -Display Stats Summary(PSB)
8. -Display Stats Summary(Userid)
9. -Display Stats Summary(IP)
10. -Display Stats Summary(ODBM)
11. -Reset Stats
12. -Reset Stats Type(Exit)
13. -Reset Stats Type(Tran)

Trace and Journal commands

The Energizer Commands Trace and Journal panel, shown below, lists commands that are used to display and set trace and journal options.

To issue a command, type the number of the command and press Enter.

Energizer Commands - Trace/Journal panel
Energizer Commands - Trace/Journal

Connect _______ + or Host ________________________________ Port ______
Select one of the following Energizer Commands. Then press Enter.

___ 1. -Display Trace (and Journal options)
    2. -Display Trace Type(*) Id(*) Sequence(*) Limit(*)
        Trace/Journal Type . . ____ (ACTL, CMDS, COMP, ERRS, EVNT, HIST, SECS, STAT,
        TRAN, XCFC, DISP, JRNLT, STRG, TIMR)
        Trace Id . . . . . . . ________ (optional)
        Starting Sequence #. . ________ { '     }  
        Limit Count . . . . . 10______ { '     }
    3. -Set Trace State(On)
    4. -Set Trace State(Off)
    5. -Set Trace State(Off) Id(*) (uses T/J Type above for Id)
    6. -Set Trace State(On) Id(*) ( '    ' '    ' '    ')
    7. -Set Journal State(On)
    8. -Set Journal State(Off)
    9. -Set Journal State(Switch)
   10. -Set Journal State(Off) Id(*) (uses T/J Type above for Id)
   11. -Set Journal State(On) Id(*) ( '    ' '    ' '    ')

Filter commands

The Energizer Commands Filters panel, shown below, lists commands that are used to filter transaction and event tracing so that only selected transactions or events are traced.

To issue a command, type the number of the command and press Enter.

⚠️ Note

To the right of several commands, you can type values that will be substituted for the '*' in the command. For more information, see the online Help.

Energizer Commands - Filters panel
Energizer for IMS Connect, version 1.7

Trace filtering

You can set a trace-only filter.

Traces are written to both memory and the journal data sets. The trace-only filter enables you to set a filter for a specific transaction, client, IP address, user ID, and so on for in-memory tracing while continuing to write all trace records to the journal file.

Traces written in memory use a wrap-around concept and, if no filter is applied, Energizer traces all transactions. Tracing all transactions might make it difficult to see a particular message that you are looking for while analyzing the trace output via the Transaction trace option of the Energizer ISPF interface. Setting the trace-only filter enables you trace the specific criteria that you are looking for during your online analysis while continuing to write all trace entries to the journal for future diagnosis and reporting.

If you want to enable the filter, use the Energizer ISPF option 3.8.6 on the Energizer Commands - Filters panel (see page 76).

Favorite commands

This topic describes favorite commands.

To build your list of frequently used commands, use the Energizer Commands Favorites panel shown in the following figure.

Energizer Commands - Favorites panel
Verifying IMS connectivity (test transactions)

This section provides information about verifying IMS connectivity by sending test transactions to IMS Connect.

To verify IMS connectivity, perform the following steps:

1. On the Energizer Primary Menu, type 4.
2. (optional) If you know the IMS Connect started task name, TCP/IP host, or port information, you can enter that information on the Primary Menu.
3. Press **Enter**.
   - If you did not enter IMS Connect information on the Primary Menu, the IMS Connect List panel is displayed.

Select the IMS Connect to use by typing an **S** or a **U**, and press **Enter**.

The Verify IMS Connectivity panel is displayed.

- If you entered the IMS Connect information on the Primary Menu, the Verify IMS Connectivity panel is displayed. For information about this panel, see online Help.

**Verify IMS Connectivity panel**

```
Verify IMS Connectivity
Commands: RESet REVIEW ROUTe SAVE
Connect GPF13CON + or Host SYSM______________________________________Port 53102
Type the message(s) and select options. Then press Enter.
PART ABCDEF

IRM Header | Protocol | Misc. Options | Energizer options
MsgID *HWSJAV* | . CM0 Commit-send | Timer 5 sec | Iterations 10
ClientID HWS4FB92 | / CM1 Send-commit | _ Return MFS | Msg Length 1000
DataStor GPF3 | . Send only | _ Purge | Max SegLen 512
Group | . Resume TPIPE | _ Syncpt | Pad
UserID RIHGPF | Confirmation | _ Serial delivery | Wait 5 sec
Password | . Confirm (ACK) | _ Ignore PURG | TCP serv
NewPass | . Reject (NAK) | _ Cancel ClientID | Seg/msg delim. +
ApplID | Socket type | _ Expire Tran | _ ASIS (see Help)
TranCode | . Persistent | _ ACK no wait | _ Send as ASCII
Reroute | / Transaction | _ Gen. ClientID | / Detail report
```

4. To update information on the panel, perform one of the following actions:
   - Type a new IMS Connect name, and press **Enter**.
   - Type the new value for any IRM Header or Energizer options fields and press **Enter**.
5. To send a transaction or IMS command without changing any other fields, type the message and press **Enter**.

The message is sent to IMS Connect, and the results are displayed on the Verify Browse panel.

⚠️ **Note**

To allow multiple segments and messages on the message input lines, enter a single delimiter character in the Seg/msg delim field for delimiting segments. For example: to use ; as the delimiter, enter `TEST;SEG1;SEG2;/DIS A;`

When you specify a delimiter, you can type a single segment that spans more than one line. If you do not type to the end of a line and do not end the line with a delimiter, a single blank is inserted between the lines.

If you do not specify a delimiter, use the following rules to divide the input lines into messages and segments:

- Each line is a separate segment.
- Any line that starts with a slash (/) or hyphen (-) begins a new message.
- Any line that ends with a period (.) ends a message.

---

**Energizer support for GENID and RETURNID**

Sample IPRTCPIC clist includes keywords GENID and RETURNID, described in the following table.

Verify IMS Connectivity (Energizer ISPF Option 4) provides additional miscellaneous options to generate and return a clientID.

⚠️ **Note**

This feature is available in IMS Connect Version 12 and higher.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENID</td>
<td>Tells IMS Connect to generate a unique <code>clientID</code> if the <code>clientID</code> in the IRM is already in use</td>
</tr>
<tr>
<td>RETURNID</td>
<td>Includes the <code>clientID</code> in the return message</td>
</tr>
</tbody>
</table>

⚠️ **Note**

The Energizer ESM segment will also return the `clientid`. 
Setting product authorization by CPU ID

To process Product Authorization (password) requests online, use Set BMC Software Product Authorization by CPU ID.

From Energizer for IMS Connect Product Authorization Primary Menu, shown below, you can process a BMC Software-supplied password, display the contents of the Product Authorization table, or display information about the processor on which you are executing.

**Energizer for IMS Connect Product Authorization Primary Menu**

```
File Display Help
-----------------------------------------------------------------
Energizer for IMS Connect Product Authorization Primary Menu Command ===>
-------------------------------------------------------------------------------- Type the following information if applicable or pull down an item from the action bar. Then press Enter.
Product load library . . ____________________________________ Authorization password
  . . __ __ __ __
```

**ODBM routing support in Energizer for IMS Connect**

This topic describes how Open Database Manager (ODBM) routing works by replacing a target IMS alias with a different alias name, based on a specified set of ODBM routing options. This section includes the following topics:

- How Energizer ODBM routing works (see page 81)
- Product components that support ODBM routing (see page 83)
- Implementing ODBM routing (see page 83)
- Rejecting incoming DRDA requests by IP address (see page 97)
- Displaying information about ODBM routing activities (see page 100)
- New events for ODBM routing (see page 109)

**How Energizer ODBM routing works**

Energizer provides a mechanism for routing DRDA messages through the IMS Common Services Layer (CSL) ODBM address space, and directly accessing IMS databases.

Without Energizer, the default method for ODBM routing is to use a round-robin algorithm to distribute work to an alias that targets an IMS system. The ODBM address space handles the round-robin distribution itself.
With Energizer, you can:

- Create pseudo-alias routing names that provide more flexibility in routing DRDA messages.
- Define a routing alias to isolate a particular application or set of users.
- Route alias traffic, based on the PSB name that the application uses.
- Block DRDA requests temporarily by IP address with the Energizer Reject IP command.

Energizer uses the routing alias from the DRDA request to find its corresponding result group. Energizer scans the list of target aliases in the result group to locate target aliases that are active to Energizer. Then Energizer uses the following process to handle the request, according to the Energizer ODBM routing options that you have specified:

1. **Determine whether a preferred alias applies.**
   Energizer checks each active target alias to determine whether it is a preferred alias. If a preferred alias exists, Energizer determines whether the alias is active to ODBM and IMS Connect. If more than one preferred alias is active, Energizer uses the specified load weight (through load balancing) for each of the preferred aliases to determine where to route the request. If none of the preferred aliases or their corresponding ODBMs are active, Energizer checks for non-preferred aliases.

2. **Determine whether a non-preferred alias applies.**
   Energizer checks each active target alias to determine whether it is active to an ODBM and IMS Connect. If more than one alias is active, Energizer uses the specified load weight (through load balancing) for each active target alias to determine where to route the request. If none of the aliases or their corresponding ODBMs are active, Energizer uses default ODBM processing.

3. **Use default ODBM processing.**
   Energizer uses the routing alias name as the target alias, and omits the ODBM name. This action allows ODBM itself to attempt to resolve the routing request for the alias. Default ODBM processing also occurs when Energizer is not active or when ODBM routing is disabled in Energizer.

**Note**

Energizer provides an Always Reject option for a result group. When you select this option for a target alias, Energizer rejects all messages that are routed to every alias in the result group with which the selected alias is associated, and returns the rejected messages to the end user with an error message.
Product components that support ODBM routing

Energizer employs a variety of product components to support ODBM routing.

- Energizer options define flexible settings for ODBM routing. Energizer uses the ODBM type of options module to store settings for ODBM routing.
- The Energizer routing exit (IPRROUT0) replaces the IMS Connect DB Routing Exit routine (HWSROUT0).
- The Energizer ISPF interface and the Database Management Console provide commands that you can use to obtain real-time information about ODBM routing.
- The batch reporting engine provides information about ODBM in an offline format.
- Energizer creates type 252 event records for ODBM routing activities.
- Energizer can issue error, warning, and informational messages about ODBM routing activities.

Implementing ODBM routing

To implement ODBM routing, you must install the Energizer routing exit (IPRROUT0), specify ODBM routing options, and activate ODBM routing on required systems. The following topics are covered in this section:

- Installing the Energizer ODBM-routing exit (see page 83)
- Specifying ODBM routing options with the ISPF interface (see page 84)
- Enabling and activating ODBM routing within an IMS Connect (see page 94)

Installing the Energizer ODBM-routing exit

To use Energizer ODBM routing, you must install the Energizer ODBM-routing exit (IPRROUT0).

IMS Connect can call an exit, of type ODBMROUT, that is used to override the IMS alias or select an ODBM. The Energizer ODBMROUT exit has the required name IPRROUT0.

If you do not install IPRROUT0, or if the exit is not called, ODBM default processing handles all ODBM traffic and performs a round-robin method of routing, as described in the IMS documentation about CSL ODBM administration.

⚠️ Note

You must make the following configuration changes before starting your IMS Connect address space.
To install the IPRROUT0 exit

1. Add the Energizer IPRROUT0 exit to the Base Primitive Environment (BPE) exit list.
2. Specify the name of the exit list member in the BPE configuration parameter member (BPECFGxx).
   For example, specify EXITMBR=(BPEEXIT0,HWS).
3. Include the following statement in the exit list member (BPEEXIT0):
   EXITDEF(TYPE=ODBMROUT,EXITS=(IPRROUT0),ABLIM=8,COMP=HWS)

Specifying ODBM routing options with the ISPF interface

To control how Energizer handles DRDA requests through ODBM routing, you must specify ODBM routing options.

Energizer stores a set of ODBM routing options as a module in the Energizer options library. You can create multiple sets of ODBM options in different options modules. For example, you might want to have different sets for testing and production.

You can specify ODBM routing options through the ISPF interface or the Database Management Console. The following instructions are for the ISPF interface. If you need help with using the console, contact BMC Customer Support.

In each ODBM routing options module, you can specify the following types of options:

- Target aliases
- PSB groups
- Result groups
- Alias routing definitions

To create or update an ODBM options module

1. Access the Energizer ISPF interface.
2. On the Energizer for IMS Connect primary menu, specify the name of the library that contains your Energizer options modules, and enter option 1 (Configure Energizer). Energizer displays the Configuration panel. This panel lists all of the existing options modules that the specified options library contains. The Type field indicates the type of each module. For ODBM routing options members, the field contains ODBM.
3. On the Configuration panel, choose an action:

- To create a new module, enter **ADD** in the **Command** field.

Energizer displays the New Options menu.

### New Options

Select one of the following types to create new options. Then press Enter.

- 1. eLink
- 2. eGroup
- 3. IMS
- 4. IMS Connect
- 5. Router
- 6. Exit Services
- 7. ODBM Routing

**Command ===>**

Enter option **7** (ODBMP Routing).

Energizer displays the ODBM Routing Options panel with options for ADDing new definitions.

### ODBM Routing Options

Type ODBM routing options.

ODBM Routing options name . ________

Description . . . . . . . . .

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Saved</th>
<th>User</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPFCTL12 IMS</td>
<td>10/11/29</td>
<td>16:19</td>
<td>RIHGPF</td>
<td></td>
</tr>
<tr>
<td>GPFCTL71 IMS</td>
<td>08/11/23</td>
<td>17:28</td>
<td>RIHGPF</td>
<td>IMS V71</td>
</tr>
<tr>
<td>GPFCTL91 IMS</td>
<td>08/11/23</td>
<td>17:28</td>
<td>RIHGPF</td>
<td>IMS V91</td>
</tr>
<tr>
<td>GPF81PAS eLink</td>
<td>06/02/07</td>
<td>15:15</td>
<td>RIHGPF</td>
<td>Elink on IMSA</td>
</tr>
<tr>
<td>GPFBODBM ODBM</td>
<td>12/10/19</td>
<td>08:50</td>
<td>RIHGPF</td>
<td>1</td>
</tr>
<tr>
<td>GPFM1ODM ODBM</td>
<td>13/09/03</td>
<td>12:40</td>
<td>RIHGPF</td>
<td>ODBM</td>
</tr>
<tr>
<td>GPFM2ODM ODBM</td>
<td>13/05/13</td>
<td>12:51</td>
<td>RIHGPF</td>
<td>ODBM</td>
</tr>
<tr>
<td>GPFODBMT ODBM</td>
<td>12/10/15</td>
<td>12:44</td>
<td>RIHGPF</td>
<td>TEST ODBM</td>
</tr>
<tr>
<td>ODBM3 ODBM</td>
<td>13/06/27</td>
<td>10:34</td>
<td>RIHGPF</td>
<td>ODBM</td>
</tr>
<tr>
<td>PAGTEST ODBM</td>
<td>13/09/04</td>
<td>19:55</td>
<td>PAG</td>
<td>PAG test options</td>
</tr>
<tr>
<td>TESTOD ODBM</td>
<td>13/06/27</td>
<td>10:49</td>
<td>RIHGPF</td>
<td></td>
</tr>
<tr>
<td>TESTODBM ODBM</td>
<td>13/08/30</td>
<td>13:23</td>
<td>RIHGPF</td>
<td>TEST ODBM OPTIONS</td>
</tr>
<tr>
<td>GPFSSYMSA eGroup</td>
<td>06/02/08</td>
<td>11:36</td>
<td>RIHGPF</td>
<td></td>
</tr>
</tbody>
</table>
Select one of the following. Then press Enter.
  _ 1. ADD Target Aliases
  2. ADD PSB Groups
      * ADD Result Groups
      * ADD or update Alias routing

Select (type a '/') any of the following.
 / Activate ODBM routing

Command ===> _____________________________________________

* To change an existing module, enter action code S in the A field to the left of the module name.
Energizer displays the ODBM Routing Options panel with options for ADDing new definitions and updating existing definitions.

ODBM Routing Options
Type ODBM routing options.

  ODBM Routing options name . PAGTEST_
  Description . . . . . . . . PAG test module____________________

Select one of the following. Then press Enter.
  _ 1. ADD or update Target Aliases
      2. ADD or update PSB Groups
          3. ADD or update Result Groups
          4. ADD or update Alias routing

Select (type a '/') any of the following.
 / Activate ODBM routing

Command ===> _____________________________________________

4. In the ODBM Routing options name field, specify the name (1 through 8 characters) to use for this ODBM options module.
5. *(optional)* In the Description field, you can enter a text string that can help identify the contents or purpose of the module.
6. ADD or update required and optional definitions as follows:
6. ADD or update target aliases, as explained in To ADD or update target aliases (see page 87).
   b. (optional) ADD or update PSB groups, as explained in To ADD or update PSB groups (see page 89).
   c. ADD or update result groups, as explained in To ADD or update result groups (see page 91).
   d. ADD or update alias routing, as explained in To ADD or update alias routing definitions (see page 92).

**Note**

One or more target aliases must exist before you can ADD a result group, and one or more result groups must exist before you can ADD an alias routing definition.

7. In the field to the left of **Activate ODBM routing**, enter the selection character (/) to enable ODBM routing.
   You can remove the selection character to disable ODBM routing for this options module.
8. When all ADDitions and changes are complete, enter the **END** command (F3).
   Energizer displays the Confirm Save Options panel so that you can save your changes, discard them, or save them as a new module. Then Energizer redisplays the Configure panel. If you ADDed a new module, the list of modules includes the new name.

**To ADD or update target aliases**

To use ODBM routing, you must define how Energizer should handle the existing aliases that belong to your IMS Connect and ODBM systems. Any alias that you ADD must match an alias name that is defined in the CSLDCxxx member of your IMS Connect (or IMS) PROCLIB. If you specify an alias that is not defined to IMS Connect or ODBM, Energizer can route messages to the alias, but the route will fail.

An alias name and an ODBM name together comprise a **target alias**.

1. On the ODBM Routing Options panel, enter option 1 (ADD or update Target Aliases).
   If no target aliases exist, Energizer displays the Target Alias Definition panel.

   **Target Alias Definition**
   
   Type Target Alias definition. Use ADD command to ADD another.

   Target alias name . . ____     (as defined in ODBM)
   Target ODBM name  . . ________
   Load balancing weight ___ (0-100)
   Select (type a '/') any of the following.
1. / Activate target alias
   _ Preferred target alias
   _ Always reject

   Command ===> _____________________________

If at least one target alias exists, Energizer displays the ODBM Routing Options - Target Aliases panel. To update an existing target alias, select it from the list. To create a new target alias, enter the ADD command. Energizer displays the Target Alias Definition panel.

2. In the **Target alias name** field, enter the name of an existing IMS Connect or ODBM alias.

3. *(optional)* In the **Target ODBM name** field, enter the name of the ODBM to which Energizer will route messages that use this alias.
   You can leave the ODBM name blank. In this case, Energizer will send the alias to ODBM, and ODBM will decide where to route it.

4. Specify a load balancing weight, in the range 0 through 100.
   Energizer uses the weight value to determine how much message traffic to route to this alias, in proportion to the weights assigned to other aliases. For example, if you assign a weight of 50 to this alias, and a weight of 25 to another alias, Energizer routes twice as much traffic to this alias as it does to the other.
5. *(optional)* Select one or more of the following options by entering a slash (/) in the selection field to the left of the option:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activate target alias</td>
<td>Enable Energizer to route messages to this alias.</td>
</tr>
<tr>
<td>Preferred target alias</td>
<td>Enable Energizer to prefer this target alias over other aliases. Energizer routes messages to an existing, active preferred alias before routing message to any non-preferred aliases, regardless of their load balancing weight. If you define multiple preferred aliases in a routing group, the load balancing weight determines the amount of traffic that Energizer routes to each preferred alias.</td>
</tr>
<tr>
<td>Always reject</td>
<td>Enable Energizer to reject any message that is sent to the result group in which this alias is active. This option provides an easy way to return message traffic to a result group. In a similar way to the operation of a mailer daemon, Energizer returns to the END user all messages that were routed to every alias in the result group, and issues an accompanying error message. If you want to stop traffic to an alias and cause Energizer to route messages to other aliases instead, deselect the Activate Target Alias option for the alias instead of selecting this option. <strong>Warning</strong> This option rejects all traffic routed to the entire result group, not just to this alias. When this document was published, the Help topic for this field incorrectly indicated that the rejected traffic is for this alias only. BMC recommends that you contact Customer Support for advice before you select this option.</td>
</tr>
</tbody>
</table>

6. If you want to ADD another target alias, enter **ADD** in the **Command** field. Energizer saves the entered information and clears the **Target alias name** field. Enter a new alias name, and change the values in the other fields as necessary.

7. When you have ADDed all target aliases, or updated an existing target alias, enter the **END** command (F3). Energizer saves the target aliases and displays the ODBM Routing Options - Target Aliases panel, listing all target aliases that you have defined.

8. When you have finished working with target aliases, enter the **END** command (F3). Energizer displays the ODBM Routing Options panel.

**To ADD or update PSB groups**

PSB groups are a collection of PSB names that you want Energizer to use as criteria for routing ODBM messages. PSB groups are optional; you are not required to define them unless you want to route messages by using the PSB name that is associated with the application.

1. On the ODBM Routing Options panel, enter option **2** (ADD or update PSB Groups). If no PSB groups exist, Energizer displays the PSB Group Definition panel.

```
PSB Group Definition
Commands: ADD Locate SAVE SORT
PSB group name  PSBGRPT
ADD/remove PSB names to the PSB Group.
```
If at least one PSB group exists, Energizer displays the ODBM Routing Options - PSB Groups panel. To update an existing PSB group, select it from the list. To create a new PSB group, enter the **ADD** command. Energizer displays the PSB Group Definition panel.

2. Enter a name for this PSB group.
3. In the **Command** field, enter **I**.
4. On the ADD PSB panel, enter a PSB name and press **Enter**.
   Energizer redispays the PSB Group Definition panel. Repeat the process of inserting PSB names as needed.
5. Enter the **END** command (**F3**).
Energizer save the options module and displays the ODBM Routing Options - PSB Groups panel.

6. To activate the PSB group and make it eligible for routing decisions, enter the selection character (J) in the field to the left of the PSB group name.

7. When you have ADDed or updated all PSB groups, enter the **END** command (F3).
Energizer displays the ODBM Routing Options panel.

**To ADD or update result groups**

A result group is a list of previously defined target aliases that you want Energizer to use all together as a group. A target alias comprises an alias name, paired with an ODBM. A result group can contain as many target aliases as you want to include.

⚠️ **Note**

A target alias can belong to multiple result groups.

1. On the ODBM Routing Options panel, enter option 3 (ADD or update Result Groups).
If no result groups exist, Energizer displays the Result Group Definition panel.

```
Result Group Definition         Row 1 to 5 of 5

Type result group definition.

Result group name  ________

Select (type a '/') the target aliases that define this Result Group.
/ Alias ODBM
/ PAGA  PAGODBM
/ PAGB  PAGODBM
/ PAGC  PAGODBM
/ PAGD  PAGODBM
/ PAGE  PAGODBM2

*************************************************************************
Bottom of data **************************************************************************

Command ===> _____________________________________________ Scroll ===> PAGE
```

If at least one result group exists, Energizer displays the ODBM Routing Options - Result Groups panel. To update an existing result group, select it from the list. To create a new result group, enter the **ADD** command. Energizer displays the Result Group Definition panel.
2. Enter a name (1 through 8 characters) to identify this result group.

3. Enter the selection character (f) in the f field to the left of each target alias that you want to include in the group.

⚠️ Note

A target alias must already exist to be listed on this panel. If you don't see a target alias that you want to include, define it as described in To ADD or update target aliases (see page 87).

4. Enter the END command (F3).

Energizer saves the result group and displays the ODBM Routing Options - Result Groups panel.

5. When you have ADDed or updated result groups as needed, enter the END command (F3). Energizer displays the ODBM Routing Options panel.

To ADD or update alias routing definitions

An alias routing definition contains the names of the virtual aliases that are known only to IMS Connect but are used to sEND ODBM/DRDA messages to actual target alias/ODBM systems.

1. On the ODBM Routing Options panel, enter option 4 (ADD or update Alias Routing).

If no alias routing definitions exist, Energizer displays the Alias Routing Definition panel.
Alias Routing Definition

Alias name . . . . . . _____
PSB group (optional) _______ +(Use Prompt for list)
Result group . . . . . _______ +

Select (type a '/') any of the following.
/ Activate routing for this alias

Command ===> _____________________________________________

If at least one alias routing definition exists, Energizer displays the ODBM Routing Options -
Alias Routing List panel. To update an existing alias routing definition, select it from the list.
To create a new alias routing definition, enter the ADD command. Energizer displays the
Alias Routing Definition panel.

**ODBM Routing Options - Alias Routing List  Row 1 to 2 of 2**

Commands: ADD Locate SAVE Select SORT  Page 4 of 4

Type one or more action codes. (Type ADD as a command to ADD an Alias.)
S=Display/Update C=Copy D=Delete I=Insert A=Activate X=Deactivate
A Alias PSB Group Result Group Active
_ PAG1 PAGPSB1 PAGRG1 /
_ PAG2 PAGPSB1 PAGRG2 /

*************************************** Bottom of data *******************************

Command ===> _____________________________________________ Scroll ===> PAGE

2. Enter a name to identify this alias routing definition.
3. Enter the name of a PSB group to include in the definition.
   You can enter the PROMPT command (F4) to select a PSB group from a list of existing groups.
4. Enter the name of a result group to include in the definition.
   You can enter the PROMPT command (F4) to select a result group from a list of existing groups.
5. *(optional)* To activate this alias routing definition, enter a slash (/) in the selection field to the left of the **Activate routing for this alias** field.

6. Enter the **END** command (F3).
   Energizer saves the alias routing definition and displays the ODBM Routing Options - Alias Routing List panel.

7. When you have ADDED or updated alias routing definitions as needed, enter the **END** command (F3).
   Energizer displays the ODBM Routing Options panel.

### Enabling and activating ODBM routing within an IMS Connect

When you have set up an ODBM routing module, you enable Energizer to use it for an IMS Connect by associating it with the corresponding IMS Connect options module.

#### To enable and activate ODBM routing

You can enable and activate ODBM routing through the ISPF interface or the Database Management Console. The following instructions are for the ISPF interface. If you need help with using the console, contact BMC Customer Support.

Before you begin, identify the IMS Connect for which you want Energizer to perform ODBM routing. This IMS Connect should have an existing IMS Connect options module (of type CONNECT) in the Energizer options library.

1. Access the Energizer ISPF interface.
2. On the Energizer for IMS Connect primary menu, specify the name of the library that contains your Energizer options modules, and enter option 1 (Configure Energizer).
   Energizer displays the Configuration panel.
3. On the Configuration panel, enter **S** in the **A** (action code) field to the left of the IMS Connect options module for which you want to enable ODBM routing.

```
File          Display       Help
---------------------------------------------------------------
Configuration          52 options found

Commands: ADD COPY Locate Select SORT

Options library . . . : RIHGPF.IPR.OPTIONS

Type one or more action codes. Then press Enter.
S=Display/Update  C=Copy   D=Delete   I=Insert   R=Reload Connect
A Name     Type     Saved User    Description
   _ GPF71PAS eLink    06/02/08 11:44    DGW7    ELINK: GPF71PAS
   _ GFFSYSMG eGroup   10/08/18 09:50    RIHGPF  GROUP: GFFSYSMG
   _ GPFMC    Connect  13/03/11 14:54    RIHGPF
   _ GPFM1CNO Connect 13/03/25 10:53    RIHGPF  IMS V12 (1)
   _ GPFM1CON Connect 13/09/03 11:24    RIHGPF  IMS V12 (1)
   _ GPFM2CON Connect 13/07/12 10:10    RIHGPF  IMS V12 (2)
   _ GPFM5CON Connect 11/10/10 09:30    RIHGPF  TETS
```
4. In the ODBM options name field on the IMS Connect Options panel, enter the name of the ODBM routing options module to use. To select the name from a list, place the cursor in the field, and enter the PROMPT command (F4).

<table>
<thead>
<tr>
<th>Started task name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPFTESTC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group name</th>
<th>Router options name</th>
<th>Exit options name</th>
<th>ODBM options name</th>
<th>Execute cmds member</th>
<th>Host name</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPFSYSMG</td>
<td></td>
<td></td>
<td>PAGTEST</td>
<td>(in PROCLIB)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port number</th>
<th>Exit Security Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Security class name</td>
</tr>
<tr>
<td></td>
<td>Security application</td>
</tr>
<tr>
<td></td>
<td>Resource prefix</td>
</tr>
</tbody>
</table>

5. Enter the END command (F3), and confirm that you want to save your changes. Energizer displays the Configuration panel. The ODBM options module is now associated with the IMS Connect.

6. (Optional) To enable the new ODBM routing options for the IMS Connect dynamically, complete the following steps:

⚠️ Note
If you do not enable the ODBM routing options dynamically, recycle IMS Connect for the options to take effect.

a. On the Configuration panel, enter R in the A field. Energizer displays the optionsName Connect Reload panel.

```
GPFTESTC Connect Reload
Host _____________________________ Port _____

Select (type a '/') any of the following to reload the options, or blank out to de-select. Then press Enter.

/ Connect options GPFTESTC
/ eGroup options GPFSYSMG
/ Exits options ________
/ Router options ________
/ ODBM options PAGTEST
```

Command ===> _____________________________

b. Enter the name of the host and port for the IMS Connect.
c. Ensure that the ODBM options member that you want to use is listed and selected (with a /).
d. Enter the **END** command (**F3**).
e. Check the output of the reload command to ensure that it was successful.

The following messages were issued in response to a successful reload:

```
-RELOAD OPTIONS TYPE(ODBM)

BMCIPA1010I Output from origin system GPFMICON@SYSM
BMCIPR5840I ODBM options reload process initializing
BMCIPR5833I ODBM options member GPFTESTC from 09/03/13-12:40 in use
BMCIPR5601I ODBM options reload processing complete
Complete status Message - Flags: IPCMD RC=0
```
Rejecting incoming DRDA requests by IP address

As part of ODBM routing support, Energizer can reject incoming DRDA requests, based on a specified IP address. Reject IP Address processing provides a flexible, temporary way to suspend requests for an application that is experiencing issues.

You can use the SET ODBM TYPE(REJECT) command to control Reject IP Address processing. For more information, see Commands for controlling Rejecting IP Address processing (see page 97). You can enter this command by using any of the following methods:

- Use the Energizer Commands panel in the ISPF interface, as explained in Issuing Reject IP Address commands through the ISPF interface (see page 98).
- Enter commands in batch mode, as explained in member IPR#REXX of the product sample library.
- Specify Energizer commands to be executed during IMS Connect initialization, as explained in Issuing Reject IP Address commands during IMS Connect initialization (see page 99).

You can use the DISPLAY ODBM TYPE(REJECT) and the DISPLAY STATS SUMMARY(IP) commands to obtain information about Reject IP Address processing. For more information, see Commands for displaying and resetting ODBM routing information (see page 102).

To support Reject IP Address processing, Energizer maintains an internal Reject IP Address table for the life of the IMS Connect job. If an entry in the table matches an inbound ODBM request, Energizer rejects that request (regardless of the specified alias name). Energizer does not maintain this table after the IMS Connect shuts down. However, you can automate the entry of Reject IP Address commands so that they always occur during IMS Connect initialization.

Energizer supports Reject IP Address for IP version 4 and later. If you have an earlier version, contact BMC Customer Support.

Commands for controlling Rejecting IP Address processing

To control Reject IP Address processing, use the SET ODBM TYPE(REJECT) command.

This command specifies an entry in the Reject IP Address table. You must enter one command for each IP address to be added, updated, or deleted. The following generic command includes all required and optional parameters:

```
-SET ODBM TYPE(REJECT) IPADDR(node.node.node.node) ID(label) ACTION(action) STATE(state)
```
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
<td>Specify the value REJECT.</td>
</tr>
<tr>
<td>IPADDR</td>
<td>Specify all nodes of the IP address to be rejected. Wildcard values (*) are not valid for the SET command.</td>
</tr>
<tr>
<td>ID</td>
<td>(optional) Specify a value (1 through 8 characters) that can help to identify the entry.</td>
</tr>
<tr>
<td>ACTION</td>
<td>Specify the action that Energizer should perform for this IP address. The following values are valid:</td>
</tr>
<tr>
<td></td>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td>ADD or UPD</td>
<td>Add an entry for this IP address to the Reject IP Address table. ADD and UPD are equivalent values; you can use them interchangeably.</td>
</tr>
<tr>
<td>DEL</td>
<td>Delete the entry for this IP address from the Reject IP Address table.</td>
</tr>
<tr>
<td>STATE</td>
<td>(optional) Change the state of this entry in the table. The following values are valid:</td>
</tr>
<tr>
<td></td>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td>ON</td>
<td>Activate the entry in the table. This value is the default.</td>
</tr>
<tr>
<td>OFF</td>
<td>Inactivate the entry in the table. Use this value to resume routing requests to this IP addresses but leave the entry in the table in case you want to reject requests for this address later.</td>
</tr>
</tbody>
</table>

The following examples illustrate valid commands:

- `SET ODBM TYPE(REJECT) IPADDR(198.1.34.212) ACTION(ADD)`
- `SET ODBM TYPE(REJECT) IPADDR(172.24.49.101) ACTION(ADD) ID(SYSP)`
- `SET ODBM TYPE(REJECT) IP(172.24.48.133) ACTION(ADD) ID(SYSM MVS)`
- `SET ODBM TYPE(REJECT) IP(172.44.44.4) ACTION(ADD) STATE(OFF)`
- `SET ODBM TYPE(REJECT) IP(172.44.44.4) ACTION(DEL)`

### Issuing Reject IP Address commands through the ISPF interface

You can use the Energizer ISPF interface to enter commands that control Reject IP Address processing.

**To reject IP addresses through the ISPF interface**

1. Access the ISPF interface.
2. Enter option 3 (Issue Commands).
3. Enter option 3 (Issue Energizer Commands).
4. Select an IMS Connect system.
5. Enter option 9 (Favorites) to display the Energizer Commands - Favorites panel.
   Energizer also displays your favorite commands at the end of the Energizer Commands - Quick Picks panel (option 1).
6. Enter the SET ODBM TYPE(REJECT) command with its required and optional parameters. Energizer executes the command immediately, and saves the command in your profile for possible later use.

Issuing Reject IP Address commands during IMS Connect initialization

Energizer supports a technique that you can use to issue Energizer commands during IMS Connect initialization. You can use this technique to ensure that your Reject IP Address commands persist across restarts of IMS Connect.

The technique employs a member of your IMS Connect PROCLIB data set to contain the Energizer commands to be executed.

To issue Energizer commands during IMS Connect initialization

1. Create a new member in your IMS Connect PROCLIB data set.
2. In the member, specify the commands that you want to issue during IMS Connect initialization.
   The following example is a typical command specified in the PROCLIB member:

```
********************************** Top of Data **********************************
*EXAMPLE SET COMMAND TO REJECT ODBM DRDA REQUEST FROM A SPECIFIC IP ADDRESS *
* -SET ODBM TYPE(REJECT) IPADDR(172.28.182.136) ID(TESTREJ) ACTION(ADD) *
* *
```

3. Access the Energizer ISPF interface.
4. Enter option 1 (Configure Energizer), and verify or specify the name of your Energizer options library.
5. On the Configuration panel, select the options member (of type Connect) for the IMS Connect system of interest.
6. In the **Execute cmds member** field on the IMS Connect Options panel, enter the name of the PROCLIB member.
   In the following example, the PROCLIB member is named REJECTIP.
The next time that this IMS Connect initializes, Energizer executes the commands in the specified PROCLIB member.

Displaying information about ODBM routing activities

At your request, Energizer can provide detailed information about ODBM routing options and activities. To work with this information, you select an IMS Connect and issue Energizer DISPLAY ODBM, DISPLAY STATS SUMMARY, and RESET STATS commands as needed. This section deals with the following topics:

- Displaying ODBM routing information in the ISPF interface (see page 100)
- Commands for displaying and resetting ODBM routing information (see page 102)

Displaying ODBM routing information in the ISPF interface

The Energizer ISPF interface provides an easy way to issue commands that cause Energizer to display and reset ODBM routing information.

You can also enter Energizer commands through the Database Management Console. The following instructions are for the ISPF interface. If you need help with using the console, contact BMC Customer Support.

To display ODBM routing information

1. On the Energizer for IMS Connect - Primary Menu, enter 3 (Issue Commands).
2. Enter Option 3 (Issue Energizer Commands)
3. On the IMS Connect List panel, select the IMS Connect of interest.
4. On the Energizer Commands panel, take one of the following actions:
   - In the Command field, enter a command (starting with the required hyphen -). You can enter any valid command in Command field at any time when you are viewing Energizer Commands panels.
- Enter **13** (ODBM) in the command-category selection field.

Energizer displays the Energizer Commands - ODBM panel that lists the valid commands for ODBM routing. Enter the number that corresponds to the command that you want to use.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>-Display ODBM</td>
</tr>
<tr>
<td>2.</td>
<td>-Display ODBM Type(Options)</td>
</tr>
<tr>
<td>3.</td>
<td>-Display ODBM Type(Route) Id(*) Alias name</td>
</tr>
<tr>
<td>4.</td>
<td>-Display ODBM Type(PSB) Id(*) PSB group</td>
</tr>
<tr>
<td>5.</td>
<td>-Display ODBM Type(Result) Id(*) Result group</td>
</tr>
<tr>
<td>6.</td>
<td>-Display Stats Summary(Routing) Id(*)</td>
</tr>
<tr>
<td>7.</td>
<td>-Display Stats Summary(Alias) Id(*) PSB name . .</td>
</tr>
<tr>
<td>8.</td>
<td>-Display Stats Summary(PSB) Id(*) Userid . .</td>
</tr>
<tr>
<td>9.</td>
<td>-Display Stats Summary(Userid) Id(*) Result group</td>
</tr>
<tr>
<td>10.</td>
<td>-Display Stats Summary(IP) Id(*) IP address</td>
</tr>
<tr>
<td>11.</td>
<td>-Display Stats Summary(ODBM) Id(*) ODBM name</td>
</tr>
<tr>
<td>12.</td>
<td>-Reset Stats Type(ODBM)</td>
</tr>
</tbody>
</table>

In the Energizer Commands panel, view the results of the command. You can scroll the information or enter more commands as needed.
Commands for displaying and resetting ODBM routing information

You can use Energizer DISPLAY ODBM and DISPLAY STATS SUMMARY types of commands to obtain information about ODBM routing options and statistics about ODBM routing activities. In addition, you can use the RESET STATS command to clear existing statistics values (reset them to 0).

DISPLAY ODBM command

In response to the DISPLAY ODBM TYPE(optionsType) command, Energizer issues a series of BMCIPA1011I messages that display information about ODBM routing options in effect for the selected IMS Connect.

- The TYPE parameter is optional. If you enter the DISPLAY ODBM TYPE(optionsType) command, Energizer displays the subset of information that relates to the specified type. You can also enter an optional ID or IPADDR parameter to further limit the displayed information.

- If you enter the DISPLAY ODBM command with no TYPE parameter, Energizer displays all available information.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY ODBM TYPE(OPTIONS)</td>
<td>Display general information about the ODBM routing options in effect. The following example illustrates the messages that Energizer displays for this command:</td>
</tr>
</tbody>
</table>

BMCIPA1011I Output from origin system GPFM1CONBSYSDM
BMCIPA1011I ODBM CONFIGURATION: GPFM1ODM FROM: 09/03/13-12:40
BMCIPA1011I OPTIONS LAST SAVED BY: RHGPF
BMCIPA1011I OPTIONS LAST RELOAD BY: N/A ON: N/A AT: N/A
BMCIPA1011I ODBM ROUTING IS: ACTIVE
BMCIPA1011I BPE ODBM ROUTING EXIT NAME: IPRROUT0

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODBM CONFIGURATION:</td>
<td>Name of the ODBM routing options module</td>
</tr>
<tr>
<td>moduleName</td>
<td></td>
</tr>
<tr>
<td>FROM: mm/dd/yy-hh:mm</td>
<td></td>
</tr>
</tbody>
</table>
### Field Discription

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date and time when the option module was created or last modified</strong></td>
<td>OPTIONS LAST SAVED BY: userID</td>
</tr>
<tr>
<td><strong>User ID of the person who created or last saved the options module</strong></td>
<td>OPTIONS LAST RELOAD BY: userID ON: mm/dd/yy AT: hh:mm</td>
</tr>
<tr>
<td><strong>User ID of the person who last reloaded the options module, and the date and time when the options became effective in the IMS Connect</strong></td>
<td>ODBM ROUTING IS: status</td>
</tr>
<tr>
<td><strong>Status (active or inactive) of ODBM routing for this IMS Connect</strong></td>
<td>BPE ODBM ROUTING EXIT NAME: exitName</td>
</tr>
<tr>
<td><strong>Name of the ODBM routing exit that is defined to this IMS Connect</strong></td>
<td></td>
</tr>
</tbody>
</table>

**DISPLAY**

**ODBM TYPE (ROUTE) ID( aliasName)**

Display information about one or more target aliases that are defined for the selected IMS Connect.

You can use the optional ID parameter to specify the name of a target alias to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays information about all target aliases.

The following example illustrates the messages that Energizer displays for this command:

```plaintext
BMCIPA1011I  ODBM Alias Routing List:
BMCIPA1011I   Alias   PSB Group   Result Group    Active
BMCIPA1011I   TSTA      <none>    RESGRPC           Y
BMCIPA1011I   TSTB      <none>    RESGRPC           Y
BMCIPA1011I   TSTC      <none>    RESGRPC           Y
BMCIPA1011I   TSTD      <none>    RESGRPC           Y
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias</td>
<td>Name of the target alias</td>
</tr>
<tr>
<td>PSB Group</td>
<td>Name of a PSB group that is selected for this IMS Connect (if any)</td>
</tr>
<tr>
<td>Result Group</td>
<td>Name of the result group that is assigned to this target alias</td>
</tr>
<tr>
<td>Active</td>
<td>Whether the target alias is active for the IMS Connect</td>
</tr>
</tbody>
</table>

**DISPLAY**

**ODBM TYPE (PSB) ID( psbGroup)**

Display information about one or more PSB groups that are defined for the selected IMS Connect.

You can use the optional ID parameter to specify the name of a PSB group to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays information about all PSB groups.

The following example illustrates the messages that Energizer displays for this command:

```plaintext
BMCIPA1011I Output from origin system GPPM1CON@SYSM
BMCIPA1011I  ODBM CONFIGURATION:   GPPM1ODM  FROM: 09/03/13-12:40
BMCIPA1011I OPTIONS LAST SAVED BY: RIHGPF
```
**Command** | **Description**
---|---
BMCIPA1011I | OPTIONS LAST RELOAD BY: N/A ON: N/A AT: N/A
BMCIPA1011I | ODBM ROUTING IS: ACTIVE
BMCIPA1011I | BPE ODBM ROUTING EXIT NAME: IPEROUT0

**Field** | **Description**
---|---
PSB Group: psbGroup | Name of the PSB group
PSB Group Status: status | Whether the PSB group is active or inactive
PSB name | Name of each PSB that is assigned to this PSB group

**DISPLAY ODBM TYPE**

**RESULT ID**

resultGroup

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
</table>
| DISPLAY ODBM TYPE (RESULT) ID(resultGroup) | Display information about one or more result groups that are defined for the selected IMS Connect. You can use the optional ID parameter to specify the name of a result group to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays information about all result groups. The following example illustrates the messages that Energizer displays for this command:

**BMCIPA1011I Result Group Definitions**

**BMCIPA1011I Result Group:** REGSRC

**BMCIPA1011I Target Alias** | **Target ODBM** | **Weight** | **Active** | **Prefer** | **Always-Reject**
---|---|---|---|---|---
E12C | GPFCDMOD | 25 | Y | N |
E12D | GPFCDMOD | 25 | Y | N |
E22C | GPFDDMOD | 25 | Y | N |
E22D | GPFDDMOD | 25 | Y | N |

<table>
<thead>
<tr>
<th>Result Group: resultGroup</th>
<th>Name of the result group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Alias</td>
<td>Name of each target alias that is included in this result group</td>
</tr>
<tr>
<td>Target ODBM</td>
<td>Name of each ODBM that is defined for the target alias</td>
</tr>
<tr>
<td>Weight</td>
<td>Assigned weight (in proportion to weights assigned to other target aliases) that controls the amount of traffic to route to this target alias</td>
</tr>
<tr>
<td>Active</td>
<td>Whether this target alias is active to the IMS Connect</td>
</tr>
<tr>
<td>Prefer</td>
<td>Whether this target alias is selected as a preferred alias</td>
</tr>
<tr>
<td>Always-Reject</td>
<td>Whether the Always Reject option is selected for this target alias</td>
</tr>
</tbody>
</table>

**DISPLAY ODBM TYPE (REJECT)**

Display information about the IP addresses that are identified as selected for automatic rejection of inbound ODBM requests.
**IPADDR(node.node.node.node)**

To filter the display to one or more addresses of interest, you can use the optional IPADDR parameter. You can specify an asterisk (*) instead of one or more specific nodes in the address. If you omit the parameter, or you specify an asterisk for each node in the value (\*\*\*\*), Energizer displays information about all IP addresses that are selected for rejection.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I IP Address Rejection
List:
  BMCIPA1011I
  BMCIPA1011I IP Address ID
  Status
  ------------
  BMCIPA1011I 172.28.182.136 TESTREJ ACTIVE(REJECT)
```

**DISPLAY STATS SUMMARY command**

In response to the DISPLAY STATS SUMMARY(\activityType\) command, Energizer issues a series of BMCIPA1011I messages that display statistics about the specified type of ODBM routing activity in the selected IMS Connect. You can also enter an optional ID parameter to further limit the displayed statistics.

Energizer provides all statistics as Cycle counts and Total counts. For Cycle counts, Energizer displays the count of each item for the specified cycle time, and resets the counts to zero at the conclusion of the cycle. For Total counts, Energizer displays the count of each item since the system started or since you last entered the RESET STATS TYPE(ODBM) command.

```
DISPLAY STATS SUMMARY (ROUTING) ID(aliasName) command

Display statistics about one or more routing aliases that requests used in the selected IMS Connect.

You can use the optional ID parameter to specify the name of a target alias to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all target aliases.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I ODBM Routing Alias Statistics

<table>
<thead>
<tr>
<th></th>
<th>Cycle</th>
<th>Rejected</th>
<th>Total</th>
<th>Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>E12X</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>E22X</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>TSTA</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
```
**DISPLAY STATS SUMMARY (ALIAS) ID(aliasName) command**

Display statistics about one or more real aliases and ODBMs that were targeted by requests in the selected IMS Connect.

You can use the optional ID parameter to specify the name of an alias to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all aliases.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I ODBM Alias (real) Routing Statistics
BMCIPA1011I
BMCIPA1011I ---- Cycle ---- ---- Total ----
BMCIPA1011I Alias ODBM Routed Failed Routed Failed
BMCIPA1011I ------ -------- ------- ------- ------- -------
BMCIPA1011I E11A REJECTED       4        4        8        8
BMCIPA1011I E12B REJECTED       4        4        8        8
BMCIPA1011I E12C GPFCDMOD       0        0       10        0
BMCIPA1011I E22D GPFDDMOD       0        0        2        0
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routing Alias</td>
<td>Name of the routing alias that the request used</td>
</tr>
<tr>
<td>Messages</td>
<td>Number of ODBM/DRDA requests that were processed for this alias</td>
</tr>
<tr>
<td>Failed</td>
<td>Number of ODBM/DRDA requests that failed for this alias</td>
</tr>
<tr>
<td>Rejected</td>
<td>Number of ODBM/DRDA requests that were rejected for this alias</td>
</tr>
</tbody>
</table>

**DISPLAY STATS SUMMARY (PSB) ID(psbName) command**

Display statistics about one or more PSBs that have been allocated in requests in the selected IMS Connect.

You can use the optional ID parameter to specify the name of a PSB to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all PSBs.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I ODBM PSB Routing Statistics
BMCIPA1011I
BMCIPA1011I ---- Cycle ---- ---- Total ----
BMCIPA1011I PSB name Allocs Failed Allocs Failed
BMCIPA1011I ------ -------- ------- ------- ------- -------
BMCIPA1011I DFSSAM09 0     8       12      16
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias</td>
<td>Name of the actual ODBM alias targeted by the request</td>
</tr>
<tr>
<td>ODBM</td>
<td>Name of the ODBM targeted by the request</td>
</tr>
<tr>
<td>Routed</td>
<td>Number of the times a request was routed to this alias and ODBM</td>
</tr>
<tr>
<td>Failed</td>
<td>Number of the times a request failed to be routed to this alias and ODBM</td>
</tr>
</tbody>
</table>
**DISPLAY STATS SUMMARY (USERID) ID(userID) command**

Display statistics about one or more TSO user IDs that are associated with requests in the selected IMS Connect.

You can use the optional ID parameter to specify the name of a user ID to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all user IDs.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I Statistics last reset on: 09/06/13 at: 14:42:48
BMCIPA1011I ODBM UserID Routing Statistics
BMCIPA1011I          ---- Cycle ----   ---- Total ----
BMCIPA1011I UserID   Logons Rejected   Logons Rejected
BMCIPA1011I --------  ------ --------   ------ --------
BMCIPA1011I rihgpf        8        0       28        0
```

**Field** | **Description**
--- | ---
UserID | TSO user ID that is associated with a request
Logons | Number of times that this user ID attempted to log on
Failed | Number of times that logon failed for this user ID

**DISPLAY STATS SUMMARY (IP) ID(ipAddress) command**

Display statistics about one or more IP addresses that are associated with requests in the selected IMS Connect. This information is available only in IP version 4 systems.

You can use the optional ID parameter to specify the name of an IP address to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all IP addresses.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I ODBM IP Address Routing Statistics
BMCIPA1011I ------- Cycle -------   ------- Total -------
BMCIPA1011I IPv4 address  Logons ODBM I/O Rejects  Logons ODBM I/O Rejects
BMCIPA1011I ----------------  ------ -------  ------- -------
BMCIPA1011I 172.28.180.56        8        0       0       28       0       48       0
```

**Field** | **Description**
--- | ---
IPv4 address | IP address that is associated with a request
Logons | Number of times a logon occurred for this IP address
ODBM I/O | Number of I/O requests from this IP address to ODBM
Rejects | Number of times a request was rejected for this IP address
DISPLAY STATS SUMMARY  
(ODBM) ID(odbmName) command

Display statistics about the one or more ODBMs to which requests were routed for the selected IMS Connect.

You can use the optional ID parameter to specify the name of an ODBM to display. If you omit the parameter, or you specify an asterisk (*) for the value, Energizer displays statistics about all ODBMs.

The following example illustrates the messages that Energizer displays for this command:

```
BMCIPA1011I ODBM System wide routing statistics
BMCIPA1011I --------------------- Count in last cycle. ---------------------
BMCIPA1011I Aliases Routed: 0 IP connections: 0
BMCIPA1011I Alias rejections: 0 Unique IP connections: 0
BMCIPA1011I --------------------- Totals since last reset. ---------------------
BMCIPA1011I Total Aliases routed: 28 Total IP connections: 28
BMCIPA1011I Aliases rejected: 16 Unique IP connections: 1
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aliases Routed</td>
<td>Number of times a routing alias was routed to ODBM</td>
</tr>
<tr>
<td>Alias rejections</td>
<td>Number of times a routing alias was rejected</td>
</tr>
<tr>
<td>Total UserID logons</td>
<td>Total number of User ID logons that were processed</td>
</tr>
<tr>
<td>Unique UserID logons</td>
<td>Total number of unique user ID logons that were processed</td>
</tr>
<tr>
<td>UserID rejections</td>
<td>Number of times a user ID logon failed</td>
</tr>
<tr>
<td>IP connections</td>
<td>Number of times an IP address connection was established for ODBM processing</td>
</tr>
<tr>
<td>Unique IP connections</td>
<td>Number of times a unique IP address connection was established</td>
</tr>
<tr>
<td>Total PSB allocations</td>
<td>Total number of PSB allocations that were processed</td>
</tr>
<tr>
<td>Unique PSB allocations</td>
<td>Total number of unique PSB allocations that were processed</td>
</tr>
<tr>
<td>PSB alloc failures</td>
<td>Number of times a PSB allocation failed or was rejected</td>
</tr>
</tbody>
</table>

RESET STATS TYPE(ODBM) command

Enter the RESET STATS TYPE(ODBM) command to clear all ODBM routing statistics for the selected IMS Connect.
Energizer displays the statistics that it displays when you enter the DISPLAY STATS SUMMARY (ODBM) command, showing the statistics that will be cleared. Then Energizer resets all statistics to 0.

New events for ODBM routing

To trace ODBM routing activities, Energizer creates type 252 events. The event subtype corresponds to the entity being traced.

Energizer creates the following events.

⚠️ **Note**

Member IPR#EVNT of the product sample library contains maps of all IMS Connect and Energizer events. This member will be available in future levels of the product.

<table>
<thead>
<tr>
<th>Event and subtype</th>
<th>Trace ID</th>
<th>Description</th>
<th>Control block map</th>
</tr>
</thead>
</table>
| 252-00            | EVR0@O00    | Traces the ODB directory block     | + EVENT # F'252', F'00' 
+04 CL8'IPODB' 
eventicator  
+10 Generation 
Timestamp 
+20 CL8 ODBM Router group name 
+28 A(0) a(first odbm table entry) 
+20 A(0) a(first psb group) 
+30 A(0) a(first result group) 
+34 A(0) a(first result entry) 
+38 P'O' # of defined odbm groups 
+3C P'O' # of defined psb groups 
+40 P'O' # of defined alias result groups 
+44 P'O' # of defined alias result entries 
+48 A odb router status flag 
EQU X'80' odb router initialization complete 
EQU X'10' group inactive 
+4C P'O' # of times reloaded 
+50 CL8 userid last gen |
<table>
<thead>
<tr>
<th>Event and subtype</th>
<th>Trace ID</th>
<th>Description</th>
<th>Control block map</th>
</tr>
</thead>
<tbody>
<tr>
<td>252-01</td>
<td>EVR0@O01</td>
<td>Traces the ODB directory block after REINIT</td>
<td>+0 EVENT # F'252', F'01' +04 CL8 'IPRODB' eyecatcher +10 Generation Timestamp +20 CL8 ODBM Router group name +28 A(0) a(first odbm table entry) +2C A(0) a(first psb group) +30 A(0) a(first result group) +34 A(0) a(first result entry) +38 F'O' # of defined odbm groups +3C F'O' # of defined psb groups +40 F'O' # of defined alias result groups +44 F'O' # of defined alias result entries +48 X odb router status flag EQU X'80' odb router initialization complete EQU X'10' group inactive +4C F'O' # of times reloaded +50 CL8 userid last gen +58 CL8 userid last load +60 A(0) options reload time (HHMMSTTH) +64 A(0) options reload date (GCYFDFDF) +68 CL44 optional description +94 A(0) name of ODBM RJIP member +98 F'O' # of reject IP addresses +9C A(0) a(first reject ip addr)</td>
</tr>
<tr>
<td>252-02</td>
<td>EVR0@O02</td>
<td>Traces the ODB routing information</td>
<td>+0 EVENT # F'252', F'02' +04 CL4 inbound alias name from client +08 CL8 inbound PSB name from client</td>
</tr>
</tbody>
</table>
Installing and using the console

When the UIM server is installed and running, you can install, update, and launch the console.

In the following topics, this section discusses how to install the console and how to use available features:

- Configuring the console (see page 111)
- Launching and exiting the console (see page 113)
- Managing UIM server clients (see page 115)
- Using the console (see page 115)
- Setting up connections (see page 118)

Configuring the console

When the UIM server is installed and running, you can install, configure, and update the console.

The UIM server contains the code for the console and downloads it to the console computer. Depending on the type of user privileges that are set on the console computer, you can install only one instance of the console for your use, or if you have administrator rights, you can install one instance of the console that can be shared by all users on the console computer.
User requirements

The console is installed once on each machine.

If the console is installed on a computer on which you have administrator privileges, tracing and logging are fully supported and the console can be shared by all users.

If the console is installed on a machine on which you do not have administrator privileges, tracing and logging may not work. However, each non-administrator user can install a console for their use on the machine.

<table>
<thead>
<tr>
<th>Privilege type</th>
<th>Type of installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>administrator</td>
<td>Install one console</td>
</tr>
<tr>
<td></td>
<td>The default location is C:/Program Files/BMC Software/Database Management Console.</td>
</tr>
<tr>
<td>non-administrator</td>
<td>Every user can install one console</td>
</tr>
<tr>
<td></td>
<td>The default location is C:/Documents and Settings/user/My Documents/BMC Software/Database Management Console.</td>
</tr>
</tbody>
</table>

Installing the console

To install the console on your personal computer, connect to the UIM server through a supported web browser.

To install the console

1. From a supported web browser, enter the URL for the UIM server on the mainframe. For example: http://uimServerHostName : uimPortNumber /dna/index.html

   The variables in the URL are defined as follows:
   • uimServerHostName is the name of the host computer on which the UIM server is running.
   • uimPortNumber 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.
3. 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.

### 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 console installer on the UIM server is updated, you will have to enter the URL for the UIM server on the mainframe to update the console. See **Installing the console** (see page 112) for more information on installing the console.

### Uninstalling the console

Uninstall the console from your personal computer by using the Windows Control Panel.

#### To uninstall the console by using the Windows Control Panel

1. From your Windows desktop, navigate to the Control Panel.
2. From the Control Panel window, navigate to Add/Remove Programs.
3. Select and remove 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.
   
   The uninstall removes the console files for the BMC Database Management Console.

### 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, choose Programs => BMC Software => Database Management Console.
   The BMC Database Management Console login dialog box is displayed.

   **BMC Database Management Console login dialog box**

2. Select the Host.

   **Tip**

   You can manage the Host list by clicking the button next to the Host list. See Managing UIM server clients (see page 115) for more information on managing server clients.

3. Enter your User ID and Password.
4. (Optional) Enter your group and account information.
5. Click OK.

To exit the console

1. From the File menu, select Exit.
   The Quit? dialog box is displayed.
2. 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, choose Programs => BMC Software => Database Management Console.
2. Click the more (...) button next to the Host list.
   The Manage UIM Server Clients dialog box is displayed.

On the Manage UIM Server Clients dialog box, you can perform the following tasks:
- add a host
- edit a host
- delete a host
- select the default host that is displayed on the BMC Database Management Console login dialog box by selecting the default check box next to the host.

Using the console

This topic describes using the console.

The following figure shows a Windows application with which you can manage BMC Software products that are console-enabled through a single interface.

BMC Database Management console
The console interface comprises the following windows:

- Navigation window — enables you to navigate to a specific Data set
- Work area window — enables you to work with data sources or console tools
- Messages window — informs you of the different types of messages received and when you received them

**Navigation window**

The Navigation window is on the left side of the console and consists of the following tabs:

- Main tab
  The Main tab displays the data sources to which you have defined connections and other related objects. To access commands from a pop-up menu, right-click on an object in the tree.

- Tasks tab
  The Tasks tab contains icons that link to parts of the product.

**Messages window**

The Messages window is at the bottom of the console and lists messages that the product generates during the current session.
The most recent message is displayed at the top of the window. To view detailed Help, click any message. To access Help or clear all the messages from the window, right-click a message.

The following table describes the information that is displayed in the Messages window.

**Messages window**

<table>
<thead>
<tr>
<th>Column heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity</td>
<td>Type of message: informational, warning, or error</td>
</tr>
<tr>
<td>When</td>
<td>Time that the message was generated</td>
</tr>
<tr>
<td>Source</td>
<td>Where the message originated</td>
</tr>
<tr>
<td>Message</td>
<td>Numerical identifier for the message and the message text</td>
</tr>
</tbody>
</table>

The following table describes the message icons which graphically illustrate the severity of a message.

**Message icons**

<table>
<thead>
<tr>
<th>Icon</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ ]</td>
<td>informational</td>
<td>Status of your system or product</td>
</tr>
<tr>
<td>![ ]</td>
<td>warning</td>
<td>Noncritical problem that may interfere with system or product processes</td>
</tr>
<tr>
<td>![ ]</td>
<td>error</td>
<td>Critical problem that may interfere with system or product processes</td>
</tr>
</tbody>
</table>

**Navigating the console**

In addition to the Navigation window and the Messages window, the console contains the following components:

- work area
- windows in the work area
- pop-up menus

**Work area**

The work area is where you work with data sources or console tools.

It has a blue background. Any window that you open is displayed in this area. Windows that are opened in the work area remain inside the work area.

**Windows in the work area**

Product information in table format is displayed in windows in the work area.

You can change how the information is displayed by sorting on columns. You can also select discontinuous rows of information.
To close a window, click the close window icon.

**Tip**

When you finish using a window, close it. Open windows consume computer memory.

To sort on a column, click the column heading.

An up arrow or a down arrow is displayed in the column heading, and shows whether the sort is ascending (up arrow) or descending (down arrow).

To select rows, perform one of the following steps:

- To select contiguous rows, click anywhere within the row and drag the mouse over the rows.
- To select noncontiguous rows, press CTRL while selecting the row.

**Pop-up menus**

Many commands are available by right-clicking on an object in the Navigation window and choosing the command from the pop-up menu.

These menu commands are also available from the **Action** menu on the console toolbar.

**Selecting user options**

The Set Options dialog box, which you open by choosing **Tools => Options**, provides the ability to show the taskbar buttons in the work area.

You can display taskbar buttons for windows that are open in the work area. Taskbar buttons are displayed along the bottom edge of the work area. The default is to show the buttons.

**Setting up connections**

When you launch the console, you must define at least one host connection. Once you define a host connection, you can work with resources on that host. When you define a host connection, the connection definition remains available each time that you start the console and log in. The names of all defined connections are listed in the Connections folder on the Main tab of the Navigation window. The following topics are discussed in this section:

- **Enterprise List and personal list of connections** (see page 119)
- **Defining and connecting to hosts** (see page 120)
Enterprise List and personal list of 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 a user launches the console, the Enterprise List is accessed to identify the host connections that are defined.

Each user has a personal list of connections. The user can define a connection in the personal list manually by entering connection information (such as the host name and port number). Or, if a connection has been predefined in the shared Enterprise List, the user can add a connection by selecting it from that shared list. After a host connection is defined in the personal list, that connection definition remains available each time that the user starts the console and logs on.

Managing the Enterprise List

The shared Enterprise List is a list of connections and their definitions that is found on the UIM server.

The Enterprise List is available to all users of the console. You can add, edit, and delete the connection information that is stored in the shared Enterprise List.

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.
   To add a connection, perform the following actions:
   a. Click Add.
   b. Enter the connection information in the Details area.
   c. Click Done.

2. To edit a connection, perform the following actions:
   a. Select the connection and click Edit.
   b. Change the information for the connection in the Details area.
   c. Click Done.

3. To delete a connection from the shared Enterprise List, perform the following actions:
   a. Select the connection
   b. Click Delete.
   The connection is deleted from the list.

4. Click OK to apply your changes to the shared Enterprise list and close the dialog box.
Defining and connecting to hosts

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.

The online Help describes connection procedures in more detail.

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 Display Name 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 to connect 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 an account and group that the user name belongs to.

6. (optional) To connect automatically whenever the console is started, select the Autoconnect at console start.
7. Click OK.
   The new host connection definition 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 definition and click Connect.
   The Connect dialog box is displayed with the connection information for the selected host.
2. In the Login Information area, select whether to connect by using console credentials or to connect 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 an account and group that the user name belongs to.

3. *(optional)* To connect automatically whenever the console is started, select the **Autoconnect at console start**.
4. Click **OK**.
   A connection is made to the host.

**Quick Start — using Energizer with the console**

This topic describes the Quick Start — using Energizer with the console.

When you have installed the Energizer for IMS Connect product, you must configure it. This section will help you customize Energizer to meet your organization’s needs, and assumes that you are familiar with the console.

The following topics are covered in this section:

- **Overview of how Energizer enhances IMS Connect use in your environment** (see page 121)
- **Customizing Energizer** (see page 122)
- **Defining your site setup to enable Energizer** (see page 128)

For information about how to use the console, see **Installing and using the console** (see page 111).

**Overview of how Energizer enhances IMS Connect use in your environment**

Energizer enhances the capabilities of IMS Connect, an integral part of the IBM Web-enablement of IMS data.

IMS Connect supports multiple datastores (IMS systems), multiple IMS releases, and multiple environments.

With Energizer, you can tailor how IMS Connect operates in your environment, and dynamically manage aspects of your IMS Connect environment without recycling IMS Connect.
Customizing Energizer

This section provides the following information to help you customize Energizer:

- Information gathering tips before customizing Energizer
- Graphical view of several configuration scenarios and when to use them
- Explanation of the start-up view
- Step-by-step instructions for customizing Energizer

Gathering information

Before customizing Energizer, you can save time by determining your configuration requirements.

Exits

Before customizing Energizer, determine your exit requirements, such as:

- Do you need security and, if so, at what level? IMS Connect? OTMA? Transaction?
- When do you want to implement security? Some organizations implement security immediately, using in-house exits, while other companies wait until after becoming familiar with the enhanced security features in Energizer.
- How many in-house (customer) exits do you have, and what is the purpose of each exit? If you define your customer exits to Energizer, you can dynamically reload these exits and perform routing.
- What other exits do you need? With Energizer, you can quickly create and maintain virtual exits without coding in assembler language.
- Do you want to stop using assembler language exits? Recreate your customer exits as virtual exits.

Routing

Before customizing Energizer, determine your routing requirements, such as:

- Will you need to route transactions to specific datastores? Which method will you use? Workload Manager (WLM) or Statistical? Both?
- Energizer uses the z/OS WLM Sysplex Routing Services to check the status at 1-minute intervals and to reset the Energizer product's internal load balancing statistics so it sorts the incoming requests based upon datastore availability.
- Energizer uses load values (weighting factor) that you specified to determine a target datastore.

Datastores

Before customizing Energizer, gather your datastore information, such as:
• How many IMS datastores do you have and to which IMS Connect are they defined? This information will help you configure the Navigation window.
• Do you have a datastore that must *always* be available in an environment where you have multiple IMS Connects? If yes, all the IMS Connects must be defined to the same eGroup. If routing is used, the same load balancing method must be defined in all IMS Connects.

**Note**

IMS Connects in the same eGroup can use different DataStore Router configuration members, but the load balancing method must be the same for the eGroup.

**Environment**

Before customizing Energizer, gather environment information, such as:

• Do you have multiple z/OS sysplexes or systems outside the sysplex arena--such as additional logical partitions (LPARS)? If you do, you must install an eLink for each sysplex and another eLink for each system or image outside the sysplex.
• Do you need a backup configuration? If so, at what level? Just the IMS Connect? Do certain datastores always need to be accessible? Do you need a full configuration backup?

**IMS Connect**

Before customizing Energizer, gather your IMS Connect information, such as:

• What are the datastores, IMS Connects and eLinks started task names? After configuring Energizer, you will need this information to start the datastores, IMS Connect and Energizer.
• What is the 'normal' or expected message volume for each IMS Connect? This will help you evaluate statistics to determine the threshold level for the WorkLoad Governor, a feature of Energizer. The WorkLoad Governor protects the availability of the datastores by limiting the number of messages passing through IMS Connect.

**Mapping your configuration**

When you have collected the basic data, you can determine the configuration. Viewing customization scenarios (see page 124) discusses several different scenarios and when you might use them. As you configure Energizer, there are a few items to consider.

**eGroup**

An eGroup is a unique grouping of IMS Connects that use the same load balancing method.
Using Energizer with IMS Connect

IMS Connect is a registered IBM product that provides e-business access to IMS applications and data.

If multiple IMS Connects are installed and you want to use the Energizer features, Energizer must be installed and active within each IMS Connect address space. The Energizer load library must be referenced in each IMS Connect started task.

Viewing customization scenarios

This section discusses possible customization scenarios, dealing with the following topics:

- One IMS Connect with multiple datastores (see page 124)
- Two IMS Connects in the same eGroup (see page 125)
- Multiple IMS Connects (see page 126)
- Datastores shared by different IMS Connects (see page 127)

One IMS Connect with multiple datastores

This topic describes one IMS Connect with multiple datastores.

The following figure shows a simple configuration with one IMS Connect with multiple datastores.

One IMS Connect with multiple datastores
You might use this configuration in the following situations:

- Test environment
- Only a few datastores
- Single application

Two IMS Connects in the same eGroup
This topic describes two IMS Connects in the same eGroup.

The following figure shows multiple IMS Connects within the same eGroup.

⚠️ **Note**

Energizer must be active in each IMS Connect address space. DataStore Routing is defined at the eGroup level and within each IMS Connect address space. The incoming transaction is routed to the IMS Connect, based upon the specified port. If the WorkLoad Governor is used, the criteria must be defined for each IMS Connect.

Two IMS Connects in the same eGroup
You might use this configuration when there is a single eGroup to maintain.

**Multiple IMS Connects**

The following figure shows multiple IMS Connects in different eGroups.

⚠️ **Note**

Energizer must be active in each IMS Connect address space. If routing is active, the load balancing method must be defined for each eGroup. If the WorkLoad Governor is used, the WorkLoad Governor criteria must be defined for each IMS Connect.
You might use this configuration in the following situations:

- if you require different routing specifications
- single sysplex

Datastores shared by different IMS Connects

When the same datastore is shared by two or more IMS Connects, all IMS Connects must be in the same eGroup.

The following figure shows datastore_3 being shared by IMS Connect_A and IMS Connect_B.

⚠️ Note

Energizer must be active in each IMS Connect address space. DataStore Routing is defined at the eGroup level and within each IMS Connect address space. Each IMS Connect within the eGroup must use the same load balancing method. The Datastore Router Configuration member name listed within each IMS Connect address space must use the same routing type. The incoming transaction is routed to the IMS Connect based upon the specified port. If the Workload Governor is used, the criteria must be defined for each IMS Connect.
You might use this configuration in the following situations:

**Datastore that is shared by different IMS Connects**

- An affinity that can only be processed in datastore_3.
- A transaction has the destination set to datastore_3.
- The load needs to be split into different IMS Connects because of geography or different server applications.
- Datastore_3 must always be available. If IMS Connect_A becomes unavailable, datastore_3 is still available.

**Defining your site setup to enable Energizer**

This section discusses your site’s setup and the tasks that you must perform to customize Energizer by using the console.

⚠️ **Warning**

The tasks in this section assume that IMS Connect will not be started or recycled before you finish customizing Energizer. If you do recycle IMS Connect before customizing Energizer, you might not get the same results as shown in this section.

✔️ **Tip**
You can copy and paste text values from one field to another field by using the CTRL + C (copy) and CTRL + V (paste) keyboard commands.

The following topics are covered:

- Steps to customizing Energizer (see page 129)
- Console icons for Energizer (see page 130)
- Adding an Exit Services Configuration member (see page 130)
- Adding a virtual exit (see page 131)
- Adding a customer exit (see page 134)
- Adding a DataStore Router Configuration member (see page 136)
- Adding a datastore (see page 138)
- Adding an affinity (see page 138)
- Adding an eLink (see page 140)
- Adding an eGroup (see page 142)
- Adding an IMS Connect (see page 144)
- Adding an IMS Control Region (see page 146)
- Refreshing the Navigation tree (see page 147)
- Starting IMS Connect and eLink (see page 147)

**Steps to customizing Energizer**

You can customize Energizer immediately after installation, or you can customize Energizer later.

**To customize Energizer**

1. Log on to the console by using your MVS ID and password.
2. Add Exit Services Configuration members.
   The Exit Services Configuration member name stores exit information that is used by IMS Connect. You can create multiple configuration members for different IMS Connects, or you can share one member with several IMS Connect address spaces.
   When you create an Exit Services Configuration member, you must create at least one of the following exits before you can save it:
   - virtual exits — exits created and maintained by using Energizer
   - customer exit — exits written and maintained in assembler language, such as HWSJAVA0
3. Add DataStore Router Configuration members.
   The DataStore Router Configuration member name stores routing information--such as which datastores have routing enabled.
4. Add eLinks.
5. Add eGroups.
6. Add IMS Connects.
7. Add IMS Control Regions.
8. Start or recycle the Datastores, IMS Connects, and eLinks.

**Note**

IMS Control Regions only require recycling if the WLM load balancing method is being used.

---

**Console icons for Energizer**

This topic describes the console icons for Energizer.

The following table lists the Energizer icons and gives a brief description of the icon that is used with Energizer.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Node name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Connection icon" /></td>
<td>host: portnumber</td>
<td>Connection icon</td>
</tr>
<tr>
<td><img src="image" alt="Product icon" /></td>
<td>Product icon</td>
<td>Application (Energizer) that is accessible from the console</td>
</tr>
<tr>
<td><img src="image" alt="IMS Connect" /></td>
<td>IMS Connect</td>
<td>Registered IBM product that provides e-business access to IMS applications and data</td>
</tr>
<tr>
<td><img src="image" alt="ELink" /></td>
<td>eLink</td>
<td>Energizer product address space</td>
</tr>
<tr>
<td><img src="image" alt="eGroup" /></td>
<td>eGroup</td>
<td>A unique grouping of IMS Connects that use the same load balancing method</td>
</tr>
<tr>
<td><img src="image" alt="DataStore Router" /></td>
<td>DataStore Router</td>
<td>Energizer component that directs a transaction to a datastore that is best equipped to process a transaction</td>
</tr>
<tr>
<td><img src="image" alt="Exit Services" /></td>
<td>Exit Services</td>
<td>Energizer component that expands the basic functionality of IMS Connect--such as dynamic reload capabilities, virtual exits, and security exits.</td>
</tr>
</tbody>
</table>

---

**Adding an Exit Services Configuration member**

In this task, you will create an **Exit Services Configuration** member that you can use to store definitions for customer and virtual exits.

**To add an Exit Services Configuration member**

1. Right-click IMS Connects, choose **Create=>Exit services configuration**.
The New Exit Services Configuration window is displayed.

Exit Services Configuration window

2. Enter a 1- to 8-character name for the member.

The Exit Services Configuration name specifies the member name that is assigned to a set of customer and virtual message exit options that are defined within the member. The member name follows standard MVS naming conventions. The Exit Services Configuration name is saved to the options library as a PDS member name. This name is also used in the IMS Connect panel. An Exit Services Configuration member name can be referenced by multiple IMS Connects; however, each IMS Connect can specify only one Exit Services Configuration member name.

3. (optional) Enter a Description.

⚠️ Note

Mixed-case characters and spaces are allowed.

4. Because the Exit Services Configuration member cannot be saved unless at least one exit (virtual or customer) is defined, perform Adding a customer exit (see page 134).

Adding a virtual exit

This topic describes adding a virtual exit.
This task assumes that you are adding a virtual exit to an existing Exit Services Configuration member name.

If you have exits that you wrote by using assembler language, see Adding a customer exit (see page 134).

To add a virtual exit

1. If you are not already creating or editing an Exit Services Configuration member in the Exit Services Configuration window, right-click IMS Connects and choose List=>Exit services configurations. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the Exit Services Configuration member name and choose Edit. The Edit Exit Services Configuration window is displayed.
3. Click Add. The Add Exit dialog box is displayed.
4. Select Virtual exit.
5. Click OK. The following dialog box is displayed.

Virtual Exit String options dialog box
6. Enter the **Exit name**.
   For a definition of the fields, click **Help**.
7. Select whether to **Activate message routing for this exit**.
8. Select whether **Return fullword message length** is enabled.
9. Specify whether Energizer extensions are requested.
10. Enter the **MSGID1 String value** and **MSGID2 String value**.
    There are no defaults for these fields. You must enter the first of two character strings that are associated with the message exit. IMS Connect processes client messages matching the string in the IRM with the string name that is specified in the exit.

**Note**

If the MSGID string is:
- an EBCDIC format string is less than eight characters, the string is automatically padded on the right with EBCDIC space (X'40') characters
- an ASCII format string is less than eight characters, the string is automatically padded on the right with ASCII space (x'20') characters
11. Specify whether the **MSGID1** String type and **MSGID2** String type should be interpreted as readable 1-8 EBCDIC strings, readable 1-8 ASCII strings, or 2-16 hexadecimal strings.

12. (optional) Select whether the message format must be translated from ASCII to EBCDIC or from EBCDIC to ASCII (Activate translation).
   
   If **Activate translation** is active (checkmark), accept the default of Standard, which uses the IBM translation table, or enter the following information:
   
   - **Client to IMS translate table** (ASCII to EBCDIC translation)
   - **IMS to Client translate table** (EBCDIC to ASCII translation)

   If you create a translation table, you can use sample JCL from the IMCNTL or the IPRCNTL member IPR#A2E to assemble and link-edit it into a library that is in the STEPLIB concatenation of the IMS Connect. Sample tables are in IPR$AMP members IPR$A2E and IPR$E2A.

13. Click **OK**.

14. Repeat steps 3 through 13 until all required virtual exits are added for the Exit Services Configuration member.

15. Click **Save**.

The tabs for IRM Security and OTMA Security are security-related. For more information about security, see **Defining Energizer security for a virtual exit** (see page 168).

### Adding a customer exit

In this task, you will add a customer exit to Energizer.

A customer exit is written in assembler language and must be maintained by using assembler language. Customer exits must be defined to Energizer if you want to use the advanced features--such as DataStore Routing, or dynamically reloading exits. This task assumes that you are adding a customer exit to an existing Exit Services Configuration member name.

**To add a customer exit**

1. If you are not already creating or editing an Exit Services Configuration member in the Exit Services Configuration window, right-click IMS Connects and choose **List=>Exit services configurations**.
   
The IMS Connect Exit Services Configurations window is displayed.

2. Right-click the Exit Services Configuration member name and choose **Edit**.
   
The Edit Exit Services Configuration window is displayed.

3. Click **Add**.
   
The Add Exit dialog box is displayed.

4. Select **Customer exit**.

5. Click **OK**.
The New Customer Exit dialog box is displayed.

**Customer Exit dialog box**

![New Customer Exit dialog box](image)

6. Enter the **Exit name**.

7. Select whether to **Activate message routing for this exit**.

8. Select whether **Return fullword message length** should be enabled.

9. *(optional)* Select to call the termination routine before the exit is reloaded

10. *(optional)* Select to call the initialization routine after the exit is reloaded.

11. Enter the **MSGID1 String value** and **MSGID2 String value**.

There are no defaults for these fields. Unless you select the **Ignore** option, you must enter the first of two character strings that are associated with the message exit. IMS Connect processes client messages matching the string in the IRM with the string name that is specified in the exit.

**Note**

When the **Verify** option is selected, the Energizer-defined **MSGID1 String value** and **MSGID2 String value** must match the (assembler language) exit code MSGID1 and MSGID2.
11. If an EBCDIC format string is less than eight characters, the string is automatically padded on the right with EBCDIC space (X'40') characters.
12. If an ASCII format string is less than eight characters, the string is automatically padded on the right with ASCII space (x'20') characters.
13. If a hexadecimal format string is less than 16 characters, the string is automatically padded on the right with HEX zeros (x'00').

Select whether the **MSGID1 String type** and **MSGID2 String type** should be interpreted as readable 1-8 EBCDIC strings, readable 1-8 ASCII strings, or 2-16 hexadecimal strings.

Select the Message ID Definition Usage:

- **Verify** ensures that the Energizer-defined **MSGID1 String value** and **MSGID2 String value** matches the (assembler language) exit code MSGID1 and MSGID2.
- **Override** uses the Energizer-defined MSGIDs; no validation is performed. This field overrides the MSGID values that are defined in the assembler language exit code.
- **Ignore** ignores the Energizer-defined MSGIDs and uses the MSGIDs that are defined in the (assembler language) exit code. When using the **Ignore** option, you do not need to enter message ID definitions.

14. Click **OK**.
   The customer exit services name, router status (active or inactive), MSGID 1 string value, and MSGID2 string value are displayed.

15. Repeat steps **Step 3 (see page 134)** through **Step 14 (see page 136)** until all customer exits have been defined to Energizer.

16. Click **Save**.
17. Click **Close**.
   The Exit Services Configuration members are saved.

---

**Note**

Finish the Energizer customization before recycling IMS Connect.

---

**Adding a DataStore Router Configuration member**

In this task, you will define a routing option, add datastores, define the datastores active status, and set statistical balancing weights.

**Before you begin**

Before you begin, perform the following task:

- Determine the naming methodology for the router name.
- Decide on what, if any, affinities to define.
- Decide on the load balancing method for the eGroup (WLM or Statistical).
To add a DataStore Router

1. Right-click IMS Connects, choose Create=>Datastore routing configuration. The New Datastore Router Configuration window is displayed.

   **DataStore Router Configuration window**

2. Enter the RDB name. The RDB name creates a 1- to 8-character member name assigned to a set of router options. This Datastore routing configuration name is specified in the IMS Connect Properties window. The Datastore routing configuration member can be referenced by multiple IMS Connects simultaneously; however, each IMS Connect can specify only one Datastore routing configuration name.

3. (optional) Enter a Description. The description can be entered in uppercase and lowercase characters.

4. Select whether the Affinity Manager is active or inactive. If there is a requirement to define transaction affinities, set the Affinity Manager to active.

5. Select whether the Load Balancer is active or inactive. If you plan to use load balancing, set Load Balancer to active. If you are not sure about the load balancing status, accept the default values. You can change it later.

6. Because the Datastore Router Configuration member cannot be saved unless at least one datastore or affinity is defined, perform one of the following actions:
   - Adding a datastore (see page 138)
   - Adding an affinity (see page 138)
Adding a datastore

This task assumes that you are adding a datastore to an existing Datastore Router Configuration member.

To add a datastore

1. If you are not already creating or editing a Datastore Router Configuration member in the Datastore Router window, right-click IMS Connects and choose List=>Exit services configurations.
   The IMS Connect Datastore Routers window is displayed.
2. Right-click the Datastore Router Configuration member name and choose Edit.
   The Edit Datastore Router Configuration window is displayed.
3. Click the Datastores tab.
4. Click Add.
   The New Datastore dialog box, shown below, is displayed.

   ![New DataStore dialog box](image)

5. Enter the Datastore name as it appears in the HWSCFG proclib member in the DATASTORE statement for the ID parameter.
6. Enter the weight (1 to 100) of the total message volume assigned to a datastore. It is used only when the Load Balancing Method is Statistical. (The load balancing method is set in the eGroup options.) If this field is not specified and the load balancing method is statistical, all datastores are assigned equal weights.
7. Specify whether the datastore is Active (checkbox) or inactive (no checkbox). The default is Active. Messages cannot be routed to an inactive datastore.
8. Specify whether a datastore is Preferred (checkbox) or not (no checkbox). Use this field to select a preferred (or primary) datastore for the routing of IMS Connect messages.
9. Click OK.
10. Repeat steps 4 through 9 until all datastores are defined.
11. Click Save.

Adding an affinity

This task assumes that you are adding an affinity to an existing Datastore Router Configuration member.
To add an affinity

1. If you are not already creating or editing a Datastore Router Configuration member in the Datastore Router window, right-click IMS Connects and choose List=>Exit services configurations.
   The IMS Connect Datastore Routers window is displayed.
2. Right-click the Datastore Router Configuration member name and choose Edit.
   The Edit Datastore Router Configuration window is displayed.
3. Click the Affinities tab.
4. Click Add.
   The New Affinity dialog box, shown below, is displayed.

**New Affinity dialog box**

For a definition of the fields, click Help.
5. Specify the resource association type to an affinity in the Affinity Type field.
6. Specify the Value that is associated with the Affinity Type.
7. Select whether the Value type should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.
8. Specify whether the affinity is Active (checkbox) or inactive (no checkbox). The default is Active. The Affinity Manager ignores inactive affinities.
9. (optional) Complete the following Data Qualification information for Data Value 1 and Data Value 2:

<table>
<thead>
<tr>
<th>Field</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Specify the offset within the message data, which further qualifies an affinity, in this numeric field. If this field is specified, the associated Operator and Value must be specified also.</td>
</tr>
<tr>
<td>Operator</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Action</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Offset</td>
<td>Specify the operator to use when comparing message data (Offset data) to Value. If the Offset field is specified, this field must be specified also.</td>
</tr>
<tr>
<td>Value</td>
<td>Specify an actual data value to use for comparison against the Offset message data value. This field must be specified if the Offset field is specified also.</td>
</tr>
<tr>
<td>Value Type</td>
<td>If the affinity type is a STRING - Message ID, specify whether Value should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string</td>
</tr>
</tbody>
</table>

To clear the Data Qualification information for Data Value 1 and Data Value 2, click Reset in the appropriate area in the dialog box.

10. Specify the assigned affinity destination by selecting a listed destination in the Destinations field. The destination must be one or more datastores that are defined to the Datastore Router.
   - To select all the listed destinations for the Destinations field, click All.
   - To clear all the selected destinations for the Destinations field, click Clear.

11. Click OK.
12. Repeat steps 4 through 11 until all affinities are defined.
13. Click Save.
14. Click Close.

The Datastore Router Configuration members are saved.

⚠️ Note

Finish the Energizer customization before recycling IMS Connect.

Adding an eLink

In this task, you will add and define an eLink.

You do not need an eLink or an eLink started task to use the ISPF or console interfaces, but you do need an eLink to enter Energizer commands from an MVS operator console.

To add an eLink

1. Right-click IMS Connects, choose Create=>eLink configuration.
   The New eLink Configuration window is displayed.
   
   eLink Configuration window
2. Enter the **eLink name**.
   This field specifies the 1- to 8-character jobname or started task name for the Energizer communications link address space. This value will create a member name within the Energizer options library.

3. *(optional)* Enter a **Description**.

4. Enter the **eLink LUNAME** and the **UIM Server LUNAME**.
   The **eLink LUNAME** and the **UIM Server LUNAME** are required fields and must be configured by you. There are no defaults. To view sample VTAM APPLIDs, see the installation guide or the IPRSAMP library.

5. Select whether the **Message Text Case** is Mixed or Upper.

   ![Note](image)
   
   The **Message Text Case** is entered at the eLink and eGroup level. If you have language constraints which require uppercase, you *must* specify uppercase in eLink and eGroup panes. See Adding an eGroup (see page 142).

6. Enter the **WTO Routing Code**, or accept the default.

7. Enter the **WTO Descriptor Code**, or accept the default.

8. Click **Save**.

   ![Note](image)
Multiple eLinks can communicate with the same UIM Server. However, once an eLink has been paired with a UIM Server, that eLink cannot communicate with any other UIM Server.

9. Perform Adding an eGroup (see page 142) to complete the eLink configuration. Trace Options and Journal Options can be completed at a later time.

Adding an eGroup

In this task, you will define an eGroup and choose the load balancing method.

Before you begin

You must have an eLink defined.

To add an eGroup

1. If you are not already creating or editing an eLink Configuration member in the eLink window, right-click IMS Connects and choose List=>eLink configurations. The Energizer eLinks window is displayed.
2. Right-click the eLink Configuration member name and choose Edit. The Edit eLink Configuration window is displayed.
3. Click Add. The Add Group to eLink dialog box is displayed.

Add Group to eLink dialog box

Add Group to eLink

Select an eGroup from the list or click Create to create a new one.

Group [GRPA] [Create]

OK Cancel Help

4. Perform one of the following actions:

<table>
<thead>
<tr>
<th>Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select the one- to eight-character Group name from the drop-down list box, and click OK.</td>
<td>The eLink Configuration window is displayed with the selected eGroup listed in the eGroups field. Repeat steps 3 through 4 until all eGroups are added. Proceed to step.</td>
</tr>
<tr>
<td>Click Create.</td>
<td>The New eGroup Configuration window is displayed. Proceed to step 5.</td>
</tr>
</tbody>
</table>

New eGroup Configuration window
5. Enter the **Group name**.
   This field specifies a 1- to 8-character eGroup name that is used for logical groupings of IMS Connects using the same load balancing method.

   ☞ **Warning**

   Because the eGroup name will be used as an XCF group name, the eGroup name must be unique. It must not match any existing XCF group name.

6. (optional) Enter a **Description**.
7. Select the Load Balancing Method:
   - Workload Manager (WLM) Sysplex Routing Services
   - Statistical

   ☢ **Note**

   If the load balancing method is WLM, the eGroup name is also the WLM group name.

   For information on the load balancing method, click Help.
8. Enter the **Cycle time**.
This field specifies the time interval (in seconds) for resetting the internal routing statistics. When the Load Balancing Method is WLM, this field also specifies the interval used for obtaining statistics from WLM. When the Statistical Balancing Method is chosen, this value represents the frequency that Energizer checks for datastore changes requiring a redistribution of the load.

Valid values are from 10 to 300 seconds (5 minutes). The default value is 60 seconds. BMC Software recommends 60 to 180 seconds (1 to 3 minutes). Datastores that become active during a cycle are not used until the next cycle starts.

9. Select whether the **Message Text Case** is Mixed or Upper.

![](Note)

The **Message Text Case** is entered at the eLink and eGroup level. If you have language constraints which require uppercase, you must specify uppercase in both the eLink and eGroup panes. For more information, see Adding an eLink (see page 140).

10. Enter the **WTO Routing Code**, or accept the default.
11. Enter the **WTO Descriptor Code**, or accept the default.
12. Click **Save**.
13. Click **Close**.

   The eLink Configuration window is displayed with the eGroups listed in the **eGroups** field.
14. Repeat steps Step 3 (see page 142) through Step 15 (see page 144) until all eGroups are defined and added.

   Adding an IMS Control Region (see page 146) to an eGroup will be completed later in the Energizer customization process.
15. Click Close.

   The eLink Configuration members are saved.

![](Note)

Finish the Energizer customization before recycling IMS Connect.

### Adding an IMS Connect

In this task, you will associate an IMS Connect to an eGroup, add a DataStore Router Configuration Member Name, and an Exit Services Configuration Member Name to the IMS Connect Properties and save the results.

**Before you begin**

You must have an eGroup defined.
To add an IMS Connect

1. Right-click **IMS Connects**, choose **Create=>IMS Connect configuration**.
   The New IMS Connect Configuration window, shown below, is displayed.

   **IMS Connect Configuration window**

2. Enter the new **IMS Connect Name**.
   This field specifies the 1- to 8-character jobname or started task name for the IMS Connect address space.

3. (optional) Enter a **Description**.

4. (optional) Enter an **eGroup** name or select one from the drop-down list box.
   If you do not enter an eGroup name, load balancing is disabled.

5. (optional) Enter a **DataStore routing configuration** member name or select one from the drop-down list box.
   If you do not enter a DataStore routing configuration member name, routing is disabled.

6. (optional) Enter an **Exit services configuration** member name or select one from the drop-down list box.
   If you do not enter an Exit services configuration member name, only the HWSJAVA0 exit is enabled.

7. Click **Save**.
   The other properties for the IMS Connect can be completed at a later time. For more information on completing these properties, see **IMS Connect fields** (see page 249).

8. Click **Close**.
   The IMS Connect Configuration members are saved.
Note
Finish the Energizer customization before recycling IMS Connect.

Adding an IMS Control Region
In this task you will define an IMS Control Region to the eGroup.

Before you begin
You must have an eGroup defined.

To add an IMS Control Region

1. If you are not already creating or editing an eGroup Configuration member in the eGroup window, right-click **IMS Connect** and choose List=>eGroup configurations.
   The IMS Connect eGroups window is displayed.
2. Right-click the **eGroup Configuration member name** and choose **Edit**.
   The Edit eGroup Configuration window, shown below, is displayed.

   **Edit eGroup Configuration window**

3. Click Add.
   The New IMS Control Region dialog box is displayed.

   **New IMS Control Region dialog box**
4. Enter the 1- to 8-character **IMS Control Region** started task or jobname.
5. Click **OK**.
6. Repeat steps **Step 3 (see page 146)** through **Step 5 (see page 147)** until all IMS Control regions have been added.
7. Click **Save**.
8. Click **Close**.
   The eGroup Configuration members are saved.

### Refreshing the Navigation tree

In this task, you refresh the Navigation tree to update changes in the Navigation window.

Refreshing the tree updates displayed information after accessing the UIM Server.

In the Navigation window, right-click IMS Connects and choose **Refresh**.

Refresh retrieves information from the UIM Server and redraws the Navigation tree.

### Starting IMS Connect and eLink

In this task, you will load all changes.

#### Before you begin

The UIM Server and console must be started.

The eLink, eGroup, IMS Connect, DataStore Router Configuration Member Name, datastores and their activity status, Exit Services Configuration Member Name must be defined with at least one virtual or customer exit and add IMS Control Regions.

#### To ensure configuration changes take effect

1. *(optional unless you are using routing)* Ensure that the Energizer load library was added to each IMS Control Region STEPLIB concatenation that will use Energizer and that the Energizer library is the first one in the concatenation.
2. *(optional unless using routing)* Start or recycle the IMS Control Regions.
   For more information, see the IBM **IMS Operators Reference**.

---

**Note**

---
If you recycle the datastore \textit{before} you recycle IMS Connect, IMS Connect will establish the OTMA connections with the datastores. If you recycle the datastores \textit{after} you recycle IMS Connect, you must issue a series of IMS Connect commands to establish the OTMA connections. For more information, see the \textit{IBM IMS Connect Guide and Reference}.

3. Ensure that the VTAM APPLIDs are defined and active. If the VTAM APPLIDs are defined but not active, issue the START CONSOLE command from the MVS operator’s console.

4. Start eLink. From the MVS operator’s console, execute the following command:

   \begin{verbatim}
   S <elink_started_task_name>
   \end{verbatim}

   If you experience problems, review the system log to ensure that your commands completed successfully.

5. Ensure that the Energizer load library was added to \textit{each} IMS Connect STEPLIB concatenation that will use Energizer and that the Energizer library is the first library in the concatenation.

   \begin{itemize}
   \item \textbf{Note} This step should have been performed during the installation process.
   \end{itemize}

6. Ensure that the IPROPTS DD statement is in your IMS Connect started task JCL.

   \begin{itemize}
   \item \textbf{Note} This step should have been performed during the installation process.
   \end{itemize}

7. Start or recycle the IMS Connects. For more information, see the \textit{IBM IMS Connect Guide and Reference}. For more information about how to use Energizer for IMS Connect, see the online Help. You can access the online Help by pressing \textbf{F1} in any window or by clicking the \textbf{Help} button.

\section*{Message exits}

This section discusses types of user message exits, how they work, and how the Energizer for IMS Connect product helps you configure those exits.
The following topics are covered in this section:

- Understanding IMS Connect exits (see page 149)
- Adding message exits with Energizer (see page 150)
- Tasks (console) (see page 152)

For information about using exits to enable security, see Security exits (see page 159) or press F1 for online Help. For information about dynamically reloading exits, see Exits and options, reloading dynamically (see page 171). Exits are assembler language routines that are used to add customized functionality to the IMS Connect base code. IMS Connect uses exits to load modules, build user tables, and process messages. Exit Services, a component of Energizer, enhances the functionality of IMS Connect by allowing you to perform the following tasks:

- Create and maintain exits without coding in assembler language Adding a virtual exit
- Define your existing assembler routine exits to Energizer so you can use the advanced features of Energizer (see Adding a customer exit)
- Transfer security from the datastore to IMS Connect (see Security exits)
- Reload exits and processing options dynamically without recycling IMS Connect (see Exits and options, reloading dynamically)

**Understanding IMS Connect exits**

The following types of user exits are available in IMS Connect:

- **user initialization exit (HWSUINIT)**
  This exit runs when IMS Connect initializes and terminates. Its purpose is to customize the initialization process. For example, you can load tables and issue user-defined messages.

- **message exits**
  Message exits process requests that IMS Connect receives from the client or the datastore. Every request that IMS Connect receives must be associated with a message exit. Energizer can use message exits that are created in Energizer or an exit that is written in assembler language.
  For IMS Connect to direct an incoming request to the correct message exit, the request must have an IMS Request Message (IRM) prefix. If any part of the IRM is missing such as the message ID-the message is rejected.

**IBM-required exits**

IBM ships several sample exits with IMS Connect.

During IMS Connect installation, the sample exits are placed in the source library. The following exits are required and must be assembled and link-edited into your IMS Connect resource library:

- **user initialization exit (HWSUINIT)**
• Java message exit (HWSJAVA0), which is invoked if a message arrives from a client using IMS Connector for Java

⚠️ Warning

If these exits are not present, IMS Connect will not initialize.

To use any of the other sample exits, you must install them. For more information about exits and installation requirements, see the IBM IMS Connect Guide and Reference.

✅ Tip

With Energizer, you can make changes to these exits and have them take effect without recycling IMS Connect.

Adding message exits with Energizer

You can define customer exits (exits that were written in assembler language and maintained outside of the console), or you can create message exits by using Exit Services.

Types of exits in Energizer

The following exit types are available in Energizer:

• Virtual exits
  Virtual exits can be created and maintained only by using Energizer. These exits can use all Energizer features. With Exit Services, you can quickly create message exits to handle the following tasks:
  • Translate data between ASCII to EBCDIC format, using standard translation tables
  • If you have specific data characteristics—such as encryption—you can specify your translation tables.
  • Perform basic message validation to ensure that the message contains the required information
  • Construct the required OTMA prefixes before sending the message to the datastore
  • Remove the OTMA prefixes from the message that is received from the datastore, so the message can be sent back to the client
  • Provide a unique client identifier when the client does not provide one

⚠️ Note
If you create a virtual exit while IMS Connect is running, Energizer adds the new exit to the exit configuration member. You must reload the exit options or recycle IMS Connect before the exit is available. Exits and options, reloading dynamically (see page 171). For information about defining a customer exit, see Adding a customer exit (see page 134).

- Customer exits
  Customer exits are message exits that were written using assembler language. When you have defined these exits to Exit Services (see Adding a customer exit (see page 134)), you can use the advanced features of Energizer—such as DataStore Routing and dynamically reloading exits.

⚠️ Note
Energizer supports Trusted User Support by recognizing the new APPLname added to the standard IRM header and the increased IRM header message length. Energizer also supports PassTickets. For more information, see IMS Connect Guide and Reference.

The following table lists the available Energizer features by exit type.

<table>
<thead>
<tr>
<th>Available Energizer features by exit type</th>
<th>Customer exit</th>
<th>Virtual exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energizer features/functions available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create message exits without using assembler language.</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Reload the exits that are defined to Energizer without recycling IMS Connect.</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>Dynamically update Energizer defined options within IMS Connect, except for message ID and exit names. Those cannot be dynamically updated.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Add or transfer security to the IMS Connect address space.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Enable DataStore Routing for messages exits.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Use the WorkLoad Governor.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>View Statistics.</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Exit Services Configurations

The Exit Services configuration member name field is a 1- to 8-character unique member name that you assign to a set of customer and virtual message exit definitions.

Multiple IMS Connects can use the same Exit Services configuration member. An IMS Connect can specify only one Exit Services configuration member.
Tasks (console)

This section discusses the following steps that you must perform to edit exits by using Energizer:

- Editing a virtual exit (see page 152)
- Editing a customer exit (see page 154)
- Copying an Exit Services Configuration Member (see page 156)
- Deleting an exit (see page 158)

Editing a virtual exit

In this task you will edit a virtual exit.

Before you begin

You must have an Exit Services configuration member defined that contains at least one virtual exit. For information on creating Exit Services configuration members, see Adding an Exit Services Configuration member (see page 130).

To edit a virtual exit

1. Right-click **IMS Connects** and choose **List=>Exit services configurations**. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**. The Edit Exit Services configuration panel is displayed.

**Edit Exit Services Configuration window**
3. Click the virtual exit to change.

4. Click **Edit**.

   The Edit Virtual Exit dialog box is displayed.

   **Edit Virtual Exit dialog box**
5. Change the information as needed.
6. Click OK.
7. Repeat steps Step 3 (see page 153) through Step 6 (see page 154) until all the changes are made.
8. Click Save.
9. (optional) Dynamically reload the Exit Services configuration member, or recycle IMS Connect. For information on reloading the Exit Services configuration member, see Reloading exit configurations (see page 174).

⚠️ Note

The changes are implemented when you reload the exit.

---

**Editing a customer exit**

In this task you will edit a customer exit.

**Before you begin**

You must have an Exit Services configuration member defined that contains at least one customer exit. For information on creating customer exits, see Adding a customer exit (see page 134).
To edit a customer exit

1. Right-click **IMS Connects** and choose **List=>Exit services configurations**. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**. The Edit Exit Services Configuration window is displayed.

**Edit Exit Services Configuration window**

3. Click the customer exit to change.
4. Click **Edit**. The Edit Customer Exit dialog box is displayed.

**Edit Customer Exit dialog box**
5. Change the information as needed.
6. Click **OK**.
7. Repeat steps Step 3 (see page 155) through Step 6 (see page 156) until all the changes are made.
8. Click **Save**.
9. (optional) Dynamically reload the Exit Services configuration member, or recycle IMS Connect. For information on reloading the Exit Services configuration member, see Reloading exit configurations (see page 174).

⚠️ **Note**

The changes are implemented when you reload the exit.

**Copying an Exit Services Configuration Member**

In this task, you will create a new Exit Services configuration member by copying an existing name. All exit definitions will be copied to the new Exit Services configuration member. Edit the individual exits and make changes. You can also delete or add exits.

**Before you begin**

You must have one Exit Services configuration member defined.
To copy an Exit Services configuration member

1. Right-click **IMS Connects** and choose **List=>Exit services configurations**. The IMS Connect Exit Services Configurations window is displayed.

2. Right-click the **Exit Services configuration member name** you want to copy and choose **Duplicate**. The New Exit Services Configuration window is displayed.

3. Enter a 1- to 8-character name for the member.
   - The **Exit Services Configuration** name specifies the member name that is assigned to a set of customer and virtual message exit options that are defined within the member. The member name follows standard MVS naming conventions. The **Exit Services Configuration** name is saved to the options library as a PDS member name.

4. **(optional)** Enter a **Description**.

   ✴ **Note**
   
   Mixed-case characters and spaces are allowed.

5. To delete an exit from the Exit Services configuration member, select the exit and click **Delete**.

6. Click **Add** to add exits to the Exit Services configuration member.

7. Select the exit type to add.
8. Click **OK**.
9. Enter the exit information for the customer exit or virtual exit you are adding.
10. Click **OK**.
11. Repeat steps 6 through 10 until all exits are added.
12. Click **Save**.

The Exit Services configuration member is saved to the Energizer options library.

---

### Warning

The Exit Services configuration member name cannot be saved unless at least one exit (virtual or customer) is defined. The exits are not available until you reload the Exit Services configuration member, or recycle IMS Connect. For information on reloading the Exit Services configuration member, see [Reloading exit configurations (see page 174)](#).

---

### Deleting an exit

In this task, you will delete an exit.

For information about how to create a virtual exit, see [Adding a virtual exit (see page 131)](#) or press **F1** for online Help. For information about how to create a customer exit, see [Adding a customer exit (see page 134)](#).

#### Before you begin

You must have an Exit Services configuration member defined.

#### To delete an exit

1. Right-click **IMS Connects** and choose `List=>Exit services configurations`.
   The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**.
   The following panel opens.

   **Edit Exit Services Configuration window**
3. Select an exit in the Exits area of the window and click Delete to delete an exit.
4. Click **Save**.

**Security exits**

This section discusses the Energizer for IMS Connect product security within IMS Connect and message exits. This section builds on the concepts covered in Message exits (see page 148), and covers the following topics:

- Overview of IMS security with Energizer (see page 159)
- Security comparison (see page 166)
- Tasks to perform to define security (see page 166)

**Overview of IMS security with Energizer**

Web-enabling legacy mainframe data requires security that extends beyond the datastore.

Security must encompass other platforms and levels of computing. This section compares the security that ships with IMS Connect and what Energizer offers.

⚠️ **Note**
Enabling IBM security for IMS Connect

IMS Connect provides minimal security by validating the RACF (or equivalent) user ID and password that are transmitted in the IMS Request Message (IRM) prefix.

To enable IMS Connect security, specify RACF=Y in the HWSCFG configuration proclib member. If the user ID or password is not specified or if the user ID or password combination is invalid, the security check fails and the message is rejected.

Note

The IBM IMS e-business Connectors redbook states that IBM does not provide a sample security exit because too many options are available for security exits and most sites have their own security methods. If you want security beyond RACF (or equivalent) user ID and password checking, you must code it yourself.

Enabling Energizer enhanced security

Energizer ships with a variety of easily configurable security options.

To enable security, you must use the Energizer Exit Services and RACF (or equivalent). Security can be created or defined in the following locations:

- IMS Connect address space
- message exits

This section explains how security is implemented, fields to use, and how these fields interact.

Energizer enhanced security for IMS Connect

Enter a valid RACF (or equivalent) class name into the Energizer Class field in the IMS Connect configuration member to perform IMS Connect authorization and transaction authorization.

If the Class field is blank, IMS Connect authentication and transaction authentication is not performed.

Energizer security for virtual exits

When security is enabled in the IMS Connect address space, security for virtual message exits can be defined by using one of the following methods:
• User ID based validation and authentication
  This method transfers security validation from the datastore to IMS Connect and ensures that the client making the request is authorized to access IMS Connect and the requested transaction.
  User ID based validation and authorization can be used alone or with several fields — such as Enable transaction authentication or Enable IMS Connect authentication.

• IMS Connect authentication
  This method verifies that the user ID is authorized to access the IMS Connect receiving the request.

• Transaction authentication
  This method verifies that the user ID is authorized to access the requested transaction.

• OTMA security field propagation
  This method puts the security information into the OTMA headers and passes that information to the datastore for further validation.

The following table lists the fields that are associated with user ID based validation and authorization that are located in Exit Services.

**User ID based validation and authorization fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable userid authentication</td>
<td>If the Enable userid authentication checkbox is selected, the user ID must be passed in the IRM. If Exit Services cannot validate the user or if a user ID was not passed in the IRM, the request is rejected. If the password, group, and new password are passed in the IRM, they can also authenticate the user. These fields are configured in the IRM Header. To use these fields, you must specify which ones are required, which are optional, and which are not allowed.</td>
</tr>
</tbody>
</table>
| Enable IMS Connect authentication | This security option verifies that the user ID is authorized to access the IMS Connect receiving the request. To enable this feature, the following conditions must be met:  
  - The Enable IMS Connect authentication checkbox must be selected.  
  - The Enable userid authentication checkbox must be selected.  
  - The IMS Connect Authorization Resource name field must have a valid name.  
  You must define resource rules in RACF (or equivalent) indicating which users can access the IMS Connect Authorization Resource name. Only READ access is required.  
  If the resource profiles were cached in the IMS Connect address space by using the Cache resource profiles field, the cached information is used. If the verification fails, an error message is returned. |
| Enable transaction authentication | This security method verifies that the user ID is authorized to access the requested transaction. To enable this feature, the following conditions must be met:  
  - The Enable transaction authentication checkbox must be selected.  
  - The Enable userid authentication checkbox must be selected.  
  You must define resource rules in RACF (or equivalent) indicating which users can access the transaction. Only READ access is required. |
If the resource profiles were cached, the cached information will be used. If the RACF (or equivalent) verification fails, an error message will be returned.

Note

If the Enable IMS Connect authentication or Enable transaction authentication checkbox is selected, the Enable userid authentication checkbox must be selected.

OTMA security field propagation

The OTMA Security Field Propagation puts the security information into the OTMA headers before passing the information to the datastore for further validation.

When defining this security exit, you must specify the level of security to be performed — such as Full, Check, or None.

The fields in the following table are optional.

OTMA security fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTMA Security Level</td>
<td>The OTMA Security Level field specifies the level of security in the OTMA Security Header for messages that are sent to the datastore. Valid values are as follows:</td>
</tr>
<tr>
<td></td>
<td>• None - (default) no RACF (or equivalent) checking</td>
</tr>
<tr>
<td></td>
<td>• Check - check for transaction and command</td>
</tr>
<tr>
<td></td>
<td>• Full - check for transaction, command, and MPR</td>
</tr>
<tr>
<td></td>
<td>This value is only used if the OTMASE initialization parameters for the IMS control region have been set to P for profile.</td>
</tr>
<tr>
<td>OTMA Default UserID</td>
<td>If the following conditions are met, this field is used:</td>
</tr>
<tr>
<td></td>
<td>• The OTMA Security Level was set to Check or Full.</td>
</tr>
<tr>
<td></td>
<td>• An OTMA user ID was not supplied by the incoming request.</td>
</tr>
<tr>
<td></td>
<td>This field specifies the 1- to 8-character default RACF (or equivalent) user ID to use in the OTMA security prefix. This value overrides the RACFID (or equivalent) value that specified in the IMS Connect HWSCFG proclib member.</td>
</tr>
<tr>
<td>OTMA Default Group</td>
<td>If the following conditions are met, this field is used:</td>
</tr>
<tr>
<td></td>
<td>• The OTMA Security Level was set to Check or Full.</td>
</tr>
<tr>
<td></td>
<td>• An OTMA Group was not supplied by the incoming request.</td>
</tr>
<tr>
<td></td>
<td>This field specifies the 1- to 8-character default RACF (or equivalent) group to use in the OTMA security prefix.}</td>
</tr>
</tbody>
</table>
Using customer security exits with Energizer

If you have written your own security message exit—a message exit that was written in assembler language to provide specific security—you can define your security exit to a virtual exit to take advantage of advanced features within Energizer.

Use the IRM Security tab on the Exit Services virtual exit dialog box to enter the name in the Security exit field for your customer security exit.

The following parameters will be passed to the customer security exit:

- Address of a fullword containing client's IP address (input only)
- Address of a halfword containing client's port number (input only)
- Address of an 8-character string containing the IMS transaction code (input/output)

For messages with a data segment, the transaction code is extracted from the first data segment. For messages without a data segment (for example, ACK, NAK, CANCEL, DISCONNECT, and RESUME messages), the transaction code is obtained from the IRM_TRNCOD field. The value is always in EBCDIC. If the data type halfword contains the number 1, Energizer has translated the transaction code from ASCII to EBCDIC. The security exit may be used to modify this value. The value returned must be EBCDIC. The returned value will be placed in the IRM_TRNCOD field, and will be used for transaction authentication, if requested.

- Address of halfword data type (input/output)
  The halfword is set to zero on input if the user data is expected to be in EBCDIC, or will be set to one if the user data is expected to be in ASCII. If the initial value is zero, the exit must not be used to change it. If the initial value is one, the exit may be used to change the value to zero to indicate that the user data is now in EBCDIC.

- Address of fullword length of user data (input only)
  This parameter is the length from the IRM_UsrDat field to the beginning of the IRM extensions, or zero if there is no user data.

- Address of user-supplied data (input/output)
  This parameter is the address of the IRM_UsrDat field in the IRM, or zero if there is no user data. The user data is not translated prior to calling the exits. The data type halfword indicates whether Energizer expects the data to be in EBCDIC or ASCII. The exit may be used to modify the user data, but not the length. If the data is initially in ASCII, the exit may be used to translate all the data to EBCDIC and must then set the data type halfword to zero.

- Address of fullword for return code (output only)
  The fullword is initialized to zero. The security exit should place a return code in the fullword.

  Energizer continues processing as follows based on the return code:

<table>
<thead>
<tr>
<th>Return code</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero</td>
<td>Energizer continues normal processing, including all requested security checks</td>
</tr>
<tr>
<td></td>
<td>Energizer bypasses all other security checks, and continues processing the message</td>
</tr>
</tbody>
</table>


Return code | Result
---|---
-1 (X'FFFFFFFF') | the message will be rejected, and this return code and the reason code will be returned to the client in an RSM segment
any other value | the message will be rejected, and this return code and the reason code will be returned to the client in an RSM segment

- **Address of fullword for reason code (output only)**
  The fullword is initialized to zero. The security exit should place a reason code in the fullword.

- **Address of 8-byte field for returned user ID (output only)**
  The field is initialized to blanks. The security exit may be used to place a user ID in this field. The value returned must be EBCDIC. If a value is returned, this user ID will be placed in the OTMA security segment and used for Energizer authentication, if requested, and for affinity checking, if requested. If no value is returned, the user ID is obtained as specified in How affinities work (see page 179).

- **Address of 8-byte field for returned group name (output only)**
  The field is initialized to blanks. The security exit may be used to place a group name in this field. The value returned must be EBCDIC. If a value is returned, this group name will be placed in the OTMA security segment and used for Energizer authentication, if requested, and for affinity checking, if requested. If no value is returned, the group name is obtained as specified in How affinities work (see page 179).

- **Address of HWSEXPRM parameter block as passed to the virtual exit by IMS Connect (input/output)**
  This parameter block points to the input buffer, which has not yet been translated or modified in any way. The security exit should not be used to modify the HWSEXPRM block, but may be used to modify the input message. All Energizer processing will be performed on the modified buffer returned from the exit.

### Energizer for IMS Connect Passphrase Support

**PHRASE**

Energizer allows HWSJAVA0 and HWSSMPLx type exits to recognize an IRM at architecture level 5, and to accept a password phrase in an IRM extension named **PHRASE**. The IRM may contain extensions as documented by IBM.

The following conditions apply:

- For an IRM extension to be recognized IMS Connect Version 12 or later must be installed.
- The password phrase will be translated from ASCII if the message is in ASCII.
- The architecture level 5 IRM extension is the only way to include a password phrase (that is, exit options cannot be used).
- A password phrase overrides any other IRM password (as indicated by the exit options) for all validation performed by Energizer when security for virtual exits is active.
If Energizer security is not active and RACF=Y, the password phrase will be validated by IMS Connect only for HWSJAVA0 type exits. If the virtual exit options specify NONE for password, the password phrase is not validated by Energizer, but is passed to IMS Connect.

If the trusted user feature is in use and accepts or rejects the message, any passphrases will not be validated and will be removed so that IMS Connect does not use them.

*NEWPHR*

In addition, Energizer adds a *NEWPHR* extension to the IRM, which you use to change an existing password phrase.

The following conditions apply:

- The *NEWPHR* extension can only be used in combination with a *PHRASE* extension, and uses the same format as *PHRASE* extensions.
- An error will result if *NEWPHR* is used by itself.
- If the virtual exit options specify NONE for new password, or the trusted user feature accepts or rejects a user, the *NEWPHR* extension is ignored by Energizer.

**Note**

If a new password or password phrase is provided, the old password or password phrase must be provided from the same location (either the virtual user exit, the IRM header, or the IRM extensions).

The virtual JAVA exit returns the following OTMA reason codes to the client:

- **EXIT-NA** if the exit is not active
- **GOVN-REJ** if the message is rejected by the governor
- **ROUT-REJ** if the message is rejected by the router

Use either of the following ways to enter password phrases through the Energizer ISPF option 4:

- Use the **PROMPT** command with the cursor in the password or new password field,
- Enter the **PASSPHRASE** or **NEWPHRASE** commands on the command line, optionally followed by the password phrase.

The ASIS option is ignored for password phrases as they are always considered specific. Password phrases are case sensitive.

The sample member $IPRHVEP discusses the use of password phrases and the virtual user exit.

**Note**
You must not mix passwords and password phrases.
Existing and new passwords or password phrases must be provided at the same time (through the virtual user exit, the IRM header, or the IRM extensions).

Security comparison

This topic provides the security comparison.

The following table compares Energizer and IMS Connect security.

Security comparison between IMS Connect and Energizer

<table>
<thead>
<tr>
<th>Security</th>
<th>Energizer</th>
<th>IMS Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>(within the IMS Connect address space) can verify that the RACF (or equivalent) User ID and password are authenticated on a per-message basis</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(within a message exit) can verify that the RACF (or equivalent) group is authenticated on a per-message basis</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) can allow passwords to be changed</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) can verify that the User ID is authenticated to access the requested transaction</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) can build a security exit without coding in assembler language</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) can select type of authentication at the exit level</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) can verify that the User ID is authenticated to access the IMS Connect receiving the request</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>(within a message exit) add security into the OTMA headers for further validation by the datastore</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(within a message exit) can use a security message exit written in assembler</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Tasks to perform to define security

This section discusses the tasks needed to perform and define security.

- Enabling security in the IMS Connect address space (see page 166)
- Defining Energizer security for a virtual exit (see page 168)
- Defining customer security exits (see page 170)

Enabling security in the IMS Connect address space

In this task, you will enable security within the IMS Connect address space.
Before you begin

The **IMS** Connect address space must be defined and displayed under the Configuration node. You must be using RACF or an equivalent security method.

## To enable security in the IMS Connect address space

1. Right-click the **IMS Connect name** and choose **Edit configuration**. The IMS Connect window, shown below, is displayed.

### Sample IMS Connect window

![Sample IMS Connect window](image)

2. In the **Class** field, enter a valid RACF (or equivalent) class name. You can enter the name in mixed case; the console converts it to uppercase.

3. In the **Application** field, specify the one- to eight-character RACF (or equivalent) application name that is passed to the installed RACF (or equivalent) exit on all RACF (or equivalent) macro (RACROUTE) calls--applicable only when Exit Services security is enabled.

4. In the **Resource profile prefix** field, specify a one- to 36-character name that is used as a prefix for any resource names which are associated with the Exit Services security. If specified, this field is used as a prefix for any resource name that is checked.

5. Select the **Cache resource profiles** checkbox to specify whether the Exit Services security resource profiles are brought into storage (RACLST). If yes (checkbox), all resource names that are defined in the **Class** field are loaded into storage during Energizer initialization.

### Note

- **Class** field: Enter a valid RACF class name.
- **Application** field: Enter the application name passed to the installed RACF exit.
- **Resource profile prefix** field: Specify a prefix for resource names associated with Exit Services security.
- **Cache resource profiles** checkbox: Determine if resource profiles are brought into storage.
Caching resource profiles improves performance of authorization calls. If caching is not specified, each authorization call results in I/O to the RACF (or equivalent) database. Any changes to the security resource profiles will require a reload of profiles before they take effect.

6. Click **Save**.
   The updated information is saved.

   **Note**

   All IMS Connect security fields are available in this window. Exit security is available through Virtual exits.

7. (optional) Reload the IMS Connect. For information on reloading the IMS Connect configuration member, see *Reloading IMS Connect configurations (see page 175)*.

**Defining Energizer security for a virtual exit**

In this task you will define security to an existing virtual message exit.

**Before you begin**

You must have an existing virtual message exit.

You must have a valid RACF (or equivalent) class name entered in the IMS Connect **Class** field. See *Enabling security in the IMS Connect address space (see page 166)*.

**To define a virtual security exit**

1. Right-click **IMS Connects** and choose List=>Exit services configurations.
   The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**.
   The following figure is displayed
3. Click the virtual exit name (or **Add** to create a new virtual exit).
4. Click **Edit**.
   The Edit Virtual Exit dialog box is displayed.
5. Choose the security options and enter the appropriate values.
   - Click the **IRM Security** tab (see page 168) shown in the following figure. Enter the information pertaining to the user ID validation and authentication.

**Sample IRM Security dialog box**
Enter the information pertaining to the user ID validation and authentication as shown in the following figure.

**Sample OTMA Security dialog box**
6. Click **OK**. 7. Click **Save**. 8. (optional) Reload exit security so the change takes effect. For information on reloading security exits, see **Reloading security exits (see page 173)**.

**Defining customer security exits**

In this task, you will define a customer security exit to Energizer.

**Before you begin**

The customer security exit must exist in a load library that is allocated in your IMS Connect STEPLIB concatenation.

**To define a customer security exit**

1. Right-click **IMS Connects** and choose **List=>Exit services configurations**. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**. The Edit Exit Services Configuration window is displayed.
3. Click the virtual exit name (or **Add** to create a new virtual exit).
4. Click **Edit**. The Edit Virtual Exit dialog box is displayed.
5. Click the **IRM Security** tab.
6. Ensure that the following security check boxes are not selected:
   - Enable userID authentication
   - Enable IMS Connect authentication
   - Enable transaction authentication
7. In the **Security exit** field, enter the customer exit security name.
8. Click **OK**.
9. Click **Save**.

**Note**

For the changes to take effect, you must reload the Exit Services configuration member. For information on reloading the Exit Services configuration member, see [Reloading exit configurations](#) (see page 174).

### Exits and options, reloading dynamically

This section discusses how to dynamically reload exits and options for the Energizer for IMS Connect product and covers the following topics:

- Overview of message exit processing options (see page 171)
- Items to consider about reloading (see page 171)
- Tasks to reload message exits (see page 172)

### Overview of message exit processing options

Message exit processing options are field values that were entered into the console, translated to the options library format, and saved in the library. Energizer provides the ability update message exits and processing options and reload them without recycling IMS Connect. For example, with Exit Services you can perform the following tasks:

- change a virtual exit definition (excluding name and string ID)
- enable or disable routing for a message exit
- enable or disable a message ID or a message exit
- add/define new message exits (virtual and customer)

### Items to consider about reloading

The following are some items to consider about the reload process:
• If a message exit, a message ID, or routing is inactive and the updated option indicates that it should be active, the reload process makes it active.

• Message exits, security exits, and virtual exits must be reentrant and reusable. Only one copy of an exit or translate table will be loaded, even when used for multiple purposes, such as in multiple virtual exits. A reload command, targeted to a specific virtual exit, will reload the single copy, causing all virtual exits to use the new copy.

• Reloading a load module for use as a message exit, security exit, virtual exit, or translate table will not be allowed unless a new copy can be brought into storage. In some cases, if multiple aliases for the same load module are used, reloading would use the existing copy and is therefore not allowed.

• If the INIT call is required when loading a new customer exit, IMS Connect must be recycled to load it.

• All options can be dynamically reloaded, but some option parameters will not take effect until you recycle IMS Connect—such as making changes to the load balancing method (WLM or statistical) or to exit names.

Tasks to reload message exits
This section discusses the tasks that you must perform to reload message exits, and why you must recycle IMS Connect when you change the Exit Names or Message ID. The following topics are covered:

• Reloading customer exits (see page 172)
• Reloading security exits (see page 173)
• Reloading router options (see page 174)
• Reloading exit configurations (see page 174)
• Reloading eGroup options (see page 175)
• Reloading IMS Connect configurations (see page 175)
• Reloading eLink configurations (see page 176)
• Changing exit names or message IDs (see page 176)

Reloading customer exits
When you have made changes to a customer exit or a security exit, the exit must be reloaded for the changes to take effect.

(Virtual exits cannot be reloaded with this command.)

In this task, you will reload a customer message exit without recycling IMS Connect.

To reload customer exits

1. Right-click the IMS Connect name and choose Execute command.

   The Energizer Command window is displayed.
Energizer Command window

2. Select **Reload** from the **Command** drop-down list box.
3. Select **Exit** from the **Keyword** drop-down list box.
4. Select **Message** from the **Type** drop-down list box.
5. Enter the name of the message (customer) exit in the **ID** field (or select one from the drop-down list box).
6. Click **Execute**. The new customer exit is loaded.

**Reloading security exits**

When you have made changes to a customer exit or a security exit, the exit must be reloaded for the changes to take effect.

(Virtual exits cannot be reloaded with this command.)

In this task, you will reload a security exit without recycling IMS Connect.

**To reload security exits**

1. Right-click the IMS Connect name and choose **Execute command**. The **Energizer Command window** (see page 172) is displayed.
2. Select **Reload** from the **Command** drop-down list box.
3. Select **Exit** from the **Keyword** drop-down list box.
4. Select **Security** from the **Type** drop-down list box.
5. Enter the name of the security exit in the ID field.
6. Click Execute.
   The new security exit is loaded.

**Reloading router options**

Issue this command after changing routing options.

For example:

- changing the list of available datastore for routing
- changing the affinity criteria
- defining workload balancing settings
- changing the activity status for the Affinity Manager or Load Balancing Manager

If you make a change to an option, you must reload the option for the changes to take effect.

**To reload router options**

1. Right-click the IMS Connect name and choose **Execute command**.
   The **Energizer Command window (see page 172)** is displayed.
2. Select **Reload** from the **Command** drop-down list box.
3. Select **Options** from the **Keyword** drop-down list box.
4. Select **Router** from the **Type** drop-down list box.
5. Click **Execute**.
   The router options are reloaded.

**Reloading exit configurations**

Issue this command after changing exit option values.

Use this command to reload a virtual exit or a customer exit for message ID corrections or customer exit configuration changes.

If you make a change to an option, you must reload the option for the changes to take effect.

**To reload exit configurations**

1. Right-click **IMS Connects** and choose **List=>Exit services configurations**.
   The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Reload**.
3. Click **OK**.
   The Exit Services configuration member is reloaded.
Reloading eGroup options

Issue this command after changing eGroup options.

For example:

- changing cycle time
- changing Write-to-Operator (WTO) routing codes
- changing the WTO Routing Codes (these codes should match the WTO Routing Codes in eLink)

If you make a change to an option, you must reload the option for the changes to take effect.

To reload eGroup options

1. Right-click the IMS Connect name and choose Execute command. The Energizer Command window (see page 172) is displayed.
2. Select Reload from the Command drop-down list box.
3. Select Options from the Keyword drop-down list box.
4. Select eGroup from the Type drop-down list box.
5. Click Execute. The eGroup options are reloaded.

Reloading IMS Connect configurations

Issue this command after changing IMS Connect options.

For example:

- changing the DataStore Router configuration member name
- changing the WorkLoad Governor
- changing trace options
- changing journal options
- changing your security definition in your SAF product--such as changing the RACF (or equivalent) class name or other RACF (or equivalent) information that affects how information is passed

If you make a change to an option, you must reload the option for the changes to take effect.

To reload IMS Connect configurations

1. Right-click the IMS Connect name and choose Reload configuration.
2. Click OK. The IMS Connect configuration member is reloaded.
Reloading eLink configurations

If you change eLink options, you must reload the eLink configuration member for the changes to take effect.

Issue this command after changing eLink options. For example:

- changing the eLink or UIM Server VTAM LUNAMEs
- changing trace options
- changing journal options
- changing the WTO Routing codes

⚠️ Note

If you add an eGroup name, you must recycle IMS Connect.

To reload the eLink configurations

1. Right-click **IMS Connects** and choose **List->eLink configurations**. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **eLink Configuration member name** and choose **Reload**.
3. Click **OK**. The eLink configuration member is reloaded.

Changing exit names or message IDs

In this task, you will change the exit name and message ID.

Because Energizer does not support this function dynamically, you must recycle IMS Connect before the changes take effect for exit name changes only.

To change exit names or message IDs

1. Right-click **IMS Connects** and choose **List->Exit services configurations**. The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **Exit Services Configuration member name** and choose **Edit**.
3. Click the exit to change.
4. Click **Edit**. The Edit Exit dialog box is displayed.
5. Enter the new exit name or message ID.
6. Click **OK**.
7. Click **Save**.
8. **(optional)** Perform one of the following steps:
### Item Changed Action to Perform

<table>
<thead>
<tr>
<th>Item Changed</th>
<th>Action to Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>exit name</td>
<td>recycle IMS Connect</td>
</tr>
<tr>
<td>changed message ID</td>
<td>reload the exit configuration</td>
</tr>
</tbody>
</table>

---

## Workload balancing

This section discusses the Energizer *for IMS Connect* product DataStore Router component and how to use it to balance the workload.

The following topics are covered here:

- Overview of workload routing (see page 177)
- Affinity Manager (see page 179)
- Load Balancer (see page 182)
- Resource Status Checker (see page 187)
- How components work together (see page 188)
- Tasks to perform to enable workload routing (see page 192)

### Overview of workload routing

Workload routing directs a transaction to the datastore that is best equipped to process that transaction.

The DataStore Router, a feature within Energizer, uses the following components to route the incoming request to a *single* datastore:

- Affinity Manager
- Load Balancer
- Resource Status Checker

*These components eliminate the need for the application or a message exit to specify which datastore the transaction request should be sent.* The DataStore Router sends the request to the appropriate datastore while taking into account unique processing characteristics — such as affinities, workload balancing, and resource availability.

If you disable routing, the client or a customer message exit *must* specify the datastore destination or the message will be rejected by IMS Connect. The DataStore Router components are discussed in detail in this section.
Transactions
Routing transactions to different datastores can improve system performance and availability by transferring workloads to the datastores that have the capacity to handle them. For example, you may want to route transactions for some of the following reasons:

- datastore availability
- varying processor speeds
- newer, more dependable datastores
- varying auxiliary storage capacity
- varying memory
- changing environment

Prerequisites
Before you can use the DataStore Router, the datastores and the activity status of each must be defined to Energizer.

For more information about how to create DataStore Router Option Members, see Adding a DataStore Router Configuration member (see page 136).

⚠️ Note
If you make any changes to the DataStore Router configuration member, you must reload the DataStore Router configuration member for the changes to take effect. For more information, see Reloading router options (see page 174).

DataStore Router components
When IMS Connect receives a message, it is sent to the appropriate message exit.

If no errors are found, Energizer invokes the DataStore Router to determine which datastore can handle the request.

Before a message can be routed to a specific datastore, several factors must be evaluated. The DataStore Router uses its components to match the incoming request to a single datastore. If all routing components are defined as active, the components are invoked in the following order:

1. Affinity Manager
2. Load Balancer
3. Resource Status Checker
The Energizer DataStore Router configuration member name field allows you to create and store multiple router configurations with different processing environments and datastore definitions. Load balancing methods, WLM and Statistical are discussed in Load Balancer (see page 182).

**Affinity Manager**

Affinities can be defined for any transaction that has unique processing characteristics.

The Affinity Manager uses these definitions to direct the request to any datastore that is capable of processing the transaction. Affinities are optional and should be active only when necessary. Affinities can be defined for the following items in an input message:

- IMS Transaction Code (fully qualified or a generic transaction name)
- IMS Connect Client
- Datastore (destination)
- RACF (or equivalent) User ID
- RACF (or equivalent) Group Name
- Message ID
- TCP/IP Port Number

⚠️ **Note**

All affinities *must have an assigned destination or list of destinations. Use the Energizer Destinations field for affinities to specify datastore destinations.*

For more information about the fields that are available for defining affinities, see Fields and processing options (see page 245).

**How affinities work**

When a request has been processed by the appropriate message exit, the request is passed to the Affinity Manager where the request is evaluated and matched to predefined affinities.

A list is compiled specifying which active datastores are capable of processing the request. This list overrides any previously created list—such as a message ID or message exit destination. The affinity list is sorted and passed to the Load Balancer for the next phase in the evaluation.

⚠️ **Note**
The client, string, and port affinities are not affected by the user exit. For transactions, datastores, user IDs, groups, and data affinities, the values from the OTMA prefix that is constructed by the user exit are used. These can be modified by a customer user exit.

For affinity checking, the transaction code from the message (not the one in the IRM header) is used. If the transaction code is lowercase, it is converted to uppercase. For user ID and group affinities, the user ID and group from the OTMA security header is used. The customer exit or the customer security exit must set these. If they are not set, no checking is done for user ID and group affinities. For virtual exits, the user ID and group are set as follows:

- If a customer security exit is provided, the returned user ID and group are used, if non-blank.
- The user ID is obtained from the IRM, if non-blank, using the offset specified in the message exit options. The group is also obtained from the IRM, if non-blank, if the user exit options specify that the group is required or optional.
- For type 1 (Java) messages with OTMA headers built by the client, the user ID and group are obtained from the OTMA security header built by the client, if non-blank.
- The default user ID or group specified in the exit options are used, if non-blank.
- If no user ID is available from any of these sources, the default user ID that is specified in the IMS Connect configuration is used. If no group is available from any of these sources, the group is left blank.

### Affinity example

The following example shows how to define an affinity.

The list of datastore destinations, as seen in the following figure, is automatically compiled from the list of datastores that are defined to Energizer.

### Example

In this example, the transaction, ROUTM006, processes on datastore REJ5 unless its target LTERM (the first parameter following the transaction name) begins with L3B. If L3B follows the transaction name, processing is redirected to REJ7, which controls access to a string of remote terminals.

The client would send an input message similar to the following message:

```
ROUTM006 L3BC46 00356 00021
```

L3B begins in column 10; it is preceded by eight characters for the transaction name and one for the blank. The input message to IMS Connect follows the IRM header, so there is also a 4-byte field preceding the transaction name. The Data Offset 1 value is 14, 10-bytes into the data plus the data’s 4-byte length field.
The following figure shows how this information would be entered into the Affinity Data Entry dialog box.

**Affinity Data Entry dialog box**

If a second data criteria is required to isolate the transaction to a specific datastore, use the **Data Offset 2** field.

**Note**

If the **Affinity Type** is **STRING - Message ID**, you must specify the Value Type. The default is a readable 1-8 EBCDIC string. You can also choose a readable 1-8 ASCII string or a 2-16 hexadecimal string.

**Affinity processing order**

Datashore affinities work on a hierarchical basis.

When the Affinity Manager processes the defined affinities to determine which affinity fits the transaction request, the first affinity that matches the criteria is used. The affinity sort order is as follows:

1. non-generic Transaction plus Affinity Data Offset 1
2. non-generic Transaction alone
3. generic Transaction plus Affinity Data Offset 1
4. generic Transaction alone
5. user plus Affinity Data Offset 1
6. user alone
7. group plus Affinity Data Offset 1
8. group alone
9. client plus Affinity Data Offset 1
10. client alone
11. message ID plus Affinity Data Offset 1
12. message ID alone
13. datastore plus Affinity Data Offset 1
14. datastore alone
15. port plus Affinity Data Offset 1
16. port alone

**Example**

Suppose a User affinity is defined to IMSA and a Transaction affinity is defined to IMSB. When a transaction request is submitted, it is processed on IMSB because the transaction affinity has precedence.

**Load Balancer**

When the Affinity Manager compiles a list of active datastores that can process the request, the list is passed to the Load Balancer to determine where to route the request, based upon one of the following load balancing methods:

- (default) Workload Manager (WLM) Sysplex Routing Services
- Statistical

**Tip**

The load balancing method is specified at the eGroup level to ensure that everything within the eGroup and the IMS Connect address space use the same load balancing method.

You can specify different router configurations (DataStore Router configuration member name); however, you *must* use the same load balancing method (WLM or Statistical) for the eGroup. Multiple IMS Connects in the same or different eGroups can use the same DataStore Router definition.
Example

Suppose you have two IMS Connects sharing the same datastore, as shown below. For routing to work, the same load balancing method (WLM or statistical) must be used in both IMS Connect address spaces. In this example, IMS Connect_A and IMS Connect_B are in the same eGroup and share datastore_3. Two IMS Connects sharing the same datastore is one of the reasons why you must use the same load balancing method for the IMS Connects within the same eGroup.

Using WLM

The WLM model uses the z/OS Workload Manager (WLM) Sysplex Routing Services to obtain resources (system capacity) and load usage statistics for z/OS systems associated with the datastores capable of processing a request.

WLM maintains and updates this information at 10-second intervals.

By default, Energizer checks the WLM status at 1-minute intervals and resets the Energizer internal load balancing statistics so it can sort the incoming requests based on datastore availability. For information about changing the 1-minute default, see Changing load balancing method and cycle time (see page 192).
BMC Software recommends the WLM method with a **Cycle time** between 60 and 180 seconds (1 and 3 minutes) to ensure that loads are balanced in a changing environment. If the **Cycle time** is too low, transaction throughput is slowed. If the **Cycle time** is too high, system checking occurs too often, you waste resources.

**Using the statistical model**

The statistical load balancing model uses load values that you specified to determine a target datastore.

A load is the weighting factor that is assigned to a datastore for load balancing. The statistical model allows you to assign a load (0 through 100) to each datastore to specify how the workload is distributed among the active datastores. These loads take the place of WLM.

When you assign a weighted value to a datastore, an algorithm converts the weight (1 through 100) to a goal percentage. The default is 1. Only active datastores are considered when setting goal percentages. For information about setting load balancing weights for datastores, see [Defining load balancing weights](#).

**Warning**

The load balancing method affects which datastores are considered active during the first cycle after IMS Connect is started:

- With the statistical method, datastores are considered active when goal percentages are calculated.
- With the WLM method, messages are sent after the first specified cycle time. This happens because the datastore status is undetermined at that time.

**Tip**

Because goal percentages are calculated only at the beginning of each routing cycle, BMC Software recommends that you set the load balancing cycle time between 1 and 3 minutes. If the cycle time is too high, Energizer will not include a newly activated datastore until the next cycle.

Use the statistical method when more than one datastore resides on the same image and you want to control the individual load going to those datastores.
Example

This example shows how the goal percentage is calculated in a 2-minute cycle with datastores becoming inactive and active within a cycle. The Affinity Manager is inactive.

Cycle 1

The cycle begins with all datastores active and loaded.

<table>
<thead>
<tr>
<th>Name</th>
<th>Weight</th>
<th>Active/Inactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore 1</td>
<td>10</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 2</td>
<td>20</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 3</td>
<td>30</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 4</td>
<td>40</td>
<td>active</td>
</tr>
</tbody>
</table>

Energizer uses the load information to calculate the goal percentage of incoming transactions to send to each datastore.

<table>
<thead>
<tr>
<th>Name</th>
<th>Weight</th>
<th>% of Goal</th>
<th>Active/Inactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore 1</td>
<td>10</td>
<td>10</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 2</td>
<td>20</td>
<td>20</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 3</td>
<td>30</td>
<td>30</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 4</td>
<td>40</td>
<td>40</td>
<td>active</td>
</tr>
</tbody>
</table>

Suppose datastores 2 and 3 become inactive during the first cycle. Because incoming transactions cannot be routed to inactive datastores, only datastores 1 and 4 would continue to process transactions based upon a 1 to 4 ratio. New goal percentages would not be created until the start of cycle 2.

Cycle 2

At the beginning of the second interval, the goal percentages for all active datastores are recalculated.
Assuming that none of the load information was changed in cycle 1, only the active datastores (1 and 4) are used to calculate the % of Goal.

<table>
<thead>
<tr>
<th>Name</th>
<th>Weight</th>
<th>% of Goal</th>
<th>Active/Inactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore 1</td>
<td>10</td>
<td>20</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 2</td>
<td>20</td>
<td>0</td>
<td>inactive</td>
</tr>
<tr>
<td>Datastore 3</td>
<td>30</td>
<td>0</td>
<td>inactive</td>
</tr>
<tr>
<td>Datastore 4</td>
<td>40</td>
<td>80</td>
<td>active</td>
</tr>
</tbody>
</table>

If datastore 3 is made active during cycle 2, transactions cannot be sent to it until cycle 3 (after a new goal percentage has been calculated).

**Cycle 3**

When cycle 3 starts, the percentages are recalculated based upon the specified load (weighting factor).

<table>
<thead>
<tr>
<th>Name</th>
<th>Weight</th>
<th>% of Goal</th>
<th>Active/Inactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore 1</td>
<td>10</td>
<td>12</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 2</td>
<td>20</td>
<td>0</td>
<td>inactive</td>
</tr>
<tr>
<td>Datastore 3</td>
<td>30</td>
<td>37</td>
<td>active</td>
</tr>
<tr>
<td>Datastore 4</td>
<td>40</td>
<td>50</td>
<td>active</td>
</tr>
</tbody>
</table>

**How Load Balancer works**

The Load Balancer spreads the workload (incoming transaction requests) among the available datastores. It does this based upon the affinity list compiled for each request and the availability of the datastores at the time the request arrives. Datastore availability is determined by the following criteria:

- Affinity Manager’s list
- datastores known to IMS Connect and Energizer
- any datastore that was active during the last cycle and had a % of Goal assigned

The Load Balancer creates a new list of available datastores, sorts it, and passes it to the Resource Status Checker.
Resource Status Checker

The Resource Status Checker verifies the destination datastore’s status before routing a transaction to it.

The destination datastore is defined as the first datastore on the list that has an active status and is accepting requests. If a datastore is not found, an error message is issued. A request cannot be sent to a datastore with an inactive status.

The IMS Connect OTMA flood monitor feature provides a State value of AVAIL, WARN, or SEVERE for each datastore. When Energizer routing is enabled with the new routing options of **Warn state weight multiplier** and **DataStore state change timer**, Load Balancer works as described in the following examples:

The following example shows how reduction of the routing weight occurs when a datastore state changes to WARN by using the **Warn state weight multiplier** routing option:

**Example**

The normal routing weight is multiplied by the value (0 to 100 percent) specified in this field to set a new weight. The default value is 50 percent. The multiplier is used only when routing and load balancing are active, but will be used for either Workload Manager (WLM) or statistical load balancing (as set in the eGroup options).

A warn state weight multiplier of 100 results in the weight not being reduced, but a **Warn state weight multiplier** of zero results in the weight being reduced to the minimum (usually one message per routing cycle).

For example, three datastores (IMSA, IMSB, and IMSC) are active, with a load balancing weight set to 33 for each datastore, indicating that one third of the messages are routed to each datastore. The **Warn state weight multiplier** is set to 66.

When IMSA changes to a WARN state, the weight for IMSA initially changes to 22 and the weights for IMSB and IMSC remain at 33. With those weights, approximately 25 percent of the messages are routed to IMSA and 37.5 percent of the messages are routed to each of IMSB and IMSC.

When a datastore state changes to SEVERE, the weight is reduced to zero immediately. Messages are not routed to that datastore, even if no other datastores are available.

When a datastore state changes to AVAIL, the weight changes to the normal weight for that datastore.

To understand how routing reduction and the **Warn state weight multiplier** work when the **Datastore state change timer** field is set to any value other than zero, see the next example.
The following example shows how weighting can be adjusted gradually to reach a state of equilibrium for the routing of messages to datastores by using the **Datastore state change timer** field:

**Example**

When this field is set to zero, routing reduction and weighting work as described in the previous example.

When the time that is specified in this field is set to a non-zero value, the weight for a datastore that remains in a WARN state is reduced for each new routing cycle. The weight is reduced at a measured pace until it has reached the minimum (usually one message per routing cycle) at the end of the specified time.

For example, three datastores (IMSA, IMSB, and IMSC) are active, with a load balancing weight set to 33 for each datastore, indicating that one third of the messages are routed to each datastore. The Warn state weight multiplier is set to 50. The **Datastore state change timer** is set to 3 (minutes), and the routing cycle is set to 60 (seconds).

When IMSA changes to a WARN state, the weight for IMSA is initially reduced to 16 by the weight multiplier and is reduced by about 5 more at the beginning of each new routing cycle while it remains in a WARN state. After three minutes, the weight has been reduced to the minimum.

When a datastore state changes to SEVERE, the weight is reduced to zero immediately and the **Datastore state change timer** is not used. Messages are not routed to that datastore, even if no other datastores are available.

When a datastore state changes to AVAIL, the weight is not changed to the normal weight for that datastore immediately. The **Datastore state change timer** increases the weight gradually until the normal weight has been reached at the end of the specified time. If the datastore returns to a WARN state before the time that is specified in the **Datastore state change timer** field has expired, the process is reversed and the weight is reduced gradually.

To understand how routing reduction and the Warn state weight multiplier work when the **Datastore state change timer field** is set to zero, see the previous example.

**How components work together**

This topic describes how components work together.
The following table lists what happens when routing is active and the Affinity Manager and Load Balancer components are active or inactive.

### Active and inactive component status when routing is active

<table>
<thead>
<tr>
<th>Affinity Manager status</th>
<th>Load Balancer status</th>
<th>Description</th>
</tr>
</thead>
</table>
| inactive                | active               | • Load Balancer uses the list of datastores defined to IMS Connect and Energizer.  
      |                      | • Load Balancer sorts the list (based on datastore resources and usage) and passes the new list to the Resource Status Checker.  
      |                      | • The transaction is sent to the first datastore on the list that has an active datastore status and is accepting requests. If no requests are found, an error message is returned. |
| inactive                | inactive             | • If the datastore is active and the datastore destination is specified in the message or the message exit (which is defined to Energizer), the message is routed to that datastore.  
      |                      | • If DataStore Routing is active and the datastore in the message is not defined to Energizer, the message is rejected. |
| active                  | active               | • When a transaction arrives, the Affinity Manager compiles a list of available datastores that are defined to IMS Connect and Energizer which can process the transaction. The Affinity Manager sends the list to the Load Balancer.  
      |                      | • The Load Balancer uses the affinity list to check datastore resources and usage. This information is used to sort the list of datastores, which is passed to the Resource Status Checker.  
      |                      | • The transaction is sent to the first datastore on the list that has an active datastore status and is accepting requests. If no requests are found, an error message is returned.  
      |                      | • If affinities are defined, these take precedence over the destinations defined in the exits or in the transactions. The transaction request is sent to the first datastore on the list that has an active status. If none are found, an error message is returned. |
| active                  | inactive             | • If the datastore is defined to Energizer and no matching affinities exist, the message is sent to the datastore defined in the message or message exit.  
      |                      | • If the datastore is not defined to Energizer, the message is rejected.  
      |                      | • If affinities are defined, these take precedence over the destinations defined in the exits or in the transactions. The transaction request is sent to the first datastore on the list that has an active status. If none are found, an error message is returned. |

### Handling serial transactions

Serial transactions are handled by specifying the affinity value and the datastore destination.

### Handling conversations

When routing is active, all iterations of a conversation are sent to the same data store. Load balancing is used for only the first iteration.
Note

Unless a conversation must be routed to a specific datastore, conversations do not need to be defined as an affinity. However, routing must be enabled.

Handling protocols and message types

This topic describes the handling protocols and message types.

The following table lists message types pertaining to the different protocol types listed below.

**Message types**

<table>
<thead>
<tr>
<th>Code</th>
<th>Message Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Transaction Message</td>
<td>Normal input transaction that expects a reply</td>
</tr>
<tr>
<td>C</td>
<td>Conversational data</td>
<td>Any conversation input other than transaction</td>
</tr>
<tr>
<td>D</td>
<td>Disconnect message</td>
<td>Similar to /EXIT to exit a conversation</td>
</tr>
<tr>
<td>A</td>
<td>ACK</td>
<td>Positive acknowledgment message required when sync level = CONFIRM</td>
</tr>
<tr>
<td>N</td>
<td>NAK</td>
<td>Negative acknowledgment</td>
</tr>
<tr>
<td>S</td>
<td>Sendonly message</td>
<td>Input transaction does not expect a reply</td>
</tr>
<tr>
<td>R</td>
<td>Resume Tpipe</td>
<td>Retrieve async messages and sendonly replies from queue</td>
</tr>
<tr>
<td>K</td>
<td>Sendonly message with ACK</td>
<td>Input with acknowledgment of receipt only</td>
</tr>
<tr>
<td>M</td>
<td>Synch callout response</td>
<td>A response for a synch callout message</td>
</tr>
</tbody>
</table>

Routing1

Routing for the message types is handled as follows:

- When routing is active, normal routing is used for T-type messages—affinities and workload balancing are checked.
- If there was a previous message, C-type, D-type, A-type, and N-type messages are routed to the same datastore as the previous message. If there was not a previous message, the datastore field is left unchanged.
- K-type, M-type, R-type, and S-type messages are not routed unless the datastore field is blank and the existing datastore field is left unchanged. If the datastore field is blank, normal routing is performed for K-type and S-type messages, and M-type and R-type messages are routed to the same data store as the previous message.
- Routing works with send-then-commit messages.
Commit-then-send messages can be routed but, if a response is NAK, the message goes on the hold queue and the socket is closed. An R-type message is required to retrieve it, but the client has no way to determine where to send the R-type message, unless the Energizer extensions option is selected for the exit. If the option is selected, the data store is returned in the Extended Status Message (ESM).

**Warning**

For S-type and R-type messages, the client should designate the datastore so Energizer does not attempt routing. The client can leave the datastore blank in an S-type message to allow Energizer to route it, but the R-type message that is used to retrieve the output must follow immediately without closing the socket. Otherwise, if the socket is closed, neither the client nor Energizer can determine where to send a later R-type message.

If the customer exit does not build a valid OTMA prefix with state data, security data, and user data, messages are not routed.

**Security**

Security for the message types is handled as follows:

- Security works differently from the sample exit. The transaction code in the message is validated, not the code from the IRM header, which could be different.
- If security is turned on, all security checking (except transaction security) is enabled for all types of messages (even ACK and NAK). All messages must have the user ID and password in the IRM header. Transaction security is only performed if a transaction code is present in the message.

**DataStore Router status**

This topic describes the Datastore router statuses.

Based upon how the datastores are defined, you can receive one of the messages that are defined in the following table.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>active</td>
<td>The datastore is available for routing.</td>
</tr>
<tr>
<td>inactive</td>
<td>Energizer routing is not available for the datastore.</td>
</tr>
</tbody>
</table>
### Status Description

**Solution:** Enable routing. Right-click `IMS Connect` to `List Datastorm routing configurations`. Right-click the datastore router member name and choose `Edit`. Click on the datastore name and choose `Edit`. Click `Active` to enable routing. Click `OK`. Click `Save`.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not Defined to Energizer</strong></td>
<td>The datastore was not defined to Energizer. Solution: Define the datastore. Right-click <code>IMS Connect</code> to <code>List Datastorm routing configurations</code>. Click the Datastores tab and choose <code>Add</code>. Complete the datastore information. Click <code>OK</code>. Click <code>Save</code>. Add <code>OK</code>.</td>
</tr>
<tr>
<td><strong>Unknown to IMS Connect</strong></td>
<td>The datastore was not defined to IMS Connect, but it was defined to Energizer. Solution: For information about how to define datastore to IMS Connect, see the IBM IMS Connect Guide and Reference.</td>
</tr>
<tr>
<td><strong>stopped</strong></td>
<td>IMS Connect stopped the routing because there was a break between IMS Connect and the OTMA on the datastore. Solution: See the IBM IMS Connect Guide and Reference.</td>
</tr>
</tbody>
</table>

### Tasks to perform to enable workload routing

This section discusses the tasks to perform to enable workload routing, and includes the following:

- Changing load balancing method and cycle time (see page 192)
- Adding a datastore to an existing router definition (see page 194)
- Copying a DataStore Router configuration member (see page 194)
- Defining load balancing weights (see page 195)
- Changing routing in the IMS Connect address space (see page 196)
- Dynamically enabling DataStore Router changes (see page 196)
- Viewing datastore routing status (see page 197)

#### Tip

To add similar routing options, copy any DataStore Router configuration member name and then edit the new configuration member. For more information, see Copying a DataStore Router configuration member (see page 194).

### Changing load balancing method and cycle time

In this task, you will learn how to change the **Load Balancing Method** and **Cycle time** for the entire eGroup.

The default is 60 seconds (1 minute).

#### Tip

To add similar routing options, copy any DataStore Router configuration member name and then edit the new configuration member. For more information, see Copying a DataStore Router configuration member (see page 194).
BMC Software recommends the WLM method with a Cycle time between 60 and 180 seconds (1 to 3 minutes) to ensure that loads are balanced in a changing environment. If the Cycle time is too low, transaction throughput is slowed; if system checking occurs too often, you are wasting resources.

To change the load balancing method and cycle time

1. Right-click **IMS Connects** and choose List=>eGroup configurations.
   The IMS Connect eGroups window is displayed.
2. Right-click the **eGroup** name and choose **Edit**.
   The eGroup Configuration window is displayed.

   **eGroup Configuration window**

3. Choose the new Load Balancing Method.
4. Enter the new **Cycle time** value between 10 and 300 seconds.
5. Click **Save**.
6. *(optional)* Reload the eGroup options. For information on reloading the eGroup options, see **Reloading eGroup options** (see page 175).
7. Click **Close**.
Adding a datastore to an existing router definition

In this task, you will add a datastore to an existing DataStore Router Configuration member.

For step-by-step instructions on creating a DataStore Router Configuration member, see Adding a
DataStore Router Configuration member (see page 136).

To add a datastore to an existing router definition

1. Right-click IMS Connects and choose List=>Datastore routing configurations. The IMS Connect Datastore Routers window is displayed.
2. Right-click the Datastore Router configuration member name and choose Edit.
3. Click the DataStores tab.
4. Click Add. The New DataStore dialog box is displayed.
5. Enter the Datastore name as it appears in the HWSCFG proclib member in the
   DATASTORE statement for the ID parameter.
6. Enter the weight (1 to 100) of the total message volume assigned to a datastore. It is used only when the Load Balancing Method is Statistical. (The load balancing method is set in the
eGroup options.) If this field is not specified and the load balancing method is statistical, all
datastores are assigned equal weights.
7. Specify whether the datastore is Active (checkbox) or inactive (no checkbox). The default is Active. Messages cannot be routed to an inactive datastore.
8. Click OK. The datastore is added to the list.
9. Repeat Step 4 (see page 194) through Step 8 (see page 194) until all datastores are
   defined.
10. Click Save.
11. Click Close.
12. (optional) Reload the router options. For information on reloading routing options, see
   Reloading router options (see page 174).

Copying a DataStore Router configuration member

In this task, you will create a new DataStore Router configuration member name by copying an
existing name.

All router definitions will be copied to the new DataStore Router configuration member. Edit the
individual routing options and make changes. You can also delete or add routing options.

Before you begin

You must have at least one DataStore Router configuration member already defined.
To copy a DataStore Router configuration member

1. Right-click **IMS Connects** and choose **List=>Datastore routing configurations**. The IMS Connect Datastore Routers window is displayed.
2. Right-click the **Datastore Router configuration member name** and choose **Duplicate**. The Edit DataStore Router Configuration window (see page 137) is displayed.
3. Enter a new **RDB name**.
4. Edit the options by performing the following steps:

<table>
<thead>
<tr>
<th>Type of Datastore</th>
<th>Steps</th>
</tr>
</thead>
</table>
| datastore         | a. Click the Datastores tab.  
|                   | b. Click to select the datastore to change.  
|                   | c. Click **Edit**.  
|                   | d. Make any changes, and click **OK**.  |
| affinity          | a. Click the Affinities tab.  
|                   | b. Click to select the affinity to change.  
|                   | c. Click **Edit**.  
|                   | d. Make any changes, and click **OK**.  |

5. Click **Save**.
6. *(optional)* Reload the DataStore Router configuration member. For information on reloading the DataStore Router configuration member, see **Reloading router options (see page 174)**.

**Defining load balancing weights**

In this task, you will define load balancing weights for existing datastores.

**To define the load balancing weights for existing datastores**

1. Right-click **IMS Connects** and choose **List=>Datastore routing configurations**. The IMS Connect Datastore Routers window is displayed.
2. Right-click the **Datastore Router configuration member name** and choose **Edit**. The Edit Dialogue box is displayed.
3. Click the DataStores tab.
4. Click an existing datastore and click **Edit**.

**Sample Edit DataStore dialog box**

5. Enter the **Weight**. Specify the weight (1-100) of the total message volume that is assigned to a datastore.
6. Ensure that the datastore status is Active.
7. Click OK.
8. Click Save.
9. (optional) Reload the router options. For information on reloading routing options, see
   Reloading router options (see page 174).

### Changing routing in the IMS Connect address space

In this task, you will enable routing in the IMS Connect address space.

For step-by-step instructions to enable routing in the IMS Connect address space, see Adding an
IMS Connect (see page 144).

#### Before you begin

The DataStore Router configuration member must exist with at least one active datastore defined.

#### To define routing in the IMS Connect address space

1. Right-click the **IMS Connect** and choose **Edit configuration**.
   The IMS Connect window (see page 167) is displayed.
2. Enter the new **DataStore routing configuration** member name to use.
3. Click **Save**.
4. Use steps Step 1 (see page 196) through Step 3 (see page 196) to define the other IMS
   Connects in the same eGroup.

#### Warning

All IMS Connects within the same eGroup must use the same load balancing
method-- WLM or statistical. The DataStore routing configuration member name
can be different, but not the load balancing method.

5. (optional) Reload the IMS Connect options. For information on reloading the IMS Connect
   configuration member, see Reloading IMS Connect configurations (see page 175).

### Dynamically enabling DataStore Router changes

In this task, you will dynamically enable routing changes.

#### Before you begin

You must create a second DataStore Router configuration member. See Adding a DataStore
Router Configuration member (see page 136).
To dynamically enable routing changes

1. Right-click the **IMS Connect name** and choose **Execute command**.
   The **Energizer Command window** (see page 172) is displayed.
2. Select **Reload** from the **Command** drop-down list box.
3. Select **Options** from the **Keyword** drop-down list box.
4. Select **Router** from the **Type** drop-down list box.
5. Click **Execute**.
   DataStore Routing is active.

Viewing datastore routing status

In this task, you will display the routing status for selected datastores.

**Before you begin**

You must create the routing definition and enable it in the IMS Connect address space. For more information, see **DataStore Router Configuration window** (see page 137).

**To view the routing status**

1. Right-click the **IMS Connect name** and choose **Execute command**.
   The **Energizer Command window** (see page 172) is displayed.
2. Select **Display** from the **Command** drop-down list box.
3. Select **Router** from the **Keyword** drop-down list box.
4. Select **STATUS** from the **Type** drop-down list box.
5. Click **Execute**.
   The status of all the datastores is displayed. For an explanation of what is displayed in the router window, see **Set commands to reset the journal and trace fields temporarily** (see page 282).

Statistics

This section discusses statistical views, how to use the statistical information to set the WorkLoad Governor's Threshold, and how to display the statistical views for the Energizer for IMS Connect product.

The following topics are covered here:

- Overview of the Energizer statistics feature (see page 198)
- Viewing charts (see page 198)
- Viewing tables (see page 199)
- Charting data (see page 200)
- Using statistics with the WorkLoad Governor (see page 201)
Overview of the Energizer statistics feature

Energizer statistics provide a graphical and tabular view of various transaction, exit, and datastore information.

With the statistical feature, you can perform the following tasks:

- monitor transaction rates before setting a value for the WorkLoad Governor Threshold (see WorkLoad Governor (see page 206)).
- monitor IMS Connect Performance
- display data in horizontal bar charts, vertical bar charts, and tabular format
- export data in comma or tab separated format so the information can be imported into other applications
- perform comparisons — such as current, recent, and peak rates — or compare the average, minimum, and maximum message sizes
- view summaries of transaction, exit, and datastore information
- view detailed exit information
- view the error count, the number of messages that were rejected since the IMS Connect was started or since statistics were reset

⚠️ Note

When IMS Connect is recycled or when the `RESET STATS` command is issued, statistical information is reset to zero.

Viewing charts

The default view that is displayed when you right-click the IMS Connect name and choose `Display=>Statistics=>[Transaction | Exit services | Datastore] is the Message Count` in a vertical bar chart.

Changing the defaults

To change the chart type (horizontal bar or vertical bar), click the Orientation drop-down list box in the following figure, and select which chart type to view.

Sample default chart
To change the data that is charted, see Charting data (see page 200).

**Changing the data type**

You can chart any of the following data types: transaction summary, exit summary, exit details, and datastore summary. To change the data type, click the Data Type drop-down list box and select the appropriate data type to chart.

**Viewing tables**

This topic describes the viewing tables.

To view data in tabular format, click the Table tab at the top of the statistics window as shown in Default table columns for the summary view.

The table format displays all available data for the data type. To change the data that is displayed in the table, you will need to select different parameters. See Charting data (see page 200).

The following figure shows the data displayed in columns.

**Default table columns for the summary view**
Charting data

Click the Chart tab to perform the following tasks:

- Change the Data Type by selecting one of the following values to chart:
  - Message count
  - Message size
  - Message rate
- Select the data checkboxes to display the data appropriate to the data type selected in the Data Type field.

Click the Table tab to perform the following tasks:

- Sort by column heading
- Sort the data in an ascending or descending order by column heading

For an explanation of the data displayed, see this table (see page 274) or press F1 for online Help.

Data handling

The following data handling tools are displayed in the statistics:

- Refresh
Sends a request to the UIM Server and updates the window with the most current information. The chart and the table display this new information.

- **Export**
  Exports the data in a comma-separated (.csv) or tab-delimited (.tab) format so the information can be imported into other applications.

**Export Data dialog box**

---

**Using statistics with the WorkLoad Governor**

Monitoring transaction throughput will help you establish the **Threshold**. Because statistics are cleared only when they are reset or when IMS Connect is recycled, you must reset the statistics at 24-hour intervals. BMC Software recommends that you monitor statistics for at least five consecutive days to determine the **Threshold**.

**Tip**

If the IMS Connect must be recycled during the test period, activate journaling. The trace information will be written to the journals.

---

**Tasks to gather statistics used in calculating the optimum threshold number**

This section discusses the tasks that gather the required statistical data that is used in calculating the optimum **Threshold** number, and includes the following tasks:

- Activating journaling (see page 202)
- Capturing message throughput statistics (see page 203)
- Evaluating statistics by using the console (see page 205)
- Exporting data (see page 206)

---

**Note**
The history record DCS0@ALL contains the field maximum input messages per 5-second interval. The record is created when the reset STATS command is executed. To quantify the peak number of input messages occurring in a day, the statistics must be reset at 24-hour intervals.

Activating journaling

Because IMS Connect could be recycled when you are determining peak load, BMC Software recommends that you store the trace information in the Journal.

In this task, you will activate journaling.

To activate journaling

1. (perform on each IMS Connect) Right-click the IMS Connect name and choose Edit configuration.
   The Edit IMS Connect Configuration window, shown below, is displayed.

2. Click the Journal Options tab.

   Journal Options
3. Click Clear.
4. Click the check–boxes to enable the following items:
   - Activate journaling
   - Historical
5. Click Save.
6. Click Close.
7. (optional) Reload the option. For information on reloading IMS Connect options, see Reloading IMS Connect configurations (see page 175).

⚠️ Note

When you have peak load information, inactivate journaling.

Capturing message throughput statistics

In this task, you will capture message throughput statistics.

To ensure that history tracing is active

1. (perform on each IMS Connect) Right-click the **IMS Connect name** and choose Edit configuration.
   The IMS Connect Configuration window is displayed.
   **IMS Connect Configuration window**
1. Click the **Trace Options** tab.

**Trace Options**

2. Click the checkboxes to enable the following items:
4. Activate tracing
5. Click Save.
6. Click Close.
7. (optional) Reload the option. For information on reloading IMS Connect options, see Reloading IMS Connect configurations (see page 175).

To capture statistics by using MVS operator commands

For each IMS Connect, perform the following steps:

1. Use an automation tool to issue the MVS operator **RESET STATS** command.
   For example: `F ELINKNAME,CON RESET STATS`
2. Repeat step 1 at midnight for at least five consecutive days of regular processing.
   All statistics — transactions, datastores, and exits — are reset.

   **Note**

   When the **RESET STATS** command is executed, a **DCS0@ALL** history record is created. This record contains the final counts before the statistics records are reset.

Evaluating statistics by using the console

Before you can configure the WorkLoad Governor, you must capture the data for at least five consecutive days.

In this task, each day after you have issued the **RESET STATS** command, you will collect the data from the previous day.

To evaluate statistics by using the console

1. (perform on each IMS Connect) Right-click the IMS Connect name and choose Execute command.
   The Energizer Command window (see page 172) is displayed.
2. Select **Display** from the **Command** drop-down list box.
3. Select **Trace** from the **Keyword** drop-down list box.
4. Select **HIST** from the **Type** drop-down list box.
5. Enter **DCS0@ALL** in the **ID** field.
6. Click **Execute**.

   **Note**
If the records are in the journal, you must print them. For information about printing the journal, see Printing journal data (see page 215).

7. Locate the offset +00B0 MXCNT.
   This is the peak input message number at a 5-second interval.
8. Divide the peak input messages number by 5 to get the peak input messages per second for the 24-hour period.
9. Evaluate the data:
   a. Factor in any changes to the environment that could increase the workload of the IMS Connect.
   b. To obtain your Threshold, add a buffer to the number.

Exporting data

In this task, you will use the export button to export data in a comma-separated format.

To export data

1. Right-click the **IMS Connect name** and choose **Display=>[Transaction | Exit services | Datastore]** statistics.
2. Select the appropriate **Data Type**:
   - message count
   - message size
   - message rate
3. Click **Export**.
4. Ensure that the **Comma separated values text file** option is selected.
5. Click **Browse** and select the subdirectory.
6. Enter the file name and the extension .csv.
   For example: export.csv.
7. Click **OK**.

WorkLoad Governor

This section discusses the WorkLoad Governor for the Energizer for IMS Connect product and how to set options and includes the following topics:

- Overview of the Workload Governor (see page 207)
- Tasks to customize the WorkLoad Governor (see page 209)
Overview of the Workload Governor

The WorkLoad Governor is a component of Energizer for IMS Connect that protects datastore availability by limiting the number of messages passing through individual IMS Connects based upon the criteria that you specify.

The criteria includes defining the highest number of acceptable messages within a specified period of time. Incoming messages that exceed this rate are rejected until the volume falls below the defined limits. You can also set a warning threshold that issues a warning message when the message volume reaches a percentage of the specified transaction threshold.

⚠️ **Note**

If multiple IMS Connects exist, you must configure the WorkLoad Governor for each IMS Connect.

This section deals with the following topics:

- Enabling the WorkLoad Governor (see page 207)
- Defining WorkLoad Governor criteria (see page 208)
- Calculating the threshold (see page 208)

### Enabling the WorkLoad Governor

To enable the WorkLoad Governor by using the console, you must enter values for the following fields:

- Threshold
- Warning level
- Cycle interval

💡 **Tip**

When Energizer is active (but before you enable the WorkLoad Governor), use the statistical feature to monitor message throughput. If you set the `Cycle interval` values too high, you can increase processing overhead. If you set the `Cycle interval` value too low, you can leave the datastores vulnerable to an influx of messages. For more information about using the statistical feature, see Statistics (see page 197).
Defining WorkLoad Governor criteria

To defining the WorkLoad Governor criteria, you must enter values for the following Energizer fields:

- **Threshold**
  
  This field represents the highest acceptable number of messages allowed. The information is used to calculate whether to process or reject incoming messages. Valid values are between 0 and 999,999,999. The value zero disables the WorkLoad Governor, and all messages are accepted. The default value is zero.

- **Cycle interval**
  
  This field specifies the interval during which messages are tallied and compared to the transaction threshold. Valid values are between 5 and 60 seconds. The default is 5 seconds.

- **Warning level**
  
  This field specifies a percentage of the message rate to use as a warning level. Valid values are between 0 and 99; zero means the warning notification is inactive.

- **Low threshold**
  
  This field specifies the minimum number of transactions expected per second. If the transaction arrival rate for the cycle is less than the minimum specified, a warning message is displayed and repeated every five cycles until the arrival rate equals or exceeds the minimum.

Calculating the threshold

Based upon the defined criteria, the WorkLoad Governor calculates a transaction threshold for a fixed-cycle interval.

Incoming messages are tallied and compared to the calculated transaction threshold. If the threshold is exceeded, newly arriving messages are rejected until the next cycle starts. The start of each new cycle interval begins with zero.

- **Warning**

  Rejected messages are not logged or recoverable. In a runaway situation, this is normal.

If the **Warning level** field was set, a warning message is issued when the message rate equals or exceeds the warning threshold level.
Warning

In this example, the WorkLoad Governor is calculated by using the following values:

- Threshold = 1000 per second
- Cycle interval = 5 seconds
- Warning level = 75 percent

Energizer performs the following calculations:

- Energizer calculates the allowed number of messages per cycle interval.
  \[ \text{number of messages per second} \times \text{Cycle interval} = \text{number of messages per interval} \]
  \[ 1000 \text{ messages per second} \times 5 \text{ second interval} = 5000 \text{ messages/interval} \]

- To calculate the warning threshold, Energizer multiplies the maximum number of messages that are allowed in an interval by the warning level percentage:
  \[ \text{allowed number of messages per interval} \times \text{Warning level} = \text{number of messages per second before warning message sent} \]
  \[ 5000 \text{ messages/interval} \times 75\% = 3750 \text{ messages/interval} \]
  When the message rate exceeds 3,750 messages per interval (or 750 messages per second), a warning message is issued.

- Messages exceeding 5,000 per interval are rejected and an error message is returned. During the 5-second cycle, the WorkLoad Governor counts the number of messages that is received. If the count exceeds the warning threshold, the warning message BMCIPR5852W is issued. If the count exceeds the transaction threshold, the error message BMCIPR5853E is issued and all new transactions are rejected until the next cycle starts.

Note

Note: If thresholds are reached during consecutive cycles, the warning messages are re-issued only every fifth consecutive cycle.

Using this example, (the workload threshold is 5,000 messages per interval and the warning level is 3,750 per interval), if 10,000 transactions arrive during a cycle, the warning message and the threshold messages are issued, and 5,000 transactions are rejected.

Tasks to customize the WorkLoad Governor

This section discusses the tasks that you must perform to customize the WorkLoad Governor and includes the following:
- Defining the WorkLoad Governor (see page 210)
- Disabling the WorkLoad Governor (see page 210)

Defining the WorkLoad Governor

In this task, you will define the WorkLoad Governor fields for an IMS Connect.

You must repeat the steps for each IMS Connect using Energizer.

Before you begin

To set realistic values without increasing processing overhead or leaving the datastores open to an influx of messages, use the Energizer statistical feature to monitor message throughput before configuring the WorkLoad Governor. For more information about using the statistical feature, see Statistics (see page 197).

To configure the WorkLoad Governor

1. (perform on each IMS Connect) Right-click the IMS Connect name and choose Edit configuration.
   
   The Edit IMS Connect Configuration window Energizer Command window (see page 167) is displayed.
2. Enter values for the Workload Governor fields.
3. Click Save.
4. (optional) Reload the IMS Connect. For information on reloading IMS Connect configurations, see Reloading IMS Connect configurations (see page 175).

Disabling the WorkLoad Governor

In this task you will disable the WorkLoad Governor.

To disable the WorkLoad Governor

1. (perform on each IMS Connect) Right-click the IMS Connect name and choose Edit configuration.
   
   The Edit IMS Connect Configuration window Figure 1 (see page 167) is displayed.
2. For the Threshold, enter zero.
3. Click Save.
4. (optional) Reload the IMS Connect. For information on reloading IMS Connect configurations, see Reloading IMS Connect configurations (see page 175).

Trace and journal options

This section discusses trace and journal options that are available in the IMS Connect address space, and when and why you would want to use them. The section includes the following:
Overview of the trace, journal, and dynamic journaling options

This section provides information about the trace, journal, and dynamic journaling options available with Energizer.

- Trace information (see page 211)
- Journal information (see page 211)
- Dynamic journaling (see page 212)
- Dynamic journal archive utility (see page 212)
- Using trace and journal options (see page 213)
- Dynamically reloading journal and trace options (see page 214)

Trace information

Trace information is in memory and is active only while Energizer is running.

If the journal is on, journal information is written to the data set that you specified during installation. Typically, journal entries are written at the same time trace entries are created.

BMC Software recommends that you leave the default trace selections active.

An example of reading the results of the trace records is discussed in Trace and journal data (see page 285).

Journal information

Journal entries usually provide more information than trace entries because trace records are limited to a maximum of 256 bytes, which includes header information. Trace records are often truncated; journal entries are not.

By default, the journal option is off because creating journals could negatively affect performance.
Dynamic journaling

Dynamic journaling offers an alternative to reusing pre-allocated journal data sets.

Dynamic journaling dynamically creates a new journal data set when:

- Journaling starts
- A journal data set fills up with data
- A journal switch occurs

For example, if dynamic journaling is not activated and you reuse a journal data set before copying its data, the data is lost. In contrast, dynamic journaling creates a new journal data set, so data in the existing journal data set remains intact. By default, the dynamic journaling option is not activated.

For a list of the dynamic journaling fields that are available in the IMS Connect address space, see Dynamic journaling fields (see page 252).

Dynamic journal archive utility

You can use a batch archive utility with dynamic journals.

The archive utility enables you to create archive skeleton JCL and automatically submit the archive job after each journal close or switch.

Energizer attempts to archive a journal when any of the following conditions exists:

- The journal is switched because it is full
- The journal is switched due to a switch command
- IMS Connect terminates

Energizer reads the JCL from the ARCHJCL member, and substitutes the journal data set name for the variable %JOURNAL in the JCL. The variable %ARCHIVE indicates the placement for the output archive data set name. The archive data set name is the same as the journal data set name but with a final node of .Ann instead of .Snn.

Archive considerations

You can create an archive job to archive journals automatically.

If a JCL error occurs, you must manually correct the job and resubmit it.

The following types of journals are not eligible for archiving:

- Journals with a statically defined DD
- Dynamic journals without an Energizer suffix
Activating the dynamic journal archiving utility

To activate the dynamic journal archive utility, follow these instructions:

To activate journal data set archiving

1. Ensure that dynamic journaling is enabled in the Energizer IMS Connect options.
2. Specify a data set name prefix for the dynamic journals.
3. Create a skeleton archive JCL member, named ARCHJCL, in one of the IMS Connect PROCLIB data sets.
   For sample JCL, see member IPR#ARCH in IMCNTL or IPRCNTL.

Note

If an ARCHJCL member does not exist, the archiving process is disabled.

Using trace and journal options

When you edit the trace or journal options, you must reload the option for the changes to be stored in the options library.

Trace and journal options are available in the eLink and IMS Connect address spaces.

To access the eLink trace and journal options

1. Right-click IMS Connects and choose List=>eLink configurations. The Energizer eLinks window is displayed.
2. Right-click the eLink Configuration member name and choose Edit. The Edit eLink Configuration window, below, is displayed.

Sample eLink Configuration window
3. Choose one of the following tabs:
   - Trace Options
   - Journal Options

   For a list of the trace and journal options in the eLink address space, see eLink fields (see page 247).

**To access the IMS Connect trace and journal options**

1. (perform on each IMS Connect) Right-click the **IMS Connect name** and choose **Edit configuration**.
   The Edit IMS Connect Configuration window is displayed.
2. Choose one of the following tabs:
   - Trace Options
   - Journal Options

   For a list of the trace and journal options that are available in the IMS Connect address space, see Trace and journal options fields (see page 251).
   Within each address space, different options can be traced. For example, VTAM is available only in the eLink address space, while history, statistics, and transactions are available only in IMS Connect.

**Dynamically reloading journal and trace options**

Trace and journal options can be reloaded dynamically when the eLink and IMS Connect address space options are reloaded.
To dynamically reload eLink options

1. Right-click **IMS Connects** and choose **List=>eLink configurations**.
   The IMS Connect Exit Services Configurations window is displayed.
2. Right-click the **eLink Configuration member name** and choose **Reload**.
3. Click **OK**.
   The eLink configuration member is reloaded.

To dynamically reload IMS Connect options

1. Right-click the **IMS Connect name** and choose **Reload configuration**.
2. Click **OK**.
   The IMS Connect configuration member is reloaded.

Printing journal data

When you installed Energizer, you specified the load library and the journal names for the eLink and IMS Connect address space.

Use the JCL in the following figure to print the IMS Connect or eLink journal logs.

⚠️ **Note**

To specify which journal to print, change the journal name in the `//JOURNAL DD`.

Sample of the IPR#JRNF Member in the IPRCNTL library

```plaintext
//PXTF EXEC PGM=IPAPXTF,
// PARM='TYPE=ALL'
/** PARM='TYPE=ALL,START=2002001121212,STOP=2099001121212'
//STEPLIB DD DSN=IPR .... load library from the install
//JOURNAL DD DSN = hlq.jobname.JOURNALn,DISP=SHR
//* more journal data sets may be concatenated as needed
//SYSPRINT DD SYSOUT=* 
//SYSUDUMP DD SYSOUT=* 
```

Parameters can be separated by commas or blanks, but they must be enclosed in quotes. The following parameters are allowed:

- **TYPE**
  To print all records, specify **ALL** or do not enter anything. To print a specific record, enter a valid journal type.
### Type parameter

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTL</td>
<td>address space control</td>
</tr>
<tr>
<td>CMDS</td>
<td>commands</td>
</tr>
<tr>
<td>COMP</td>
<td>component</td>
</tr>
<tr>
<td>DISP</td>
<td>internal dispatcher calls</td>
</tr>
<tr>
<td>ERRS</td>
<td>errors</td>
</tr>
<tr>
<td>HIST</td>
<td>history data (IMS Connect only)</td>
</tr>
<tr>
<td>LTCH</td>
<td>latch activity</td>
</tr>
<tr>
<td>SECS</td>
<td>security</td>
</tr>
<tr>
<td>STAT</td>
<td>statistical (IMS Connect only)</td>
</tr>
<tr>
<td>STRG</td>
<td>storage management activity</td>
</tr>
<tr>
<td>TIMR</td>
<td>timer activity</td>
</tr>
<tr>
<td>TRAN</td>
<td>transaction activity (IMS Connect only)</td>
</tr>
<tr>
<td>VTAM</td>
<td>VTAM macro calls (eLink only)</td>
</tr>
<tr>
<td>XCFX</td>
<td>XCF control</td>
</tr>
</tbody>
</table>

- **GMT**
  
  Start and stop times are displayed in GMT times, with no local time adjustment. If GMT is not specified, a local time offset is applied. If a job is executed in a different time zone or after a time change (local time offset is different than when the journal entry was created), local times are displayed incorrectly.

- **START / STOP**
  
  - START=yyyydddhhmmsstth
  - STOP=yyyydddhhmmsstth

Specify the range of times for which records are printed:

- yyyy is the year (four digits are required).
- ddd is the Julian date.
- hh is the hour (00-24).
- mm and ss are minutes and seconds (00-60).
- t and h are tenths and hundredths of seconds.

If you do not specify a time, all records are printed.

The timestamps must be numeric, but no other validation is performed (STOP=9999999999999999 is allowed and includes all times). A partial specification is allowed.
Example

START=2002005 and STOP=2002005

This example displays all records for January 05, 2002.

Reading trace records

Trace data is not written to the journal.

Instead it resides in memory and is used for debugging purposes. Most trace records have a trace record type and an associated ID. Trace entries are 256 bytes, which includes the header. Trace data is often truncated. Journal entries are not truncated.

IMS Connect trace records can be displayed in the console.

To view IMS Connect trace records

1. Right-click the **IMS Connect name** and choose **Execute command**.
   The **Energizer Command window (see page 172)** is displayed.
2. Select **Display** from the **Command** drop-down list box.
3. Select **Trace** from the **Keyword** drop-down list box.
4. Complete the **Type**, **ID**, **Limit**, and **Sequence** fields to set the trace type, datastore ID, number of lines to display, and sequence number.
5. Click **Execute**.
   The **IMS Connect trace options are displayed**.
   You can also use the MVS operator console **DISPLAY TRACE** command to display the eLink trace records and IMS Connect trace records. For more information, see **MVS operator commands (see page 276)**.

Energizer tracing available within IMS Connect

Most of the trace information pertains to Energizer.

However, some options apply only to the IMS Connect address space. These options can help you understand what is happening in your environment. For example:

- You can understand your transaction workflow.
- You can use it to locate where a problem is occurring.
- You can collect information about peak times, so you can set a realistic WorkLoad Governor transaction threshold and warning message level.
The following trace records are available only in the IMS Connect address space. These are the trace options that you will use most often.

- transaction: TYPE = TRAN
- history: TYPE = HIST
- statistics: TYPE = STAT

**Transaction trace records**

Transaction Activity (TRAN) shows the messages activity through the message exits, READ, XMIT, and EXER.

Four or five trace records are created for each trip through an exit. A successful round-trip transaction will create 10 trace records (five READ and five XMIT). If there is an error (EXER), four trace records are written.

The following table lists the trace records that are created for transactions. For information about the format of transaction trace records, see Transaction format (see page 220).

**'Type = Tran' trace records**

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID=READ@EXP</td>
<td>Traces READ parameters (see IMS CONNECT control block HWSEXPRM)</td>
</tr>
<tr>
<td>ID=READ@MSG</td>
<td>Traces input IRM prefix and message from client</td>
</tr>
<tr>
<td>ID=READ@SVT</td>
<td>Traces internal control blocks</td>
</tr>
<tr>
<td>ID=READ@RET</td>
<td>Traces return codes and other status information</td>
</tr>
<tr>
<td>ID=READ@OUT</td>
<td>Traces message from exit to datastore</td>
</tr>
<tr>
<td>ID=XMIT@EXP</td>
<td>Traces XMIT parameters</td>
</tr>
<tr>
<td>ID=XMIT@MSG</td>
<td>Traces message from datastore to exit</td>
</tr>
<tr>
<td>ID=XMIT@SVT</td>
<td>Traces internal control blocks</td>
</tr>
<tr>
<td>ID=XMIT@RET</td>
<td>Traces return codes and other status information</td>
</tr>
<tr>
<td>ID=XMIT@OUT</td>
<td>Traces output message from exit to client</td>
</tr>
<tr>
<td>ID=EXER@EXP</td>
<td>Traces EXER parameters</td>
</tr>
<tr>
<td>ID=EXER@SVT</td>
<td>Traces internal control blocks</td>
</tr>
<tr>
<td>ID=EXER@RET</td>
<td>Traces return codes and other status information</td>
</tr>
<tr>
<td>ID=EXER@OUT</td>
<td>Traces output message from exit to client</td>
</tr>
</tbody>
</table>

**Note**

The @OUT output message are only available if the return code is less than 8.
History trace records

Historical (HIST) information provides historical statistical data and is recorded once each hour.

The following table lists the trace records that are created for History. For information about the format of historical trace records, see Statistics and history formats (see page 222).

'Type = Hist' trace records

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID=WLMI@MXD</td>
<td>Traces statistics for an exit for a one-hour interval</td>
</tr>
<tr>
<td>ID=WLMI@RSB</td>
<td>Traces statistics for a datastore for a one-hour interval</td>
</tr>
<tr>
<td>ID=WLMI@ALL</td>
<td>Traces statistics for all trans for a one-hour interval</td>
</tr>
<tr>
<td>ID=DCS0@MXD</td>
<td>Traces statistics for an exit when reset</td>
</tr>
<tr>
<td>ID=DCS0@RSB</td>
<td>Traces statistics for a datastore when reset</td>
</tr>
<tr>
<td>ID=DCS0@TRN</td>
<td>Traces statistics for a tran when reset</td>
</tr>
<tr>
<td>ID=DCS0@ALL</td>
<td>Traces statistics for all trans when reset</td>
</tr>
<tr>
<td>ID=LBMG@MXD</td>
<td>Traces statistics for an exit at termination/reload</td>
</tr>
<tr>
<td>ID=LBMG@RSB</td>
<td>Traces statistics for a datastore at termination/reload</td>
</tr>
<tr>
<td>ID=LBMG@ALL</td>
<td>Traces statistics for all trans at termination/reload</td>
</tr>
</tbody>
</table>

The WLMI@--- and LBMG@--- records are identical to the TYPE=STAT records, but they are created approximately once an hour, regardless whether any transactions were processed.

The DCS0@--- records are created when statistics are reset by using the RESET STATS command.

The DCS0@TRN records are created only when specific transactions are reset. If all statistics are reset, DCS0@TRN records are not created and a single DCS0@ALL record is created instead.

Statistical trace records

Statistical (STAT) records are created at the end of each routing cycle.

The following table lists trace records that are created for statistics at the end of each routing cycle. For information about the format of statistical trace records, see Statistics and history formats (see page 222).

'Type = Stat' trace records

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID=WLMI@MXD</td>
<td>Traces statistics for an exit for a routing cycle</td>
</tr>
</tbody>
</table>

The statistical records are created only if transactions were started during the cycle. If the router options are reloaded or if IMS Connect terminates, the current routing cycle is terminated, the LBMG@---- records are created (if necessary), and a new cycle is started with the new options (for a reload).

**Trace formats**

This section lists the trace formats for the following types:

- transactions
- historical
- statistical

Historical and statistical are listed together because they share the same IDs.

**Transaction format**

This topic describes transaction formats.

The following table lists the format of the ID=READ@RET, XMIT@RET, and EXER@RET trace records for TYPE=TRAN. The first portion is the EXRET section of the HWSEXPRM parmlist that is passed to the exit.

**Return values for an exit**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>4</td>
<td>RETCODE - Final return code from exit processing</td>
</tr>
<tr>
<td>+0004</td>
<td>4</td>
<td>RSNCODE - Final reason code from exit processing</td>
</tr>
<tr>
<td>+0008</td>
<td>4</td>
<td>DATALEN - Length of data returned from exit</td>
</tr>
<tr>
<td>+000C</td>
<td>1</td>
<td>UFLAG1 - User flag (READ exit only)</td>
</tr>
<tr>
<td>+000D</td>
<td>3</td>
<td>not used</td>
</tr>
<tr>
<td>+0010</td>
<td>8</td>
<td>CLID - client id set by exit (READ exit only)</td>
</tr>
</tbody>
</table>

The following table lists return codes.
Return codes

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0018</td>
<td>4</td>
<td>Return code from READ user exit (before routing)</td>
</tr>
<tr>
<td>+001C</td>
<td>4</td>
<td>Return code from governor (non-zero means rejected)</td>
</tr>
<tr>
<td>+0020</td>
<td>4</td>
<td>Return code from router (non-zero means rejected)</td>
</tr>
<tr>
<td>+0024</td>
<td>4</td>
<td>Return code from XMIT/EXER user exit</td>
</tr>
</tbody>
</table>

The following table lists values that were used by the Affinity Manager to assign an affinity to the message. This information is extracted from the parmlist, OTMA headers, and IMS Connect control blocks. The parameters are not set unless routing is active.

Values used by the Affinity Manager

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0028</td>
<td>8</td>
<td>transaction code</td>
</tr>
<tr>
<td>+0030</td>
<td>8</td>
<td>user ID</td>
</tr>
<tr>
<td>+0038</td>
<td>8</td>
<td>group</td>
</tr>
<tr>
<td>+0040</td>
<td>8</td>
<td>client ID</td>
</tr>
<tr>
<td>+0048</td>
<td>8</td>
<td>client string</td>
</tr>
<tr>
<td>+0050</td>
<td>8</td>
<td>data store (as set by user exit before routing)</td>
</tr>
<tr>
<td>+0058</td>
<td>8</td>
<td>port</td>
</tr>
<tr>
<td>+0060</td>
<td>8</td>
<td>LTERM</td>
</tr>
</tbody>
</table>

The following table lists results of Energizer routing. These values are not set unless routing is active.

Energizer routing results

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0068</td>
<td>8</td>
<td>matching affinity label, if any are matched</td>
</tr>
<tr>
<td>+0070</td>
<td>8</td>
<td>preferred datastore selected by load balancer</td>
</tr>
<tr>
<td>+0078</td>
<td>4</td>
<td>calculated weight of preferred datastore</td>
</tr>
<tr>
<td>+007C</td>
<td>1</td>
<td>number of acceptable datastores after load balancing</td>
</tr>
<tr>
<td>+007D</td>
<td>3</td>
<td>not used</td>
</tr>
<tr>
<td>+0080</td>
<td>8</td>
<td>datastore set by router</td>
</tr>
</tbody>
</table>

The remaining portion of the trace record contains debugging information.
Statistics and history formats

This topic describes the statistics and history formats.

The following table lists information that is unique to ID=----@MXD, the statistics for exits.

**ID=----@MXD, statistics for exits**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>8</td>
<td>exit name</td>
</tr>
<tr>
<td>+0008</td>
<td>8</td>
<td>n/a</td>
</tr>
<tr>
<td>+010</td>
<td>n/a</td>
<td>common section, see Common portion for statistics and history (see page 223)</td>
</tr>
</tbody>
</table>

The following table lists the information that is unique to ID=----@RSB, the statistics for datastores.

**ID=----@RSB, statistics for datastores**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>8</td>
<td>datastore name</td>
</tr>
<tr>
<td>+0008</td>
<td>4</td>
<td>routing weight (from options or Workload Manager) multiplied by 256</td>
</tr>
<tr>
<td>+000C</td>
<td>4</td>
<td>routing goal (expressed as a percentage) multiplied by 256</td>
</tr>
<tr>
<td>+010</td>
<td>n/a</td>
<td>common section, see Common portion for statistics and history (see page 223)</td>
</tr>
</tbody>
</table>

The following table lists the information that is unique to ID=DCS0@TRN, the statistics for transactions.

**ID=DCS0@TRN, statistics for transactions**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>+0004</td>
<td>8</td>
<td>transaction name</td>
</tr>
<tr>
<td>+000C</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>+010</td>
<td>n/a</td>
<td>common section, see Common portion for statistics and history (see page 223)</td>
</tr>
</tbody>
</table>

The following table lists the information that is unique to ID=----@ALL, the statistics for all transactions.

**ID=----@ALL, statistics for all transactions**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>16</td>
<td>n/a</td>
</tr>
<tr>
<td>+010</td>
<td>n/a</td>
<td>common section, Common portion for statistics and history (see page 223)</td>
</tr>
</tbody>
</table>
Common portion for statistics and history

The following table lists the common portion for statistics and history. The first few counts are for the current routing cycle. The rest of the counts are cumulative. They are not reset each cycle. They are reset only when the `RESET STATS` command is issued, in which case the DCS0@--- records are written with the final counts before they are reset.

Not all counts are kept for all types of records. #RD04 and #RD08 count return codes from the customer or virtual READ exit. Add to these #GV04 and #RT04 to get total non-zero returns from the READ exit.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0010</td>
<td>8</td>
<td>RTIME - timestamp of last reset</td>
</tr>
<tr>
<td>+0018</td>
<td>8</td>
<td>n/a</td>
</tr>
<tr>
<td>+0020</td>
<td>4</td>
<td>input message this cycle</td>
</tr>
<tr>
<td>+0024</td>
<td>4</td>
<td>input messages that are rejected by router this cycle</td>
</tr>
<tr>
<td>+0028</td>
<td>4</td>
<td>input messages that are balanced this cycle</td>
</tr>
<tr>
<td>+002C</td>
<td>4</td>
<td>input messages that match an affinity this cycle</td>
</tr>
<tr>
<td>+0030</td>
<td>8</td>
<td>n/a</td>
</tr>
<tr>
<td>+0034</td>
<td>4</td>
<td>input messages rejected by governor this cycle</td>
</tr>
<tr>
<td>+0038</td>
<td>4</td>
<td>input messages balanced since reset</td>
</tr>
<tr>
<td>+003C</td>
<td>4</td>
<td>input messages matching an affinity since reset</td>
</tr>
<tr>
<td>+0040</td>
<td>16</td>
<td>n/a</td>
</tr>
<tr>
<td>+0050</td>
<td>4</td>
<td>#READ - count of 'READ' calls to exit</td>
</tr>
<tr>
<td>+0054</td>
<td>4</td>
<td>#RD04 - count of 'READ' calls where exit set rc=04</td>
</tr>
<tr>
<td>+0058</td>
<td>4</td>
<td>#RD08 - count of 'READ' calls where exit set rc&gt;=08</td>
</tr>
<tr>
<td>+005C</td>
<td>4</td>
<td>#XMIT - count of 'XMIT' calls to exit</td>
</tr>
<tr>
<td>+0060</td>
<td>4</td>
<td>#XM00 - count of 'XMIT' calls where exit set rc=00</td>
</tr>
<tr>
<td>+0064</td>
<td>4</td>
<td>#XM08 - count of 'XMIT' calls where exit set rc^=00</td>
</tr>
<tr>
<td>+0068</td>
<td>4</td>
<td>#EXER - count of 'EXER' calls to exit</td>
</tr>
<tr>
<td>+006C</td>
<td>4</td>
<td>#EX04 - count of 'EXER' calls where exit set rc=04</td>
</tr>
<tr>
<td>+0070</td>
<td>4</td>
<td>#EX08 - count of 'EXER' calls where exit set rc&gt;=08</td>
</tr>
<tr>
<td>+0074</td>
<td>4</td>
<td>#GVNR - count of calls to governor</td>
</tr>
<tr>
<td>+0078</td>
<td>4</td>
<td>#GV04 - count of governor calls which rejected the message</td>
</tr>
<tr>
<td>+007C</td>
<td>4</td>
<td>#ROUT - count of calls to router</td>
</tr>
</tbody>
</table>
## Offset Length Description

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0080</td>
<td>4</td>
<td>#RT04 - count of router calls which rejected the message</td>
</tr>
<tr>
<td>+0084</td>
<td>12</td>
<td>n/a</td>
</tr>
<tr>
<td>+0090</td>
<td>8</td>
<td>INSZ - total of input (from client) message sizes</td>
</tr>
<tr>
<td>+0098</td>
<td>4</td>
<td>INMIN - smallest input message size</td>
</tr>
<tr>
<td>+009C</td>
<td>4</td>
<td>INMAX - largest input message size</td>
</tr>
<tr>
<td>+00A0</td>
<td>8</td>
<td>OUSZ - total of output (to client) message sizes</td>
</tr>
<tr>
<td>+00A8</td>
<td>4</td>
<td>OUMIN - smallest output message size</td>
</tr>
<tr>
<td>+00AC</td>
<td>4</td>
<td>OUMAX - largest output message size</td>
</tr>
<tr>
<td>+00B0</td>
<td>4</td>
<td>MXCNT - maximum input messages per 5-second interval</td>
</tr>
</tbody>
</table>

The remaining portion of the trace record contains debugging information.

### Tasks to set and display trace options in the IMS Connect address space

This section discusses the tasks that you must perform to set trace options in the IMS Connect address space and to display trace data and includes the following:

- Setting trace options in the IMS Connect address space (see page 224)
- Displaying trace data (see page 225)

#### Setting trace options in the IMS Connect address space

In this task, you will set trace options in the IMS Connect address space.

This task is similar to setting trace options in the eLink address space.

**Before you begin**

Energizer must be configured, and the console must be running.

**To set IMS Connect trace options**

1. Right-click the **IMS Connect name** and choose **Edit configuration**. The **Edit IMS Connect Configuration window** (see page 167) is displayed.
2. Click the **Trace Options** tab.
3. Click to select and deselect the options, or click **Default**, **All**, or **Clear**.

For information about the field definitions in the IMS Connect address space, see **Trace and journal options** (see page 210) or press **F1** for online Help.
4. Click **Save**.
5. (optional) Reload the option. For information on reloading IMS Connect options, see **Reloading IMS Connect configurations (see page 175)**.

### Displaying trace data

In this task, you will view the trace results that you set in the IMS Connect address space.

**Before you begin**

Select the data that you want to view. See **Setting trace options in the IMS Connect address space (see page 224)**, or press **F1** for online Help.

**To view IMS Connect trace data**

1. Right-click the **IMS Connect name** and choose **Execute command**.
   
   The **Energizer Command window (see page 172)** is displayed.
2. Select **Display** from the **Command** drop-down list box.
3. Select **Trace** from the **Keyword** drop-down list box.
4. To display a maximum of 100 trace READ parameters for transactions (see the IMS Connect control block HWSEXPRM), enter the following information:
   
   ```plaintext
   TYPE: TRAN
   ID: READ@EXP
   LIMIT: 100 SEQUENCE (leave blank)
   ```
5. Click **Execute**.
   
   The trace data is displayed.

### Energizer Offline Reporting

This section describes how the Energizer offline reporting engine takes advantage of the dynamic journaling facility and how it offers filtering capabilities for reports. The section includes the following topics:

- **Overview of Energizer offline reporting (see page 226)**
- **Offline report filtering (see page 226)**
- **Transaction Report (see page 227)**
- **Event report (see page 230)**
- **Exception report (see page 233)**
- **Commands Report (see page 234)**
- **Response time report (see page 234)**
- **History report (see page 236)**
- **ODBM Report (see page 237)**
Overview of Energizer offline reporting

The Energizer offline reporting engine takes advantage of the dynamic journaling facility and offers filtering capabilities for reports.

For example, the reporting engine can locate and print journal data sets that Energizer creates.

The reporting engine looks for data sets that use the specified values for the JOURNAL_PREFIX, START_DATE, and START_TIME keywords. You can target specific journal data sets by using the JOURNAL DD statement and omitting the JOURNAL_PREFIX keyword. For sample JCL, see member IPR#JOURND in the IPRCNTL or IMCNTL library (depending on your installation method).

⚠️ Note

PTF BPQ4833 for FMID ZLUI120 allows the Log Analyzer ISPF interface to build log analysis JCL that includes the IPRPREFIX keyword. This keyword supports the Energizer JOURNAL_PREFIX keyword.

Offline report filtering

You can configure the information you need to see in specific offline reports.

The following commands can be filtered:

- RESP
- TRNR
- CMDS

You can filter the report output by adding one of the parameters described in the following table:

<table>
<thead>
<tr>
<th>Filter parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAN=XXXXXXX</td>
<td>Where XXXXXXX is the transaction name or the transaction mask. For example, P* or P?RT)</td>
</tr>
<tr>
<td>USERID=XXXXXXX</td>
<td>Where XXXXXXX is the USERID that issued the transaction or the USERID mask</td>
</tr>
<tr>
<td>DS=XXXXXXX</td>
<td>Where XXXXXXX is the datastore id that the transaction was routed to or the USERID mask</td>
</tr>
<tr>
<td>CLIENT=XXXXXX</td>
<td>Where XXXXXXXX is the client ID that was associated with the transaction or the client ID mask</td>
</tr>
<tr>
<td>EXIT=XXXXXXX</td>
<td>Where XXXXXXX is the IMS CONNECT exit name that handles the transaction or an exit name mask</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXIT=XXXXXXX</td>
<td>Where XXXXXXX is the IMS CONNECT exit name that handles the transaction or an exit name mask</td>
</tr>
<tr>
<td></td>
<td>Where the IP address that you specify is the clients</td>
</tr>
<tr>
<td>Filter parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IP_ADDRESS=NNN.NNN.NNN</td>
<td></td>
</tr>
<tr>
<td>RESPONSE_TIME=NNNN</td>
<td>Where NNNN is the response time (seconds). the report will display response times that are equal to or greater than the number that you specify.</td>
</tr>
<tr>
<td>EVENT=(NN,NN,NNN,...)</td>
<td>Where N is the event number (in decimal) to be displayed. All non-matching events will be excluded.</td>
</tr>
</tbody>
</table>

Note

Filtering is ignored for the following reports:

- EXCP
- DUMP
- EVNT

Transaction Report

You can report on transaction response times as well as filter and select the frequency for reports.

The following figure shows a sample transaction report for the syntax TYPE=TRAN,RESP=TRNR.

Sample Transaction report

<table>
<thead>
<tr>
<th>1</th>
<th>2016-353</th>
<th>ENERGIZER FOR IMS CONNECT V1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.01.16</td>
<td>PAGE 1</td>
<td>Transaction Report</td>
</tr>
<tr>
<td>TRAN</td>
<td>UserID</td>
<td>DataStore</td>
</tr>
<tr>
<td>exit</td>
<td>Resp time</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>SYMQEC18 BRAZIL RCIM</td>
<td>2016.352</td>
<td>17:51:46.887</td>
</tr>
<tr>
<td>SYMQEC18 BRAZIL R12APPL</td>
<td>2016.352</td>
<td>17:51:46.899</td>
</tr>
<tr>
<td>SYMQEC18 BRAZIL RCIN</td>
<td>2016.352</td>
<td>17:51:46.909</td>
</tr>
<tr>
<td>SYMQEC18 BRAZIL R12APPL</td>
<td>2016.352</td>
<td>17:51:46.920</td>
</tr>
<tr>
<td>SYMQEC18 BRAZIL R12APPL</td>
<td>2016.352</td>
<td>17:51:46.920</td>
</tr>
</tbody>
</table>
The following table describes the fields in the Transaction table report.

**Transaction report fields description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAN</td>
<td>The inbound Transaction name taken from the IRM (Application Data)</td>
</tr>
<tr>
<td>UserID</td>
<td>The USERID as specified in the IMS Connect IRM message data</td>
</tr>
<tr>
<td>DataStore</td>
<td>The Datastore that the transaction was sent to</td>
</tr>
<tr>
<td>Note</td>
<td>The data store may be different from original Datastore in IRM if Routing is activated</td>
</tr>
<tr>
<td>Date</td>
<td>The Date of the IMS Connect message arrival</td>
</tr>
<tr>
<td>Arrive Read</td>
<td>The Time stamp of the IMS Connect message arrival (in IMS Connect) from the client application</td>
</tr>
<tr>
<td>Sent otma</td>
<td>The Time stamp of the IMS Connect message that is sent to IMS</td>
</tr>
<tr>
<td>Return otma</td>
<td>The Time stamp of the IMS message that is returned from IMS</td>
</tr>
<tr>
<td>Leave exit</td>
<td>The Time stamp of the IMS Connect message that is sent back to client application</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resp time</td>
<td>Overall Response time is calculated based on Leave Exit – Arrive Read and includes IMS transaction response time</td>
</tr>
</tbody>
</table>

---

**Transaction dump report**

The transaction dump report allows you to drill down and see ALL the transaction data for each IMS Connect unit of work.

You can review the message from READ INPUT through XMIT output.

**Tip**

The DUMP report produces a significant amount of output. Use the command TIME INTERVALS to limit output by narrowing your search criteria.

The following figure shows a sample of a transaction dump report using syntax TYPE=TRAN, REPORT=DUMP.

**Transaction dump report panel**

```
1  2013-353 ENERGIZER FOR IMS CONNECT V1.
5.01.06 PAGE 1 Dump Report
0RECOR D TYPE TRAN - SEQUENCE 333434 RECORDED AT 2013.352 17:51:46.8879 LOCAL
IPRHMXD: READ - RETURN VALUES
0SVT AT 3FO85C30 FOR HEX 00000004 BYTES
+00000000 E2E5E340
*SVT *
0EXRET AT 405199C0 FOR HEX 00000020 BYTES
+00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
EXRE T AT 405199C0 FOR HEX 00000020 BYTES
+00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*IPRHMXWA...*  |...N^..O.Q........*
+00000020 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*............SYMREQ18BRAZIL...*
+00000040 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*............KID00001*SAMPLE*788....*
+00000060 F1F1F2F5 F7000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*11257............RC1M *
+00000080 FD7559D5 1E9E04F1 D9C3F1D4 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 40404040
*N...1RC1M .>.+J........*
+000000A0 CC6E84ED 3D03C864 3F2B69E0 3FC26800 4051F048 3FO85C34 405199D0 40529216
*.>d..LH......... .0...*... .r..k.*
+000000C0 40529116 4052909E 405290AE 40529080 40529212 00080005 00080008 00080000
*.j. ... ... .k..........*
```
Event report

The event report allows you to view all the IMS Connect generated EVENTS.

See sample IMSAMP/IPRSAMP member( ) for EVENT# details.

Tip

The event report produces a significant amount of output. Use the command TIME INTERVALS to limit output by narrowing your search criteria.

The following figure shows a sample event report using syntax TYPE=EVNT,REPORT=DUMP.
## Event report sample

<table>
<thead>
<tr>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECORD TYPE TRAN - SEQUENCE 333434</td>
<td>RECORDED AT 2013.352 17:51:46.8879 LOCAL</td>
</tr>
</tbody>
</table>

**IPRHUMXD: READ - RETURN VALUES**

<table>
<thead>
<tr>
<th>SVT</th>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
<td>E2E5E340</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SVT</th>
<th>AT 405199C0 FOR HEX 00000020 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
<td>00000000 00000000 0000976E 00000000 D2C9C4F0 F0F0F0F1 00000000 00000000</td>
</tr>
</tbody>
</table>

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>SVT</th>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
<td>E2E5E340</td>
</tr>
</tbody>
</table>

**OUTBUF**

<table>
<thead>
<tr>
<th>AT 40529040 FOR HEX 0000972E BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
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</table>

**OUTBUF**

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<tr>
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</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

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<thead>
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<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
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</table>

**OUTBUF**

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<tr>
<th>AT 40529040 FOR HEX 0000972E BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

**OUTBUF**

<table>
<thead>
<tr>
<th>AT 40529040 FOR HEX 0000972E BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

**OUTBUF**

<table>
<thead>
<tr>
<th>AT 40529040 FOR HEX 0000972E BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**OUTBUF**

<table>
<thead>
<tr>
<th>AT 40529040 FOR HEX 0000972E BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>

- **RECORD TYPE TRAN - SEQUENCE 333434** | **RECORDED AT 2013.352 17:51:46.8879 LOCAL** |

**IPRHUMXD: READ - OUTPUT BUFFER**

<table>
<thead>
<tr>
<th>AT 3F085C30 FOR HEX 00000004 BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>+00000000</td>
</tr>
</tbody>
</table>
Event dump report

The Event dump report allows you to view all the IMS Connect generated EVENTS in detail.

See sample IMSAMP/IPRSAMP member(IPR#EVNT) for EVENT# details.

The following figure shows a sample event dump report using syntax TYPE=EVNT, REPORT=EVNT

Event dump report sample

```
+00000100 00000000 00040404 04040404 04040000 00040000 00040404 40404040 40400000
*...........*......*........
+00000120 00000200 00000000 00000000 00004040 04040404 04040000 00000000 00000000
*..................*........
+00000140 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*..................*........
+00000160 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
*..................*........
+00000180 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

---RECORD TYPE EVNT - SEQUENCE 3341597 RECORDED AT 2013.352 17:51:47.6598 LOCAL
1 2013-353 ENERGIZER FOR IMS CONNECT V1.
5.01.06 PAGE 1143 Dump Report

EID: 10- Begin accept socket
EVENT AT 401B2478 FOR HEX 0000000C BYTES
+00000000 000A0000 C5E5D5E3 40404040
*.....EVNT

TCPIB AT 401B2540 FOR HEX 00000030 BYTES
+00000000 00300100 12100002 2BF90000 00008000 00000000 00000000 00000000
*.........9...................
+00000020 00000000 00000000 00000000 00000000

---RECORD TYPE EVNT - SEQUENCE 3341600 RECORDED AT 2013.352 17:51:47.6599 LOCAL
EID: 60- Prepare for Socket read
EVENT AT 4051975C FOR HEX 0000000C BYTES
+00000000 003C0000 CC6E8031 FDC04063
*.....>....

TCPIB AT 40519B24 FOR HEX 00000030 BYTES
+00000000 00300100 12100001 2BF9000B 00004000 00001020 00000000 00000000
*.........9........
+00000020 00000000 00000000 00000000 00000000

---RECORD TYPE EVNT - SEQUENCE 3341603 RECORDED AT 2013.352 17:51:47.6600 LOCAL
EID: 73- Read socket
EVENT AT 4051975C FOR HEX 0000000C BYTES
+00000000 00490000 CC6E8031 FDC04063
*.....>....

TIMESTAMP AT 3F11EB28 FOR HEX 00000008 BYTES
```
Exception report

The Exception report lists all the IMS Connect generated exception type EVENTS, such as Session Errors.

This can be used to help identify problem areas and can allow you to further diagnose utilising additional reports such as TRAN DUMP.

The following figure shows a sample exception report using syntax TYPE=EVNT,REPORT=EXCP.

**Exception report sample**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Time</th>
<th>EID</th>
<th>Description of Exception type</th>
<th>Variable data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013.352</td>
<td>18:11:18.164</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=BUZZER9</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.177</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CATCH9</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.185</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.193</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.204</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CHOCOLAT</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.220</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CAUGHTTH</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.226</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.237</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=DECEMBER</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.242</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.255</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=BATHTUB9</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.259</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.270</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=AXHANDLE</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.270</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.285</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=BUZZERA</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.293</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.299</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.306</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CATCHA</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.322</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CAUGHTTH</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.330</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.336</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=CHOCOLAT</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.336</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.356</td>
<td>19</td>
<td>IMS TMEMBER has left the XCF Group</td>
<td>member=DECEMBER</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.363</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
<tr>
<td>2013.352</td>
<td>18:11:18.369</td>
<td>17</td>
<td>IMS Datastore is Unavailable</td>
<td>tmember=R10APPL</td>
</tr>
</tbody>
</table>
Commands Report

The Commands report lists all Energizer commands issued against the IMS Connect.

This provides an AUDIT trail of user activity against each IMS Connect.

The following figure shows a sample commands report using syntax TYPE=EVNT, REPORT=CMDS.

Commands report sample

<table>
<thead>
<tr>
<th>Date</th>
<th>DestID</th>
<th>UserID</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013.352</td>
<td>IPAHWS8</td>
<td>RIHJER4</td>
<td>-LIST CLIENT TYPE(ALL) ID(<em>) PORT(</em>)</td>
</tr>
<tr>
<td>2013.352</td>
<td>IPAHWS8</td>
<td>RIHJER4</td>
<td>-DISPLAY STATS SUMMARY(TRAN)</td>
</tr>
<tr>
<td>2013.352</td>
<td>IPAHWS8</td>
<td>RIHJER4</td>
<td>-DISPLAY STATS SUMMARY(DS)</td>
</tr>
<tr>
<td>2013.352</td>
<td>IPAHWS8</td>
<td>RIHJER4</td>
<td>-DISPLAY STATS SUMMARY(TRAN)</td>
</tr>
<tr>
<td>2013.352</td>
<td>IPAHWS8</td>
<td>RIHJER4</td>
<td>-DISPLAY STATS SUMMARY(DS)</td>
</tr>
</tbody>
</table>

Response time report

The following figure shows a sample transaction report using syntax TYPE=EVNT, REPORT=RESP.

Response Time Report

<table>
<thead>
<tr>
<th>UOW Key (HEX)</th>
<th>TranID</th>
<th>DestID</th>
<th>UserID</th>
<th>Date</th>
<th>Arrive Time</th>
<th>Sent to OTMA</th>
<th>BackFromOTMA</th>
<th>WritetoSock</th>
<th>ResponseTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC6E8031413D1162</td>
<td>SYMQEC18</td>
<td>RC1M</td>
<td>BRAZIL</td>
<td>2013.352</td>
<td>17:51:46.887</td>
<td>17:51:46.888</td>
<td>00:00:00.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC6E8031440CD961</td>
<td>SYMQEC18</td>
<td>R12APPL</td>
<td>BRAZIL</td>
<td>2013.352</td>
<td>17:51:46.899</td>
<td>17:51:46.899</td>
<td>00:00:00.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC6E80314679A364</td>
<td>SYMQEC18</td>
<td>RC1N</td>
<td>BRAZIL</td>
<td>2013.352</td>
<td>17:51:46.909</td>
<td>17:51:46.909</td>
<td>00:00:00.009</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following table describes the fields in the Response time report.

**Response time report fields description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UOW KEY</td>
<td>The UOW KEY is a svt token found in the read input set of records. This is used when diagnosing problems in a Transaction Dump Trace</td>
</tr>
<tr>
<td>TRANID</td>
<td>The inbound Transaction name taken from the IRM (Application Data)</td>
</tr>
<tr>
<td>UserID</td>
<td>The USERID as specified in the IMS Connect IRM message data</td>
</tr>
<tr>
<td>DESTID</td>
<td>The Destination ID (datastore) that the transaction was sent to</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The data store may be different from original Datastore in IRM if Routing is activated</td>
</tr>
<tr>
<td>Date</td>
<td>The Date of the IMS Connect message arrival</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrive Time</td>
<td>The Time stamp of the IMS Connect message arrival (in IMS Connect) from the client application</td>
</tr>
<tr>
<td>Sent to otma</td>
<td>The Time stamp of the IMS Connect message that is sent to IMS</td>
</tr>
<tr>
<td>backfromotma</td>
<td>The Time stamp of the IMS message that is returned from IMS</td>
</tr>
<tr>
<td>Writetosock</td>
<td>The Time stamp of the IMS Connect message that is sent back to client application</td>
</tr>
<tr>
<td>Resp time</td>
<td>Overall Response time is calculated based on Leave Exit – Arrive Read and includes IMS transaction response time</td>
</tr>
</tbody>
</table>

### History report

The history report provides historical statistics on an hourly basis by Datastore or Exit Name.

The following figure shows a sample history report using syntax TYPE=HIST, REPORT=HIST, DS=IMT1A

### History report sample

```
<table>
<thead>
<tr>
<th>2013-352</th>
<th>ENERGIZER FOR IMS CONNECT V1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.01.06</td>
<td>PAGE 1</td>
</tr>
<tr>
<td></td>
<td>History Report</td>
</tr>
<tr>
<td>Exit/DataSt. Name</td>
<td>Timestamp (local)</td>
</tr>
<tr>
<td>Avg Size----</td>
<td>Errors</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>Input Output</td>
<td>Time (sec.)</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>143</td>
<td>6</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>91</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>92</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>92</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>99</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>101</td>
<td>0</td>
</tr>
<tr>
<td>DATASTORE</td>
<td>IMT1A</td>
</tr>
<tr>
<td>155</td>
<td>4</td>
</tr>
</tbody>
</table>
```
ODBM Report

The ODBM Dump report allows you to view the ODBM events by Unit of Work (UOW).

This report shows the incoming DRDA requests and DRDA commands and replies to help you understand the application work flow.

Tip

To view the ODBM EVENT data in detail, use TYPE=EVNT,REPORT=DUMP syntax with Time Intervals to narrow your search for the Data you need to review.

The following figure shows a sample ODBM report using the syntax TYPE=EVNT,REPORT=ODBR.

Sample ODBM Report

<table>
<thead>
<tr>
<th>1</th>
<th>2013-300</th>
<th>ENERGIZER FOR IMS CONNECT V1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.01.06</td>
<td>PAGE 1</td>
<td>Open Database Request Activity Report</td>
</tr>
<tr>
<td>0</td>
<td>EID</td>
<td>Activity Description</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>----------------------</td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>----------------------</td>
</tr>
<tr>
<td>0</td>
<td>Start of request</td>
<td>2013.300 10:27:31.194</td>
</tr>
<tr>
<td>60</td>
<td>Prepare for Socket read</td>
<td>10:27:31.194 key=CA6083E038995527</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>91</td>
<td>DRDA command</td>
<td>10:27:31.194 OPNQRY qryrowset=12</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>91</td>
<td>DRDA command</td>
<td>10:27:31.194 INAIB pcbname=PCB01</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>91</td>
<td>DRDA command</td>
<td>10:27:31.194 DLIFUNC func=RETRIEVE</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>73</td>
<td>Read socket</td>
<td>10:27:31.194 port=52106 socket=12</td>
</tr>
<tr>
<td>91</td>
<td>DRDA command</td>
<td>10:27:31.194 SSALIST ssa=PARTROOT(PARTKEY</td>
</tr>
<tr>
<td>5157.49</td>
<td>652.30</td>
<td>192</td>
</tr>
</tbody>
</table>
Troubleshooting

If the installation or subsequent launch of the console was not installed successfully or you see unexpected results, use the information here to determine the source of the problem. This section contains troubleshooting and tracing information about the User Interface Middleware (UIM) server and the console. This section includes the following topics:

- Overview of troubleshooting Energizer (see page 238)
- Console (see page 238)
- UIM server (see page 241)
- Energizer (console) (see page 243)

Overview of troubleshooting Energizer

This section discusses problems that could occur, the reason they occurred, and how to resolve the problem in the following areas:

- Console (the graphical user interface)
- UIM server
- Energizer

Console

This section discusses problems that pertain to the console and covers the following topics:

- Cannot launch the console installation (see page 239)
- Cannot expand tree (see page 239)
• Cannot access BMC Software product functions (see page 239)
• Connection failures between the console and the UIM server (see page 240)

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 Software product functions

You cannot access BMC Software 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.

**UIM server**

This section discusses problems that pertain to the UIM server.

If you contact BMC Software Customer Support, Customer Support might ask you to enable or disable overall tracing options or just specific tracing options. See the following topics that discuss enabling and disabling tracing options:

- Enabling or disabling specific tracing options temporarily (see page 313)
- Enabling or disabling the overall tracing option temporarily (see page 312)

**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 MVS 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='TCP_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.
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.

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 = EACCESGenerated in BIND called
   from lineUnexpected 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.

Energizer (console)

This section covers troubleshooting issues that pertain to the Energizer, covering the following topics:

- Cannot view statistics or dynamically reload exits (see page 244)
- Cannot enter security information in the exits (see page 244)
- Incorrect destination cannot enter MVS operator commands (see page 244)
Cannot view statistics or dynamically reload exits

The following table provides a detailed description of the problem, the reason that the problem occurred, and a solution to the problem:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
</tr>
</thead>
</table>
| Problem | You have fully customized Energizer. Transactions are still being processed through IMS Connect. DataStore Routing, WorkLoad Governor, security, and the exits all function correctly. However, you cannot dynamically reload exits or view statistics.  
*Note:* If Energizer has been fully customized, you will have at least one eLink, one eGroup, one IMS Connect, one datastore, one DataStore Router Configuration member, and one Exit Services Configuration member defined. |
| Reason | Ensure that eLink is online. If eLink is on a different system than the IMS Connects, the system with eLink could have been IPLed. |
| Solution | Restart the eLink. When eLink comes online, you can dynamically reload your exits or view statistics. You do not need to recycle IMS Connect. |

Cannot enter security information in the exits

The following table provides a detailed description of the problem, the reason that the problem occurred, and a solution to the problem:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>You cannot enter security information in the exits. Everything is dimmed.</td>
</tr>
<tr>
<td>Reason</td>
<td>If the Energizer Class name field is blank (IMS Connect Properties window), security is not enabled and you cannot enter security information in any security field.</td>
</tr>
<tr>
<td>Solution</td>
<td>Right-click the appropriate IMS Connect and click the Edit configuration. Enter a class name that has been previously defined in your RACF (or equivalent) security package.</td>
</tr>
</tbody>
</table>

Incorrect destination cannot enter MVS operator commands

The following table provides a detailed description of the problem, the reason that the problem occurred, and a solution to the problem:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>When you issue an MVS operator command, you receive BMC340292E message.</td>
</tr>
</tbody>
</table>
1. Choose **Tools => Internet Options => Advanced**.
2. Scroll to the Java Sun heading, and deselect it.
3. Follow the instructions on screen.
   - If you are prompted to restart, you must restart Internet Explorer, not your computer.

### Fields and processing options

This section discusses the Energizer for IMS Connect product’s fields and processing options (or configuration), the difference between fields and options, which options and fields that are available in which address spaces, and valid values. Many of these options and fields must be configured before Energizer is executed. The following topics are covered:

- Overview of options library configuration (see page 245)
- eLink fields (see page 247)
- eGroup fields (see page 248)
- IMS Connect fields (see page 249)
- Exit Services fields (see page 253)
- DataStore Router fields (see page 260)

### Overview of options library configuration

During installation, you specified the name of the options library.

The console uses this library to save the processing options (or configuration) that are created and updated. There must be an options library that contains the processing options (or configuration) allocated to a DD statement within each address space where Energizer is installed--eLink, IMS Connect, and the IMS Control Region.

All options are loaded from that DD. No attempt is made to locate any options from the STEPLIB concatenation.
If the console and the address spaces use the same library, no special processing is necessary. The address spaces reference the current configuration members. If the address spaces use a different library, you must copy each member manually (every time one is created or updated) into the appropriate address space library.

The following topics are covered in this section:

- Fields versus processing options (see page 246)
- Customizing Energizer with the console (see page 246)
- Address space options (see page 246)

**Tip**

BMC Software recommends that you use only one library for options.

### Fields versus processing options

Fields refer to data that is displayed in the window in the work area; processing options (or configuration) refer to data that is stored in the options library. Using the console Save button translates field values into the proper format to store in the options library.

### Customizing Energizer with the console

When you have installed Energizer, you must customize it before you can use it. Use the console to define the following features:

- Message Exits configuration
- DataStore Router configuration
- eLink configuration, the Energizer communication link address space
- eGroup configuration
- IMS Connect address space configuration
- Datastores

### Address space options

Each address space that is associated with Energizer has unique options that tell Energizer how to function. The console places those configuration members in the options library. The member name of each address space configuration will be the name of the address space started task or the job name. During initialization, Energizer loads a member from the options library with a name that matches the job or started task name that is assigned to the address space.
eLink fields

Several eLink field values are used as default values in other address space. When this occurs, the console automatically fills-in the values for you.

The following table lists fields that can be defined in the eLink address space.

**eLink fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eLink name</td>
<td>Specifies the 1- to 8-character job or started task name for the Energizer communications link address space.</td>
</tr>
<tr>
<td></td>
<td>This value creates or references a member name in the options library in the eLink address space.</td>
</tr>
<tr>
<td>Description</td>
<td>(optional) Specifies a name that helps you identify the eLink</td>
</tr>
<tr>
<td></td>
<td>Mixed case and spaces are allowed.</td>
</tr>
<tr>
<td>eLink LUNAME</td>
<td>Specifies the eLink LUNAME that is used to communicate with the UIM Server</td>
</tr>
<tr>
<td></td>
<td>You must create a VTAM definition in your system VTAMLST data set. For more information, see the sample in IPR$APPL.</td>
</tr>
<tr>
<td>UIM Server LUNAME</td>
<td>Specifies the UIM Server LUNAME that is used to communicate with the eLink</td>
</tr>
<tr>
<td></td>
<td>You must create a VTAM definition in your system VTAMLST data set. For more information, see the sample in IPR$APPL.</td>
</tr>
<tr>
<td>Message Text Case</td>
<td>Specifies the format for Energizer messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are Mixed and Upper case. The default is Mixed.</td>
</tr>
<tr>
<td></td>
<td>The Message Text Case is entered in the eLink and eGroup windows. If you have language constraints which require uppercase, you must specify uppercase in the eLink and the eGroup window.</td>
</tr>
<tr>
<td>WTO Routing Code</td>
<td>Specifies the WTO routing code to use for write-to-operator messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are between 1 and 128. The default is 11, system programmer messages.</td>
</tr>
<tr>
<td>WTO Descriptor Code</td>
<td>Specifies the WTO descriptor code to use for write-to-operator messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are between 1 and 13. The default is 7, task-related messages.</td>
</tr>
<tr>
<td>Trace Options</td>
<td>Specifies which of the following options to use to trace events:</td>
</tr>
<tr>
<td></td>
<td>• Activate tracing - turns tracing on and off</td>
</tr>
<tr>
<td></td>
<td>• Address space control (ACTL) - task attach/detach, abends</td>
</tr>
<tr>
<td></td>
<td>• Commands (CMDS)</td>
</tr>
<tr>
<td></td>
<td>• Component (COMP) - initialization, termination, reload</td>
</tr>
<tr>
<td></td>
<td>• Errors (ERRS)</td>
</tr>
<tr>
<td></td>
<td>• Internal Dispatcher (DISP)</td>
</tr>
<tr>
<td></td>
<td>• Journal (JRNL)</td>
</tr>
<tr>
<td></td>
<td>• Latch activity (LTCH)</td>
</tr>
<tr>
<td></td>
<td>• Security (SECS) - SAF calls, ACEE creation</td>
</tr>
<tr>
<td></td>
<td>• Storage management (STRG)</td>
</tr>
<tr>
<td></td>
<td>• Timer (TIMR)</td>
</tr>
<tr>
<td></td>
<td>• XCF control (XCFC)</td>
</tr>
<tr>
<td></td>
<td>• VTAM (VTAM) - VTAM control</td>
</tr>
</tbody>
</table>
Field Description

The default trace configuration contains the following values: address space control, commands, component trace, error trace, security, VTAM, and XCF control

Journal Options

Specifies which of the following options to use to create a journal:

- Activate journaling - turns journal on and off
- Address space control (ACTL) - task attach/detach, abends
- Commands (CMDS)
- Component (COMP) - initialization, termination, reload
- Errors (ERRS)
- Internal Dispatcher (DISP)
- Latch activity (LTCH)
- Security (SECS) - SAF calls, ACEE creation
- Storage management (STRG)
- Timer (TIMR)
- XCF control (XCFC)
- VTAM (VTAM) - VTAM control

The default journal configuration contains the following values: address space control, commands, component trace, commands, error trace, security, VTAM, and XCF control

eGroups

Specifies the names of the eGroups that exist for an eLink configuration member

eGroup fields

The eGroup is the XCF group used to communicate among the various address spaces. eGroup options are used to specify values that must be consistent across all address spaces within the group--such as IMS Connect and IMS Control Region.

The following table lists the fields that can be defined in the eGroup address space.

eGroup fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group name</td>
<td>Specifies a 1- to 8-character eGroup name that is used for logical groupings of IMS Connects that use the same load balancing method. If the load balancing method is the WLM Sysplex Routing Services, the Name is also the WLM group name. Because the eGroup name will be used as an XCF group name, the eGroup name must be unique. It must not match any existing XCF group name. Because eGroups are used for communication among the address spaces, eGroup cannot be changed without recycling all the address spaces.</td>
</tr>
<tr>
<td>Description</td>
<td>(optional) Specifies a name that helps you identify the eGroup. Mixed case and spaces are allowed.</td>
</tr>
<tr>
<td>Load Balancing Method</td>
<td>Specifies the method to use for load balancing. Valid values are as follows: WLM Sysplex Routing Services, Statistical</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Load Balancing Method</td>
<td>The Load Balancing Method cannot be changed without recycling the IMS Control Regions and IMS Connect address spaces.</td>
</tr>
<tr>
<td>Cycle time</td>
<td>Specifies the time interval (in seconds) for resetting the internal routing statistics</td>
</tr>
<tr>
<td></td>
<td>When the Load Balancing Method is WLM, this field specifies the interval used for obtaining statistics from WLM. Valid values are from 10 to 300 seconds (five-minutes). The default value is 60 seconds. BMC Software recommends 60 to 180 seconds (1- to 3-minutes). Datastores that become active during a cycle are not used until the next cycle starts.</td>
</tr>
<tr>
<td>Message Text Case</td>
<td>Specifies the format of Energizer messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are Upper or Mixed case. The default is Mixed.</td>
</tr>
<tr>
<td></td>
<td>The Message Text Case is entered in the eLink and eGroup windows. If you have language constraints which require uppercase, you must specify uppercase in the eLink window and the eGroup window.</td>
</tr>
<tr>
<td>WTO Routing Code</td>
<td>Specifies the WTO routing code to use for write-to-operator messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are between 1 and 128. The default is 11, system programmer messages.</td>
</tr>
<tr>
<td>WTO Descriptor Code</td>
<td>Specifies the WTO descriptor code to use for write-to-operator messages</td>
</tr>
<tr>
<td></td>
<td>Valid values are between 1 and 13. The default is 7, task-related messages.</td>
</tr>
<tr>
<td>IMS Control Regions</td>
<td>Specifies the names of the IMS Control Regions that exist for an eGroup configuration member</td>
</tr>
</tbody>
</table>

**IMS Connect fields**

This topic describes the IMS Connect fields.

The following table lists the required fields that must be defined in the IMS Connect address space.

### IMS Connect fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Connect Name</td>
<td>Specifies the 1- to 8-character job or started task name for the IMS Connect address space</td>
</tr>
<tr>
<td></td>
<td>It is used as the member name in the options library in the IMS Connect address space.</td>
</tr>
<tr>
<td>Description</td>
<td>(optional) Specifies a name that helps you identify the IMS Connect address space</td>
</tr>
<tr>
<td></td>
<td>Mixed case and spaces are allowed</td>
</tr>
<tr>
<td>eGroup</td>
<td>Specifies the names of the eGroup configuration member that is used for an IMS Connect address space</td>
</tr>
<tr>
<td>Datastore routing configuration</td>
<td>Specifies the name of the DataStore Router configuration member that is used for an IMS Connect address space</td>
</tr>
<tr>
<td></td>
<td>If you do not specify a Datastore routing configuration member name, routing is disabled.</td>
</tr>
<tr>
<td>Exit services configuration</td>
<td>Specifies the name of the Exit services configuration member that is used for an IMS Connect address space</td>
</tr>
</tbody>
</table>
### Execute Commands member

Specifies the name of the Execute Commands member that is used for an IMS Connect address space, if any. The member must exist in the PROCLIB concatenation for the address space, and may contain Energizer commands to be executed upon initialization.

### Host name

Specifies the name of the host computer on which the IMS Connect is installed. You may enter the IP address in dotted decimal form (for example, 127.0.0.1) or the equivalent domain name. If you leave this entry blank, the local host (the system to which you are logged on) is the default host.

### Port

Specifies the port number that is assigned to the IMS Connect.

### Pass IMS Connect data to MainView Logger

Specifies whether IMS Connect statistics and performance data will be passed to MainView Logger for display by MainView for IMS. The use of this field requires the MainView Logger and the MainView for IMS products to be installed.

## Exit security fields

This topic describes the exit security fields.

The following table lists the Exit Security fields that can be defined in the IMS Connect address space.

### Security fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Specifies the 1-8 character RACF (or equivalent) class name in which IMS Connect message exit resources are defined. If the RACF (or equivalent) class name is not defined, IMS Connect fails. If Exit Services security is used, this field must be defined. If the field is blank, entries in the Enable IMS Connect authentication and the Enable Transaction authentication options in the message exit table are ignored.</td>
</tr>
<tr>
<td>Application (when Exit Services security is enabled)</td>
<td>Specifies the 1-8 character RACF (or equivalent) application name that is passed to the installed RACF (or equivalent) exit on all RACF (or equivalent) macro (RACROUTE) calls</td>
</tr>
<tr>
<td>Resource profile prefix</td>
<td>Specifies a 1-36 character name that is used as a prefix for any resource names associated with the Exit Services security. If specified, this field is used as a prefix for any resource name that is checked.</td>
</tr>
<tr>
<td>Cache resource profiles</td>
<td>Specifies whether the Exit Services security resource profiles are brought into storage (RACLIST). If they are, all resource names defined in the Class name are loaded into storage during Energizer initialization. Any changes to the security resource profiles requires a reload of profiles before they take effect. Caching resource profiles improves performance of authorization calls. If caching is not specified, each authorization call results in I/O to the RACF (or equivalent) database. Any changes to the security resource profiles will require a reload of profiles before they take effect.</td>
</tr>
</tbody>
</table>
WorkLoad governor fields

This topic describes the workload governor fields.

The following table lists the WorkLoad governor fields that can be defined in the IMS Connect address space.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold</td>
<td>Specifies the maximum number of transactions that can be received by IMS Connect. Valid values are from 0 to 9,999,999, where 0 disables the WorkLoad Governor.</td>
</tr>
<tr>
<td>Warning level</td>
<td>Specifies the warning level for the WorkLoad Governor operation. Valid values are specified as a percentage between 0 and 99. When the message rate exceeds the specified warning percentage, warning messages are issued until the level falls below the warning level. No messages are rejected.</td>
</tr>
<tr>
<td>Cycle interval</td>
<td>Specifies the interval for the WorkLoad Governor to use when checking transaction volume. Valid values are between 5 and 60 seconds. The default is 5 seconds. The higher the interval, the longer it takes to recognize that warning or rejection level has been reached or has expired.</td>
</tr>
<tr>
<td>Low threshold</td>
<td>Specifies the minimum number of transactions that can be expected per second. If the transaction arrival rate for the cycle is less than the minimum specified, a warning message is displayed and repeated every five cycles until the arrival rate equals or exceeds the minimum.</td>
</tr>
</tbody>
</table>

Trace and journal options fields

This topic describes the trace and journal options.

The following table lists the fields that can be defined in the IMS Connect address space.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace Options</td>
<td>Specifies which of the following options to use to trace events:</td>
</tr>
<tr>
<td></td>
<td>• Activate tracing - turns tracing on and off</td>
</tr>
<tr>
<td></td>
<td>• Address space control (ACTL) - task attach/detach, abends</td>
</tr>
<tr>
<td></td>
<td>• Commands (CMDS)</td>
</tr>
<tr>
<td></td>
<td>• Component (COMP) - initialization, termination, reload</td>
</tr>
<tr>
<td></td>
<td>• Errors (ERRS)</td>
</tr>
<tr>
<td></td>
<td>• Events (EVNT) - IMS Connect event trace</td>
</tr>
<tr>
<td></td>
<td>• Historical (HIST) - data relating to statistics</td>
</tr>
<tr>
<td></td>
<td>• Internal Dispatcher (DISP)</td>
</tr>
<tr>
<td></td>
<td>• Journal (JRNL)</td>
</tr>
<tr>
<td></td>
<td>• Latch activity (LTCH)</td>
</tr>
<tr>
<td></td>
<td>• Security (SECS) - SAF calls, ACEE creation</td>
</tr>
<tr>
<td></td>
<td>• Statistical - once per minute with prior load balancing goals and statistics</td>
</tr>
<tr>
<td></td>
<td>• Storage management (STRG)</td>
</tr>
</tbody>
</table>
### Dynamic journaling fields

This topic describes the dynamic journaling fields.

The following table lists the dynamic journaling fields that you can define in the IMS Connect address space.

#### Fields for defining dynamic journaling

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activate dynamic journaling</td>
<td>Specifies whether Energizer will dynamically allocate new journal files when needed</td>
</tr>
<tr>
<td>Data set name prefix</td>
<td>Specifies a prefix for the names of dynamically generated journal files</td>
</tr>
<tr>
<td></td>
<td>The prefix can be up to 17 characters. It can contain multiple qualifiers separated by periods (for example, qualifier.qualifier).</td>
</tr>
<tr>
<td></td>
<td>The dynamically allocated data set names have the following format, which is based on the GMT time of the allocation:</td>
</tr>
<tr>
<td></td>
<td>prefix.Dyyyyddd.Thhmmssst.Snn</td>
</tr>
<tr>
<td></td>
<td>The variables represent the following values:</td>
</tr>
<tr>
<td></td>
<td>• prefix is the name specified in this field.</td>
</tr>
<tr>
<td></td>
<td>• yyyddd is the year and day of the year.</td>
</tr>
<tr>
<td></td>
<td>• hhmmssst is the hour, minutes, seconds, and tenths of a second of the day.</td>
</tr>
<tr>
<td></td>
<td>• nn is a generated sequence number (normally 01 unless a duplicate time stamp is encountered).</td>
</tr>
</tbody>
</table>
### Exit Services fields

To use the advanced features in Energizer—such as DataStore Routing or reloading message exits without recycling IMS Connect—your customer exits **must** be defined to Energizer.

If they are not defined, Energizer does not know that they exist.

BMC Software recommends that you define all customer exits to Energizer.

The following table lists the exit services fields.

#### Exit Services fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit Services name</td>
<td>Specifies the configuration member name assigned to the set of customer and virtual message exit options. This name is specified in the IMS Connect address space options. Message options can be shared with more than one IMS Connect.</td>
</tr>
</tbody>
</table>

The following topics are covered in this section:

- Customer exit fields (see page 254)
- Virtual exit fields (see page 255)
Customer exit fields

This topic describes the customer exit fields.

The following table lists the fields that are available for adding a customer exit.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit name</td>
<td>Specifies the name of the customer message exit that IMS Connect loads from //STEPLIB. The exit is used to process messages that are associated with the specified message IDs.</td>
</tr>
<tr>
<td>Activate message routing for</td>
<td>Specifies whether the DataStore Router feature is active (checkmark) or inactive (no checkmark) for an exit. The default is Yes (active). If routing is not active, the message is sent to the datastore that is specified in the IRM header or in the customer exit OMUSR_DESTID field, which is located in the OTMA User Data Prefix.</td>
</tr>
<tr>
<td>Return fullword message</td>
<td>Specifies whether a message that is returned to the client begins with a fullword length of the entire message. Valid values are Yes (checkmark) and No (no checkmark). The default is Yes.</td>
</tr>
<tr>
<td>MSGID1 String value</td>
<td>Specifies the first of two message ID strings that are associated with the message exit. IMS Connect processes client messages matching the string in the IRM with the string name that is specified in the exit. There are no defaults for this field. Unless you select the Ignore option, you must enter a value.</td>
</tr>
<tr>
<td>MSGID2 String value</td>
<td>Specifies the second of two message ID strings that are associated with the message exit. IMS Connect processes client messages matching the string in the IRM with the string name that is specified in the exit. There are no defaults for this field. Unless you select the Ignore option, you must enter a value.</td>
</tr>
<tr>
<td>MSGID1 String Type</td>
<td>Specifies whether MSGID1 String should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.</td>
</tr>
<tr>
<td>Call termination routine</td>
<td>(when selected) calls the termination routine before the exit is reloaded.</td>
</tr>
<tr>
<td>Call initialization routine</td>
<td>(when selected) calls the initialization routine after the exit is reloaded.</td>
</tr>
</tbody>
</table>
Field Description

When Verify is selected, the format (character or hexadecimal) and the value of the customer exit
MSGID1 String value and MSGID2 String value must match the message exit format and value of the
customer exit source code.

- If a character format string is less than eight characters, the string is automatically padded on the
  right with EBCDIC space (x'40') characters.
- A hexadecimal format string represents an ASCII string. If the hexadecimal format string is less
  than 16 characters, the string is automatically padded on the right with ASCII space (x'20')
  characters.

MSGID2 String Type Specifies whether MSGID2 String should be interpreted as a readable 1- 8 EBCDIC string, a readable 1-
8 ACII string, or a 2-16 hexadecimal string

Verify ensures that the Energizer-defined MSGID1 and MSGID2 matches the MSGID1 and MSGID2 defined in
the (assembler language) exit code

Override Uses the Energizer MSGID1 and MSGID2 values—no validation is performed
This field overrides the MSGID values that are defined in the assembler language exit code.

Ignore Uses MSGID1 and MSGID2 that are defined in the assembler language exit code
Ignore ignores the Energizer-defined MSGID1 and MSGID2 values.

Virtual exit fields

Virtual exit fields are grouped by how they are displayed.

General options fields

This topic describes the general options fields.

The following table lists the fields that are used for defining virtual exits.

(Virtual exit) General options fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit name</td>
<td>Specifies a 1 to 8 character identifier that is used in commands to qualify the entry.</td>
</tr>
<tr>
<td>Activate message routing for this exit</td>
<td>Specifies whether the DataStore Router is active (checkmark) or inactive (no checkmark) for an exit. If routing is inactive, the message is sent to the datastore specified in the IRM header or in the customer exit OMUSR_DESTID field, which is located in the OTMA User Data Prefix.</td>
</tr>
<tr>
<td>Return fullword message length</td>
<td>Specifies whether a message that is returned to the client begins with a fullword length of the entire message.  Valid values are Yes (checkmark) or No (no checkmark). The default is Yes.</td>
</tr>
<tr>
<td>Allow Energizer extensions</td>
<td>Specifies that an Extended Status Message (ESM) is returned to the client following each RSM or CSM. See SAMP library member $IPRHESM for the ESM layout.</td>
</tr>
<tr>
<td>Force transaction expiration for all messages</td>
<td>Specifies that all messages for this exit will have an expiration time value set.</td>
</tr>
</tbody>
</table>
String options fields

This topic describes the string options fields.

The following table lists the fields that are used on the Virtual Exit dialog box.

(Virtual exit) String Options fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSGID1 String value</td>
<td>specifies the first of two character strings that are associated with the message exit. There are no defaults for this field. Exit Services processes client messages matching the string according to the options specified in the string. If the MSGID string is less than an 8-character or 16-hexadecimal-character string, ASCII or character spaces are added to the right of the MSGID string.</td>
</tr>
<tr>
<td>MSGID1 String type</td>
<td>specifies whether MSGID1 String should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.</td>
</tr>
<tr>
<td>MSGID1 Activate translation</td>
<td>specifies whether the messages matching the message ID must be translated between client and IMS/OTMA format. Valid values are Yes (checkmark) and No (no checkmark). The default is No.</td>
</tr>
<tr>
<td>MSGID1 Client-to-IMS translate table</td>
<td>(required if Activate translation is Yes) specifies the name of the user translation table to use. The default is STANDARD, which uses the IBM translation tables. If you create a translation table, use JCL to assemble and linkedit it. If you want to create a translation table, there is a sample file in IPRSAMP(IPR$A2E).</td>
</tr>
<tr>
<td>MSGID1 IMS-to-Client translate table</td>
<td>(required if Activate translation is Yes) specifies the name of the user translation table to use. The default is STANDARD, which uses the IBM translation tables. If you create your translation table, use JCL to assemble and linkedit it. If you want to create a translation table, there is a sample file in IPRSAMP(IPR$E2A).</td>
</tr>
<tr>
<td>MSGID2 String value</td>
<td>(optional) specifies the second of two character strings that is associated with the message exit. Exit Services processes client messages matching the string according to the options that are specified in the string. If the MSGID string is less than an 8 characters or 16 hexadecimal character string, ASCII or character spaces are added to the right of the MSGID string.</td>
</tr>
<tr>
<td>MSGID2 String Type</td>
<td>specifies whether MSGID2 String should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.</td>
</tr>
<tr>
<td>MSGID2 Activate translation</td>
<td>specifies whether the messages matching the message ID must be translated between the client and IMS/OTMA format. Valid values are Yes (checkmark) and No (no checkmark). The default is No.</td>
</tr>
<tr>
<td>MSGID2 Activate translation</td>
<td>(required if Translate Message Format is Yes) specifies the name of the user translation table to use. The default is STANDARD, which uses the IBM translation tables.</td>
</tr>
</tbody>
</table>
### MSGID2 Client-to-IMS translate table
If you create your translation table, use JCL to assemble and linkedit it. If you want to create your own translation table, there is a sample file in IPRSAMP(IPR$A2E).

### MSGID2 IMS-to-Client translate table
(required if the Translate Message Format field is Yes) specifies the name of a user translation table to use. The default is STANDARD, which uses the IBM translation tables. If you create your translation table, use JCL to assemble and linkedit it. If you want to create a translation table, there is a sample file in IPRSAMP(IPR$E2A).

---

#### IRM Security fields
The following table lists the fields that are used for defining IRM Security in a virtual exit.

**Virtual exit) IRM Security fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable userid authentication</td>
<td>Specifies whether user ID authentication is active or inactive for an exit. Valid values are Yes and No. The default is No. If the field is active, Exit Services verifies that any user ID, password, group, and new password that is specified are valid. If validation fails, an error message is issued.</td>
</tr>
<tr>
<td>Enable IMS Connect authentication</td>
<td>Specifies whether IMS Connect authentication is active or inactive for an exit. Valid values are Yes and No. The default is No. If this field is active and the user ID was authenticated, Exit Services validates that the user ID has access to the resource name specified by the IMS Connect authentication Resource name. If the validation fails, an error message is issued to the operating console. If this option is active, Enable userid authentication must also be active and a valid Class name must be specified in the IMS Connect address space options.</td>
</tr>
<tr>
<td>(IMS Connect authentication)</td>
<td>Specifies the 1- to 8-character resource name to use when validating the IMS Connect resource authorization. (required if Enable IMS Connect authentication is active)</td>
</tr>
<tr>
<td>Resource name</td>
<td>If the Energizer Exit Security Resource profile prefix field has a value, that value is used as a prefix to the resource name when validating IMS Connect authorization.</td>
</tr>
<tr>
<td>Enable transaction authentication</td>
<td>Specifies whether transaction authentication is active or inactive for an exit. Valid values are Yes and No. The default is No. If the field is active and the user ID has been authenticated, Exit Services validates the user ID access to the IMS transaction being executed. If validation fails, an error message is returned to the console. If this field is active, Enable userid authentication must also be active and a valid Energizer Class Name must be specified in the IMS Connect Exit Security window.</td>
</tr>
<tr>
<td>Security exit</td>
<td>Specifies the name of a customer security exit that is called by Exit Services to perform security validation. This field cannot be used if any of the other RACF (or equivalent) security fields are active.</td>
</tr>
</tbody>
</table>

---

---
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Trusted user IP address | Specifies an IP address in *nnn. nnn. nnn. nnn* format to allow clients connecting from that address to bypass Energizer and IMS Connect security checks. You can replace any portion of the address with `*` to allow any number to match.  
**WARNING**  
Some firewalls or routers may change 'foreign' IP addresses to 'local' IP addresses. Before you specify `*`, ensure that all matching IP addresses are trusted. Enter a host name to translate the name to an IP address. The IP address is saved, and not the host name. |
| Userid Offset | Specifies the offset within the IMS Request Message (IRM) prefix that accompanies the client message of the RACF (or equivalent) user ID  
If the RACF (or equivalent) user ID is passed in the IRM_RACF_USERID (or equivalent) field, this field should be blank. Otherwise, specify the decimal offset of the RACF (or equivalent) user ID within the client message. |
| Password Offset | Specifies the offset within the IRM prefix of the RACF (or equivalent) password  
If the RACF (or equivalent) password is passed in the IRM_RACF_PW (or equivalent) field, this field should be blank. Otherwise, specify the decimal offset of the RACF (or equivalent) password within the client message. |
| Password Status | Specifies the status of the RACF (or equivalent) password  
It is required when Enable userid authentication is active. Valid values are as follows:  
- Required - If the RACF (or equivalent) password name is not present in the message, the message is rejected and an error message is returned to the client.  
- Optional - If the RACF (or equivalent) password is present in the message, it is used in the validation.  
- Not Allowed - The RACF (or equivalent) password is not allowed and is ignored if it is present in the message. |
| Reroute name Offset | Specifies the offset within the IMS Request Message (IRM) prefix for the reroute name. The default is the IRM_REROUT_NM field. |
| Reroute name Status | Specifies the status of the reroute name  
Valid values are as follows:  
- Required - If the reroute name is not present in the message, the message is rejected and an error message is returned to the client.  
- Optional - If the reroute name is present in the message, it is used in the validation.  
- Not Allowed - The reroute name is not allowed and is ignored if it is present in the message. |
| Group Offset | Specifies the offset within the IRM prefix that accompanies the client message of the RACF (or equivalent) group  
If the RACF (or equivalent) group is passed in the IRM_RACF_GRNAME (or equivalent) field, this field should be blank. Otherwise, specify the decimal offset of the RACF (or equivalent) group within the client message. |
| Group Status | Specifies the status of the RACF (or equivalent) authentication group field  
Valid values are as follows:  
- Required -- If the RACF (or equivalent) group name is not present in the message. The message is rejected and an error message is returned to the client.  
- Optional -- If the RACF (or equivalent) group name is present in the message, it is used in the validation. |
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Allowed</td>
<td>The RACF (or equivalent) group name is not allowed and is ignored if it is present in the message.</td>
</tr>
<tr>
<td>New Password Offset</td>
<td>Specifies the offset within the IRM prefix for the RACF (or equivalent) new password.</td>
</tr>
<tr>
<td>New Password Status</td>
<td>Specifies the status of the RACF (or equivalent) new password.</td>
</tr>
<tr>
<td>MFS Modname Offset</td>
<td>Specifies the offset within the IMS Request Message (IRM) prefix for the MFS modname.</td>
</tr>
<tr>
<td>MFS Modname Status</td>
<td>Specifies the status of the MFS Modname.</td>
</tr>
<tr>
<td>Application id Offset</td>
<td>Specifies the offset within the IMS Request Message (IRM) prefix for the RACF (or equivalent) application ID.</td>
</tr>
<tr>
<td>Application id Status</td>
<td>Specifies the status of the RACF (or equivalent) application ID.</td>
</tr>
</tbody>
</table>

**Maximum timeout field**

Enter a maximum timeout value between 0.01 and 3600 seconds.

The value will be rounded to the nearest supported value.

If the client sets a timeout value in IRM_TIMER less than the maximum, the client value is left unchanged.
If the client does not set a timeout value or sets a value higher than the maximum, the value is changed to this maximum.

If no maximum is specified in this option, the client value is left unchanged.

**OTMA Security fields**

This topic describes the OTMA security fields.

The following table lists the virtual message exit fields that are used to define OTMA Security.

### (Virtual exit) OTMA Security fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default userid</td>
<td>Required if the OTMA Security level is <strong>CHECK</strong> or <strong>FULL</strong>. If the client does not provide a user ID, this field specifies the 1- to 8-character default RACF (or equivalent) user ID to use in the OTMA security prefix. This value overrides the RACFID (or equivalent) value that is specified in the IMS Connect HWSCFG proclib member.</td>
</tr>
<tr>
<td>Default group</td>
<td>Required if the OTMA Security level is <strong>CHECK</strong> or <strong>FULL</strong>. If the client does not provide a group, this field specifies the 1- to 8-character default RACF (or equivalent) group to use in the OTMA security prefix.</td>
</tr>
<tr>
<td>Security Level</td>
<td>Specifies the OTMA security level to set in the OTMA security prefix. Valid values are as follows:</td>
</tr>
<tr>
<td></td>
<td>• <strong>NONE</strong> - (default) no RACF (or equivalent) checking</td>
</tr>
<tr>
<td></td>
<td>• <strong>CHECK</strong> - check for transaction (TXN) and command (CMD)</td>
</tr>
<tr>
<td></td>
<td>• <strong>FULL</strong> - check for transaction, command and MPR</td>
</tr>
</tbody>
</table>

**DataStore Router fields**

DataStore Router fields are divided into the following sections:

- DataStore Router fields are used to define routing options.
- Datastore fields are used to add and define datastores.
- Affinity fields are used to add and define affinities.

**DataStore Router fields table**

This topic describes the table information for the Datastore Router fields.

The following table lists the fields that are used to define the DataStore Router processing environment.

**Datastore Router fields**
**Fields**

### DRDB name

Creates the 1-8 character configuration member name assigned to a set of DataStore Router options. The name is also specified in the IMS Connect address space options. Routing options may be shared with more than one IMS Connect, or separate router options can be used.

### Description (optional)

Specifies a name that helps you identify the member. Mixed case and spaces are allowed.

### Activate affinity manager

Specifies whether the Affinity Manager component is **Active** or **Inactive**. The default is **Active**. The Affinity Manager ignores inactive affinities.

### Activate load balancing

Specifies whether the **Load Balancing** component is **Active** or **Inactive**. The default is **Active**.

---

## Datastore fields

Each datastore defined to IMS Connect must also be defined in the DataStore Router options.

To add or define datastores to the DataStore Router configuration member, use the fields that are listed in the following table:

### Datastore fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore name</td>
<td>Specifies the 1- to 8-character name of a datastore as it appears in the HWSCFG proclib member on the DATASTORE statement</td>
</tr>
<tr>
<td>Weight</td>
<td>Specifies the weight (1-100) of the total message volume that is assigned to a datastore only when the Load Balancing Method is Statistical. (The load balancing method is set in the eGroup options.) If this field is not specified and the load balancing method is Statistical, all datastores are assigned an equal value.</td>
</tr>
<tr>
<td>Active</td>
<td>Specifies whether a datastore is Active or Inactive. The default is Active. Messages cannot be routed to inactive datastores.</td>
</tr>
<tr>
<td>Preferred</td>
<td>Specifies whether a datastore is Preferred or not. Use this field to select a preferred (or primary) datastore for the routing of IMS Connect messages.</td>
</tr>
</tbody>
</table>

---

## Affinity fields

Affinities can be defined for any messages that have unique processing characteristics.

These affinities are used by the Affinity Manager component in selecting the datastores that can process the message. The affinity fields in the following table are used to add/define affinities to Energizer.

### Affinity fields
### Field Description

**Affinity Type**
Specifies one of the following resource association types to an affinity:
- **DEST** - Datastore (one of the defined datastores)
- **CLIENT** - IMS Connect Client
- **TRAN** - IMS Transaction Code (specific or generic)
- **USER** - RACF (or equivalent) User ID
- **GROUP** - RACF (or equivalent) Group name
- **STRING** - Message ID String (requires **Value Type** which Specifies whether **Value** is a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.)
- **PORT** - TCP/IP Port Number (the one assigned to IMS Connect)

**Value**
Specifies one of the following values that are associated with the affinity type:
- **Datastore** - enter the datastore in the message or 1- to 7-characters ending with an asterisk (*), indicating a generic datastore name
- **IMS Connect Client** - enter the 1- to 8-byte client name
- **IMS Transaction Code** - enter a fully-qualified transaction name or 1- to 7-characters ending with an asterisk (*), indicating a generic transaction name
- **RACF (or equivalent) User ID** - enter the 1- to 8-character RACF (or equivalent) User ID
- **RACF (or equivalent) Group Name** - enter the 1- to 8-character RACF (or equivalent) group name
- **Message ID** - enter the 1- to 8-character message ID
- **TCP/IP Port Number** - enter the port number that received the message

**Value Type**
Applies only to **STRING - Message ID** transaction types

The field is used to specify whether **Value** should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string.

**Active**
Specifies whether this affinity is Active or Inactive

The default is Active. The Affinity Manager ignores inactive affinities.

**Data Offset 1**
(numeric) Specifies the offset within the message data, which further qualifies an affinity

If this field is specified, the Data Operator 1 and Data Value 1 must also be specified.

**Data Operator 1**
Specifies which operator to use when comparing the message data (Data Offset 1 data) to the Data Value 1

If the Data Offset 1 field is specified, this field must be specified. Valid operators are as follows:
- **EQ** - equal
- **NE** - not equal
- **GE** - greater than or equal
- **GT** - greater than
- **LT** - less than
- **LE** - less than or equal

**Data Value 1**
Specifies an actual data value to use for the comparison against the Data Offset 1 message data value

If the Data Offset 1 field is specified, this field must be specified.

**Data Value Type 1**
Applies only to **STRING - Message ID** affinity types

Specifies whether Data Value 1 should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string

**Data Operator**
Specifies which logical operator to use when the two qualifying values are specified
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Data Offset 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Offset 2</td>
<td>Specifies the offset within the message data, which further qualifies an affinity&lt;br&gt;<strong>If this field is specified, the Data Operator 2, and Data Value 2 must be specified.</strong></td>
<td></td>
</tr>
<tr>
<td>Data Operator 2</td>
<td>Specifies the operator to use when comparing the message data (Data Offset 2 data) with the Data Value 2&lt;br&gt;<strong>Valid operators are as follows:</strong>&lt;br&gt;- EQ - equal&lt;br&gt;- NE - not equal&lt;br&gt;- GE - greater than or equal&lt;br&gt;- GT - greater than&lt;br&gt;- LT - less than&lt;br&gt;- LE - less than or equal&lt;br&gt;<strong>If the Data Offset 2 field is specified, this field must be specified.</strong></td>
<td></td>
</tr>
<tr>
<td>Data Value 2</td>
<td>Specifies the actual data value to use for the comparison against the Data Offset 2 message data value&lt;br&gt;<strong>If the Data Offset 2 field is specified, this field must be specified.</strong></td>
<td></td>
</tr>
<tr>
<td>Data Value Type 2</td>
<td>Applies only to <strong>STRING - Message ID</strong> affinity types&lt;br&gt;Specifies whether Data Value 2 should be interpreted as a readable 1-8 EBCDIC string, a readable 1-8 ASCII string, or a 2-16 hexadecimal string</td>
<td></td>
</tr>
<tr>
<td>Destinations</td>
<td>Specifies the assigned affinity destination(s)&lt;br&gt;The destination must be one or more datastores that are defined to the DataStore Router.</td>
<td></td>
</tr>
</tbody>
</table>

## Menus and commands

This section discusses the Energizer for IMS Connect console-enabled product menus and menu commands. The following topics are covered here:

- **Menus (see page 263)**
- **Commands (see page 265)**

### Menus

Pop-up menus are displayed when you click the right mouse button on an item in the Navigation tree or in a window.<br>The following table shows which Items have which menus:

#### Pop-up menus

<table>
<thead>
<tr>
<th>Right-click</th>
<th>To do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Connects (Navigation tree)</td>
<td>• Add an IMS Connect&lt;br&gt;• Add an eLink&lt;br&gt;• Add an eGroup&lt;br&gt;• Add a Data-store router</td>
</tr>
<tr>
<td>Right-click</td>
<td>To do this</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>• Add an Exit Services configuration member</td>
</tr>
<tr>
<td></td>
<td>• List existing IMS connects</td>
</tr>
<tr>
<td></td>
<td>• List existing eLinks</td>
</tr>
<tr>
<td></td>
<td>• List existing eGroups</td>
</tr>
<tr>
<td></td>
<td>• List existing Data-store routers</td>
</tr>
<tr>
<td></td>
<td>• List existing Exit Services configuration members</td>
</tr>
<tr>
<td></td>
<td>• Refresh the Navigation tree with information from the UIM Server</td>
</tr>
<tr>
<td>IMS Connect (Navigation tree)</td>
<td>• View statistics</td>
</tr>
<tr>
<td></td>
<td>• Edit the IMS Connect configuration</td>
</tr>
<tr>
<td></td>
<td>• Delete the IMS Connect configuration</td>
</tr>
<tr>
<td></td>
<td>• Reload the IMS Connect configuration</td>
</tr>
<tr>
<td></td>
<td>• List the active clients</td>
</tr>
<tr>
<td></td>
<td>• Display the Energizer Command window</td>
</tr>
<tr>
<td>IMS Connect (window)</td>
<td>• Edit an IMS Connect</td>
</tr>
<tr>
<td></td>
<td>• Delete an IMS Connect</td>
</tr>
<tr>
<td></td>
<td>• Copy an IMS Connect</td>
</tr>
<tr>
<td></td>
<td>• Reload an IMS Connect</td>
</tr>
<tr>
<td>active client (IMS Connect Clients window)</td>
<td>Issue the DELETE CLIENT command on the IMS Connect for the selected active client</td>
</tr>
<tr>
<td>eLink (window)</td>
<td>• Edit an eLink</td>
</tr>
<tr>
<td></td>
<td>• Delete an eLink</td>
</tr>
<tr>
<td></td>
<td>• Copy an eLink</td>
</tr>
<tr>
<td></td>
<td>• Reload an eLink</td>
</tr>
<tr>
<td>eGroup (window)</td>
<td>• Edit an eGroup</td>
</tr>
<tr>
<td></td>
<td>• Delete an eGroup</td>
</tr>
<tr>
<td></td>
<td>• Copy an eGroup</td>
</tr>
<tr>
<td></td>
<td>• Reload an eGroup</td>
</tr>
<tr>
<td>Datastore router (window)</td>
<td>• Edit a Data-store router</td>
</tr>
<tr>
<td></td>
<td>• Delete a Data-store router</td>
</tr>
<tr>
<td></td>
<td>• Copy a Data-store router</td>
</tr>
<tr>
<td></td>
<td>• Reload a Data-store router</td>
</tr>
<tr>
<td>Exit Services configuration member (window)</td>
<td>• Edit an Exit Services configuration member</td>
</tr>
<tr>
<td></td>
<td>• Delete an Exit Services configuration member</td>
</tr>
<tr>
<td></td>
<td>• Copy an Exit Services configuration member</td>
</tr>
<tr>
<td></td>
<td>• Reload an Exit Services configuration member</td>
</tr>
</tbody>
</table>
Commands

This section discusses commands that can be issued from the Energizer Command window and includes the following:

- Display command (see page 265)
- SET command (see page 271)
- RELOAD command (see page 273)
- Reset command (see page 273)
- IMS Connect statistics commands (see page 274)
- LIST command (see page 275)
- QUERY command (see page 276)
- DELETE command (see page 276)
- UPDATE command (see page 276)

To display information in memory that is associated with the IMS Connect address space

1. Right-click the IMS Connect name and choose Execute Command.
2. The Energizer Command window is displayed.
3. Select Display from the Command drop-down list box.
4. Select and enter the appropriate parameters in the drop-down list boxes and fields, based on the following table, to display the pertinent information and click Execute:

<table>
<thead>
<tr>
<th>Display command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
<td>Displays information in memory about eGroups and how IMS Connect is connected to them:</td>
</tr>
<tr>
<td></td>
<td>- Group displays the eGroup name to which the address space is connected.</td>
</tr>
<tr>
<td></td>
<td>- Member displays the member name that is used by the address space to identify itself. The member consists of the started task name followed by the '@' sign, which is followed by the MVS system identifier.</td>
</tr>
<tr>
<td></td>
<td>- Token displays the unique XCF token that is assigned to each member.</td>
</tr>
<tr>
<td></td>
<td>- Status displays the status of the group. JOINED indicates which eGroups are connected to the eLink address space. ACTIVE specifies which members are active in the group.</td>
</tr>
<tr>
<td></td>
<td>- System displays the MVS system identifier for each member's address space.</td>
</tr>
<tr>
<td></td>
<td>- Type displays the type of address space. Valid values are ELINK for the eLink address space or CONNECT for the IMS Connect address space.</td>
</tr>
<tr>
<td><strong>Queues</strong></td>
<td>Displays information in memory that is related to internal processing queues:</td>
</tr>
<tr>
<td></td>
<td>- Queue/Task displays the queue name and then a line for each task for the queue type. Some queues have more than one processing task for performance.</td>
</tr>
<tr>
<td></td>
<td>- Status displays the status of the queue or task. Valid values are ACTIVE, STOPPED, SHUTDOWN, or QUIESCE.</td>
</tr>
<tr>
<td></td>
<td>- Wait/Ready displays the active wait count for the queue.</td>
</tr>
<tr>
<td></td>
<td>- Tasks displays the number of tasks for this queue type.</td>
</tr>
<tr>
<td></td>
<td>- Abends displays the number of abends that are encountered by this queue type.</td>
</tr>
<tr>
<td>Display command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Max</td>
<td>displays the maximum number of abends that are allowed for this queue type before the address space is terminated.</td>
</tr>
</tbody>
</table>

### Trace
Displays the trace entries in memory based on the values specified in the type, ID, and limit fields:
- **Type** displays any valid trace type.
- **ID** (optional) displays the trace ID code.
- **Limit** (optional) displays the maximum number of trace entries to display. The default is 10. An entry of 0 means there is no limit.
- **Sequence** (optional) displays the sequence number of the first trace entry to scan, looking for a match on type and limit.

The trace displays the following information:
- **Trace Status** displays ON if the journal is active and OFF if it is inactive.
- **Current Sequence** displays the sequence number specifying the number of journal entries that are created so far.
- **Current DD** displays the active journal DDNAME if the journal is active.
- **Internal - Trace** displays the four-character identifier for each internal trace table.
- **Status** displays ON if the specified trace is active and OFF if it is inactive.

A table is displayed listing each Trace type, whether the trace type is on or off, its sequence, and its journal status.

### Users
Displays information in memory that is associated with any active users:
- **User ID** displays the user ID that is assigned to the user.
- **Type** displays the type of user. Operator means the user entered the command from the OS user interface. Console means the user entered the command from the console.
- **Job Name** displays the jobname that is associated with the user.
- **System** displays the OS/390 system ID on which the user is active.
- **Token** displays the internally assigned token for user identification purposes.
- **PROC#** displays the number of processes that the user has active.
- **Total Active Users** = displays the number of active users.
- **Maximum Users** = displays the maximum number of users who can be active at one time.

### Datastore
Displays the status of one or more datastores that are defined to IMS Connect and the XCF OTMA information:
- **ID**: ALL or datastore ID
- **Datastore** displays the datastore identifier.
- **Connect-Status** displays the status of the datastore and its connection to IMS Connect.
- **OTMA-Group** displays the XCF group name that is used for OTMA communications.
- **OTMA-Member** displays the XCF member name that identifies IMS Connect in the XCF group.
- **OTMA-TMember** displays the XCF member name that IMS Connect uses to communicate with IMS in the XCF group.
- **DRU-Exit** displays the OTMA DRU (destination resolution) exit name.

### Router Type (Options)
Displays high-level information:
- **Router Configuration** displays the member name of the router configuration options.
- **Affinity Management** displays the activity status of the Affinity Manager.
- **Load Balancing** displays the activity status of the Load Balancer and the load balancing method that is used.

### Router Type (Status)
Displays the high-level view, as seen in the Router => Type (Options), with a more detailed view—such as:
- **Routing cycle started** displays when the cycle started.
- **Cycle time** displays the cycle interval.
- **Datastore** displays the datastores that are defined to the router.
- **Weight** displays the value that is entered for load balancing.
### Display command Description

- **% Goal** displays the load balancing percentage that is specified.
- **#MSGS** displays the number of messages processed by the router per datastore.
- **%MSGS** displays the percentage of total messages that are processed by each datastore.
- **Status** displays whether the specified service is active, inactive, stopped, unknown to IMS Connect, or not defined to Energizer.

The following results display the number of messages that are affected in this cycle and since reset:

- Input messages
- Rejected by user exit
- Rejected by governor
- Rejected by router
- Total sent
- Matched an affinity

### Router Type (Affinity)

Displays the high-level information along with the detailed information—such as:

- **Affinity** displays the match value that is associated with the affinity.
- **Type** displays the affinity type. Valid values are transaction code affinity (TRANS), user ID affinity (USER), group affinity (GROUP), client ID affinity (CLIENT), message ID affinity (STRING), TCP/IP port affinity (PORT), IMSID destination affinity (DEST).
- **Destination** displays the datastore with which the affinity is associated.
- **Match** displays the number of times that the router is matched on this affinity.
- **Status** displays whether the affinity is active or inactive.
- **Label** displays the affinity label.

### Router Type (Datastore)

Displays the following information about the specified datastore:

- **Router Configuration** displays the member name of the router configuration options.
- **From** displays the date and time that the router configuration options were created.
- **Affinity Management** is displays the activity status of the Affinity Manager.
- **Load Balancing** is displays the activity status of the Load Balancer and the load balancing method that is used.
- **Resource Management** is displays the activity status of the Resource Manager.
- **Routing Cycle Started** displays when the cycle started.
- **Cycle Time** displays the cycle interval.
- **Datastore** displays the datastores that are defined to the router.
- **Weight** displays the value that is entered for load balancing.
- **% of Goal** displays the load balancing percentage that is specified.
- **# Transactions** displays the number of transactions that is processed by the router per datastore.
- **% Transactions** displays the percentage of total transactions that are processed by each datastore.
- **Status** displays whether the specified service is active, inactive, stopped, unknown to IMS Connect, or not defined to Energizer.

### Exit Type (Status)

Displays the following status information for one or more exits:

- **ID** is required. Valid values are All or a specific exit name.
- **User Message Exit** displays the name of the message exit.
- **Exit Status** displays the status for the specified exit. Valid values are active or inactive.
- **Routing Status** displays the routing status for the specified exit. Valid values are active or inactive.
- **ID** displays the heading for the display that follows. String 1 and String 2 indicate one of the two 8-character message IDs that are associated with the exit.
- **Service** displays the a heading that names the service (Exit or Router) being described.
- **Status** displays whether the specified service is active or inactive, stopped, unknown to IMS Connect.

The Action, Date, Time, ID, and Count are displayed for the following actions:

- RELOAD EXIT
- SET EXIT ACTIVE
- SET EXIT INACTIVE
- SET ROUTER ACTIVE
### Display command

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SET ROUTER INACTIVE</td>
</tr>
</tbody>
</table>

#### Exit Type (Options) - Part one

Displays the following processing options for one or more exits:

- **ID** is required. Valid values are **All** or a specific exit name.
- **User Message Exit Configuration** displays the member name for the message exit configuration options.
- **From** displays the date and time options that were created or last modified.
- **Options Last Saved by** displays the user ID that last saved the options.
- **Options Last Reloaded By - On - At** displays the user ID that last reloaded the options specifying the date (On) and time (At).
- **Times Reloaded** displays the number of times that the options were reloaded.
- **Exit** displays the name of the message exit.
- **Assembly Date** displays the date that message exit was assembled.
- **Options Last Saved by** displays the user ID that last saved the options specifying the date (On) and time (At).
- **Call Initialization Exit Routine** displays whether the initialization routine was called after the exit was reloaded. Valid values are **yes** or **no**.
- **Call Termination Exit Routine** displays whether the termination routine was called before the exit was reloaded. Valid values are **Yes** or **No**.
- **Output Buffer Length Returned To Client** displays whether messages that are returned to the client are preceded with a fullword length of the entire message. Valid values are **Yes** or **No**.
- **Override - Use Energizer MSG IDS** displays whether override was used. Valid values are **Yes** or **No**.

#### Exit Type (Options) - Part two

<table>
<thead>
<tr>
<th>MSGID1</th>
<th>MSGID2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSGID1 displays the first of two 8-character message IDs that are associated with the exit. It is displayed in character format followed by a 16-character printable hex format in case the string is actually an ASCII string, which does not show up in character format.</td>
<td>MSGID2 displays the second of two 8-character message IDs that are associated with the exit. It is displayed in character format followed by a 16-character printable hex format in case the string is actually an ASCII string, which does not show up in character format.</td>
</tr>
</tbody>
</table>
- **Convert** displays whether **MSGID1** should be converted. Valid values are **Yes**, **No**, and **N/A**.
- **Client-2-IMS Table** displays the user-specified translation table that is used to covert **MSGID1** from the client format into IMS/OTMA format. The table is valid only when Energizer is handling the user exit services and **Convert** = **Yes** is specified. To perform normal ASCII to EBCDIC translation, the value is **Standard**.
- **IMS-2-Client Table** displays the user-specified translation table that is used to covert **MSGID1** from IMS/OTMA format into the client format. The table is valid only when Energizer handles the user exit services and **Convert** = **Yes** is specified. To perform normal EBCDIC to ASCII translation, the value is **Standard**.
- **MSGID2** displays the second of two 8-character message IDs that are associated with the exit. It is displayed in character format followed by a 16-character printable hex format in case the string is actually an ASCII string, which does not show up in character format.
- **Convert** displays whether **MSGID2** should be converted.
- **Client-2-IMS Table** displays the user-specified translation table that is used to covert **MSGID2** from the client format into IMS/OTMA format. The table is valid only when Energizer is handling the user exit services and **Convert** = **Yes** is specified. To perform normal ASCII to EBCDIC translation, the value is **Standard**.
- **IMS-2-Client Table** displays the user-specified translation table that is used to covert **MSGID2** from IMS/OTMA format into the client format. The table is valid only when Energizer handles the user exit services and **Convert** = **Yes** is specified. To perform normal EBCDIC to ASCII translation, the value is **Standard**.

#### Exit Type (Virtual) - Part one

Displays the following information for one or more virtual exits:

- **ID** is required. Valid values are **All** or a specific exit name.
- **User Message Exit** displays the name of the exit.
- **User Security Exit** displays the security for one or more exits.
- **UserID Validation** displays whether user ID authentication is being performed (**active**) or not (**inactive**) for messages that are received by this exit.
<table>
<thead>
<tr>
<th>Display command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UserID displays whether RACF (or equivalent) user ID is required or inactive. If user ID validation is active, the user ID is required.</td>
<td></td>
</tr>
<tr>
<td>Group displays whether the RACF (or equivalent) group is inactive, required, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
<tr>
<td>Password displays whether the RACF (or equivalent) password is inactive, required, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
<tr>
<td>New Password displays whether the RACF (or equivalent) new password is inactive, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exit Type (Virtual) - Part two</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application ID displays whether the application ID is inactive, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
<tr>
<td>Reroute name displays whether the reroute name is inactive, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
<tr>
<td>MFS modname displays whether the MFS modname is inactive, optional, or not allowed in the IRM.</td>
<td></td>
</tr>
<tr>
<td>Offset displays the decimal offset of the corresponding field when the field is required or optional. If the offset corresponds to the default fields as mapped by the IRM, DFLT is specified.</td>
<td></td>
</tr>
<tr>
<td>IMS Connect Validation displays whether user ID is authenticated for authority to IMS Connect. Valid values are active and inactive.</td>
<td></td>
</tr>
<tr>
<td>Resource displays the resource name that is used to authenticate the user ID when IMS Connect validation is ACTIVE.</td>
<td></td>
</tr>
<tr>
<td>Transaction Validation displays whether the user ID is authenticated for authority to the IMS transaction being executed. Valid values are active and inactive.</td>
<td></td>
</tr>
<tr>
<td>OTMA Security Level displays the OTMA security level that is set in the OTMA security prefix and passed to IMS. Valid values are NONE, CHECK, and FULL.</td>
<td></td>
</tr>
<tr>
<td>OTMA Default UserID displays the default user ID that is set in the OTMA security prefix and passed to IMS when one is not specified in the message.</td>
<td></td>
</tr>
<tr>
<td>OTMA Default Group displays the default group that is set in the OTMA security prefix and passed to IMS when one is not specified in the message.</td>
<td></td>
</tr>
<tr>
<td>Trusted IP address displays the IP address in nnn.nnn.nnn.nnn format which allows clients connecting from that address to bypass Energizer and IMS Connect security checks.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options Type (Connect) - Part one</th>
<th>Displays the following information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Connect Address Space Options displays the member name for the options.</td>
<td></td>
</tr>
<tr>
<td>From displays the date and time that the options were created or last modified.</td>
<td></td>
</tr>
<tr>
<td>Options Last Saved By displays the user ID that last saved the options.</td>
<td></td>
</tr>
<tr>
<td>Options Last Reload By - On - At displays the user ID that last reloaded the options and when, date (On) and time (At).</td>
<td></td>
</tr>
<tr>
<td>Times Reloaded displays the number of times that the options have been reloaded.</td>
<td></td>
</tr>
<tr>
<td>Group Options displays the name of the eGroup options.</td>
<td></td>
</tr>
<tr>
<td>Router Options displays the name of the DataStore Router options.</td>
<td></td>
</tr>
<tr>
<td>User Message Exit Options displays the name of the Exit Services options.</td>
<td></td>
</tr>
<tr>
<td>Governor IS (status) displays whether the Governor is active or inactive.</td>
<td></td>
</tr>
<tr>
<td>Governor Transactions Threshold displays the acceptable transaction volume as the number of transactions per second.</td>
<td></td>
</tr>
<tr>
<td>Governor Warning Threshold displays the transaction volume level (number of transactions per Governor threshold unit) at which warning messages are issued.</td>
<td></td>
</tr>
<tr>
<td>Governor Threshold Interval displays the threshold interval; it is a period of time for which transactions are tallied and compared to the transaction threshold. This interval is specified as a number between 5 and 60 seconds.</td>
<td></td>
</tr>
<tr>
<td>RACF (or equivalent) Security IS displays whether the RACF (or equivalent) security is active or inactive when the Message Exit Security feature is active.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options Type (Connect) - Part two</th>
<th>Displays the following information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF (or equivalent) Class Name displays the RACF (or equivalent) class name that is used when the Message Exit Security feature is active.</td>
<td></td>
</tr>
<tr>
<td>RACF (or equivalent) Application Name displays the RACF (or equivalent) application name that is used on all RACROUTE macro calls that are associated when the Message Exit Security feature is active.</td>
<td></td>
</tr>
</tbody>
</table>
### Display command Description

- **RACF (or equivalent) Resource Name Prefix** displays a 1- to 36-character RACF (or equivalent) prefix that is used to build all resource profile names that are associated with authorization calls for the Message Exit Security when the Message Exit Security feature is active.

- **RACF (or equivalent) Resource Caching** displays whether Exit Services security resource profiles are brought into storage (RACLIST).

### Options Type (eGroup) Displays the following information:

- **Group name** displays the member name for the options.
- **From** displays the date and time that the options were created or last modified.
- **Options Last Saved By** displays the user ID that last saved the options.
- **Options Last Reloaded By - On - At** displays the user ID that last reloaded the options and date (On) and time (At) of the last reload.
- **Times Reloaded** displays the number of times the options have been reloaded.
- **XCF Group Name** displays the name of the XCF group used for communications between address spaces.

### Options Type (Router) Displays the following information:

- **Router Configuration** displays the member name of the router configuration options.
- **From** displays the date and time that the router configuration options were created.
- **Affinity Management** displays the activity status of the Affinity Manager.
- **Load Balancing** displays the activity status of the Load Balancer and the load balancing method that are used.
- **Routing Cycle Started** displays when the cycle started.
- **Cycle Time** displays the cycle interval.
- **Datastore** displays the datastores that are defined to the router.
- **Weight** displays the value that is entered for load balancing.
- **% of Goal** displays the load balancing percentage specified.
- **# Transactions** displays the number of transactions processed by the router per datastore.
- **% Transactions** displays the percentage of total transactions that are processed by each datastore.
- **Status** displays if the specified service is active, inactive, stopped, unknown to IMS Connect, or not defined to Energizer.

### Options Type (Exit) - Part one Displays the following information:

- **User Message Exit Configuration** displays the member name for the message exit configuration options.
- **From** displays the date and time that the options were created or last modified.
- **Options Last Saved** displays the user ID that last saved the options.
- **Options Last Reloaded By - On - At** displays the user ID that last reloaded the options and date (On) and time (At).
- **Times Reloaded** displays the number of times that the options were reloaded.
- **Exit** displays the name of the message exit.
- **Assembly Date** displays the date that the message exit was assembled.
- **Defined in UMX** displays whether exit/message IDs are defined in Exit Services Options. Valid values, Yes or No.
### Display command | Description
--- | ---
- **Call Initialization Exit Routine** displays whether the initialization routine was called after the exit was reloaded. Valid values, **Yes** or **No**.
- **Call Termination Exit Routine** displays whether the termination routine was called before the exit was reloaded. Valid values, **Yes** or **No**.
- **Output Buffer Length Returned To Client** displays whether messages that are returned to the client are preceded with a fullword length of the entire message. Valid values, **Yes** or **No**.
- **Override - Use Energizer MSG IDS** displays whether override was used. Valid values, **Yes** or **No**.
- **MSGID1** displays the first of two 8-character message IDs that are associated with the exit. It is displayed in character format followed by a 16-character printable hex format in case the string is actually an ASCII string, which does not show up in character format.
- **Convert** displays whether **MSGID1** should be converted. Valid values are **Yes**, **No**, and **N/A**.
- **Client-2-IMS Table** displays the user-specified translation table that is used to convert **MSGID1** from the client format into IMS/OTMA format. The table is valid only when Energizer is handling the user exit services and **Convert = Yes** is specified. To perform normal ASCII to EBCDIC translation, the value is **Standard**.
- **IMS-2-Client Table** displays the user-specified translation table that is used to convert **MSGID1** from IMS/OTMA format into the client format. The table is valid only when Energizer handles the user exit services and **Convert = Yes** is specified. To perform normal EBCDIC to ASCII translation, the value is **Standard**.
- **MSGID2** displays the second of two 8-character message IDs that are associated with the exit. It is displayed in character format followed by a 16-character printable hex format in case the string is actually an ASCII string, which does not show up in character format.
- **Convert** displays whether **MSGID2** should be converted.
- **Client-2-IMS Table** displays the user-specified translation table that is used to convert **MSGID2** from the client format into IMS/OTMA format. The table is valid only when Energizer is handling the user exit services and **Convert = Yes** is specified. To perform normal ASCII to EBCDIC translation, the value is **Standard**.
- **IMS-2-Client Table** displays the user-specified translation table that is used to convert **MSGID2** from IMS/OTMA format into the client format. The table is valid only when Energizer handles the user exit services and **Convert = Yes** is specified. To perform normal EBCDIC to ASCII translation, the value is **Standard**.

## SET command

This topic describes using the SET command to temporarily modify trace, journal, and exit fields for the IMS Connect address space.

⚠️ **Note**

These changes are lost when IMS Connect is recycled. Exit Type (Router) and Exit Type (Exit) are lost when the router or exit is reloaded.

To temporarily modify trace, journal, and exit fields for the IMS Connect address space

1. Right-click the IMS Connect name and choose Execute Command.
2. Select and enter the appropriate parameters in the drop-down list boxes and fields, based on the following table, to display the pertinent information and click Execute:

3. Select **Set** from the **Command** drop-down list box.

### IMS Connect Set command

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Exit Type (Router) ID( exitname ) State (ACTIVE</td>
<td>INACTIVE)**</td>
</tr>
<tr>
<td>**Exit Type (Router) ID( exitname ) State (ACTIVE</td>
<td>INACTIVE) Client( MsgId1</td>
</tr>
<tr>
<td>**Exit (Exit) ID( exitname ) State(ACTIVE</td>
<td>INACTIVE)**</td>
</tr>
<tr>
<td>**Journal ID( type ... ) State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td>**Journal ID(ALL) State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td>**Journal State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td><strong>Journal State(SWITCH)</strong></td>
<td>Closes the active journal file. Any processing that is performed starts the next journal.</td>
</tr>
<tr>
<td>**Trace ID( type ... ) State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td>**Trace ID(ALL) State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td>**Trace State(OFF</td>
<td>ON)**</td>
</tr>
<tr>
<td>**Router Type(OPTIONS) RDBMEMB( new_rdbmember ) Affinity management (ACTIVE</td>
<td>INACTIVE) Load Balancing management(ACTIVE</td>
</tr>
<tr>
<td>**Router Type(AFFINITY) Label( internal_name ) State(ACTIVE</td>
<td>INACTIVE) Dest( datastore )**</td>
</tr>
<tr>
<td>**Router Type(DATASTORE) ID( datastore ) State(ACTIVE</td>
<td>INACTIVE) Load( number)**</td>
</tr>
</tbody>
</table>
The LOAD keyword is not valid if WLM is active, nor is it valid for IMSPLEX datastores.

### RELOAD command

This topic describes the **RELOAD** command.

To dynamically reload, validate, and activate the IMS Connect address space options and customer exits

1. Right-click the IMS Connect name and choose Execute Command.
2. The Energizer Command window is displayed.
3. Select **RELOAD** from the **Command** drop-down list box.
4. Select and enter the appropriate parameters in the drop-down list boxes and fields, based on the following table, to display the pertinent information and click **Execute**:

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ReLoAd CoMmand</td>
<td>ReLoAd CoMmand</td>
</tr>
<tr>
<td>Options Type(ROUTER</td>
<td>EXIT</td>
</tr>
<tr>
<td>Exit Type(SECURITY</td>
<td>M ESSAGE) ID( exitname</td>
</tr>
</tbody>
</table>

### Reset command

This topic describes the Reset command.

To dynamically reset (re-initialize) security and statistics within the active address space

1. Right-click the IMS Connect name and choose Execute Command
2. The Energizer Command window is displayed.
3. Select **Reload** from the **Command** drop-down list box.
4. Select and enter the appropriate parameters in the drop-down list boxes and fields, based on the following table, to display the pertinent information and click **Execute**:

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ReLoAd CoMmand</td>
<td>ReLoAd CoMmand</td>
</tr>
<tr>
<td>Security Type(PROFILES)</td>
<td>deletes and rebuilds the in-storage resource profiles that are associated with the Message Exit Security feature This command is valid only when Caches=Yes is specified in the IMS Connect address space options.</td>
</tr>
</tbody>
</table>
4. Reset command Description

Stats Type(EXIT | TRAN | DATASTORE | ALL) ID(ALL | pattern ) resets the statistics that are associated with the Exit Services message processing such as exit, transaction, datastore or all.

IMS Connect statistics commands

To display statistics that were processed by message exits, right-click the IMS Connect name and choose one of the following menu items:

- **Display=>Transaction** statistics to display information relating to transactions.
- **Display=>Exit Services** statistics to display message exit information.
- **Display=>Datastore** statistics to display datastore information.

The following table lists the output of these commands.

**IMS Connect statistics command**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Message Rate</td>
<td>Displays the number of transactions per second averaged over the most recent 5 seconds</td>
</tr>
<tr>
<td>Recent Message Rate</td>
<td>Displays the number of transactions per second averaged over the most recent 30 to 60 minutes The calculation starts from the previous 30-minute interval.</td>
</tr>
<tr>
<td>Peak Message Rate</td>
<td>Displays the rate for the busiest 5 second interval since the start of the IMS connect region or since statistics were reset. It is possible (though unlikely) for the <strong>Current Message Rate</strong> to be higher than the peak rate.</td>
</tr>
<tr>
<td>Input Message Count</td>
<td>Displays number of messages that were received since the last statistical reset or since IMS Connect was recycled</td>
</tr>
<tr>
<td>Output Message Count</td>
<td>Displays number of messages that have been sent since last statistical reset or since IMS Connect was recycled</td>
</tr>
<tr>
<td>Avg Input Message Size</td>
<td>Displays the total messages since the start of the IMS connect region or since statistics were reset. This parameter does not count input messages which were improperly formatted and were rejected before the READ exit was invoked. It does not count messages for an inactive exit.</td>
</tr>
<tr>
<td>Min Input Message Size</td>
<td>Displays the minimum size (length of the data that is received from the client, before translation or addition of OTMA headers)</td>
</tr>
<tr>
<td>Max Input Message Size</td>
<td>Displays the maximum size (length of the data that is received from the client, before translation or addition of OTMA headers)</td>
</tr>
<tr>
<td>Avg Output Message Size</td>
<td>Displays the total messages since the start of the IMS connect region or since statistics were reset, but it does not count the following information:</td>
</tr>
<tr>
<td></td>
<td>• Output messages that were improperly formatted and rejected before the READ exit was invoked</td>
</tr>
<tr>
<td></td>
<td>• Messages for an inactive exit</td>
</tr>
<tr>
<td>Parameters</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Min Output Message Size</td>
<td>Displays the minimum size as the length of the data that is sent from the client, before translation or addition of OTMA headers</td>
</tr>
<tr>
<td>Max Output Message Size</td>
<td>Displays the maximum size as the length of the data that is sent from the client, before translation or addition of OTMA headers</td>
</tr>
</tbody>
</table>
| Errors Count            | Displays the count of input messages that were rejected by the READ exit or EXER exit since the start of the IMS Connect region or since statistics were reset. Errors are messages that are not sent to a datastore. The following messages are considered errors:  
  - Non-zero return codes from the virtual or customer exit  
  - Messages that are rejected by the WorkLoad governor  
  - Messages that are rejected by the DataStore Router  
  - Messages that are rejected by IMS Connect (EXER exit invoked for message)  
  
  **Input messages minus Errors** are the number of messages that are sent to datastores. |
| Read Function Invoke Count | Displays the number of times that the Read Function was invoked for this exit |
| Exer Function Invoke Count | Displays the number of times that the Exer Function was invoked for this exit |
| Xmit Function Invoke Count | Displays the number of times that the Xmit Function was Invoked for this exit |
| Exit RC=0 on READ Count | Displays the number of times that the Exit RC=0 on READ was invoked for this exit |
| Exit RC=0 on XMIT Count | Displays the number of times that the Exit RC=0 on XMIT was invoked for this exit |
| Exit RC=4 on READ Count | Displays the number of times that the Exit RC=4 on READ was invoked for this exit |
| Exit RC=4 on EXER Count | Displays the number of times that the Exit RC=4 on EXER was invoked for this exit |
| Exit RC=8 on READ Count | Displays the number of times that the Exit RC=8 on READ was invoked for this exit |
| Exit RC=8 on EXER Count | Displays the number of times that the Exit RC=8 on EXER was invoked for this exit |
| Suppressed by governor | Displays the number of times that the Governor suppressed messages for this exit |
| Router Invoked for Message | Displays the number of times that the router was invoked for messages |
| Router Errors | Displays the number of times that there were router errors for this exit |

**LIST command**

This topic describes the LIST command.
To display a list of clients currently active in IMS Connect.

1. Right-click the IMS Connect name and choose Execute Command.
2. Select List from the Command drop-down list box.
3. Select and enter the appropriate parameters in the drop-down list boxes and fields, based on the following table, to display the pertinent information and click Execute:

### IMS Connect List command

<table>
<thead>
<tr>
<th>Display command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST CLIENT TYPE (All) ID( id) PORT( port)</td>
<td>Displays a list of the active clients and other information about the active clients. The list can be filtered to display active clients by client ID or on specific IMS Connect ports. The output of this command displays the information for one or more active clients in a more detailed format than the one-line summary list.</td>
</tr>
<tr>
<td>LIST CLIENT TYPE (Summary) ID( id) PORT( port)</td>
<td>Displays a list of the active clients and other information about the active clients. The list can be filtered to display active clients by client ID or on specific IMS Connect ports. The output of this command displays the information for one or more active clients in a one-line summary format.</td>
</tr>
</tbody>
</table>

**QUERY command**

For more information about this IMS Connect z/OS command, see the appropriate IBM IMS commands manual.

**DELETE command**

For more information about this IMS Connect z/OS command, see the appropriate IBM IMS commands manual.

**UPDATE command**

For more information about this IMS Connect z/OS command, see the appropriate IBM IMS commands manual.

**MVS operator commands**

This section discusses the MVS operator commands that are associated with starting and stopping the VTAM link and the eLink, covering the following topics:

- Overview of MVS command (see page 277)
- Specifying the command destination (see page 277)
- eLink commands (see page 277)
- Energizer commands for IMS Connect (see page 280)
Overview of MVS command

Commands can be executed by using the console or by using the MVS command line. The MVS command is discussed as follows:

- Lists the commands
- Explains what the command does
- Lists the equivalent console execute commands
- Provides a cross-reference to the console command, which has an explanation for the columns headings and keyword

Specifying the command destination

Commands are limited to a specific type of address space (eLink and IMS Connect).

The format of the command is based upon the target address space. For example, if the eLink jobname is IPRELINK, The following table lists the basic command formats that would be used in each address space.

### Specifying the command destination

<table>
<thead>
<tr>
<th>Address Space</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>eLink</td>
<td>/F IPRELINK, command</td>
</tr>
<tr>
<td></td>
<td>Examples:</td>
</tr>
<tr>
<td></td>
<td>- /F IPRELINK, DISPLAY GROUP</td>
</tr>
<tr>
<td></td>
<td>- /F IPRELINK, RELOAD OPTIONS TYPE(ELINK)</td>
</tr>
<tr>
<td>IMS Connect</td>
<td>/F IPRELINK, CON command</td>
</tr>
<tr>
<td></td>
<td>Examples:</td>
</tr>
<tr>
<td></td>
<td>- /F IPRELINK, CON SET TRACE STATE (ON) ID (ALL)</td>
</tr>
<tr>
<td></td>
<td>- /F IPRELINK, CON DISPLAY OPTIONS TYPE (CONNECT)</td>
</tr>
</tbody>
</table>

### eLink commands

This section discusses commands that are valid and available from the OS console interface to the eLink address space, covering the following topics:

- Starting and stopping the VTAM link (see page 278)
- Starting and stopping eLink (see page 278)
- Display commands (see page 278)
- Set commands (see page 279)
- Reload command (eLink) (see page 279)
Starting and stopping the VTAM link

This topic describes starting and stopping the VTAM link.

The following table lists the commands that start and stop the VTAM link to the UIM Server and eLink.

**MVS console operating commands**

<table>
<thead>
<tr>
<th>Command Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>START CONSOLE</td>
<td>Starts the VTAM link to the UIM Server and eLink</td>
</tr>
<tr>
<td>STOP CONSOLE</td>
<td>Stops the VTAM link to the UIM Server and eLink</td>
</tr>
</tbody>
</table>

Starting and stopping eLink

This topic describes starting and stopping the eLink.

The following table lists the commands to start and stop the eLink.

**Starting and stopping eLink commands**

<table>
<thead>
<tr>
<th>Task</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start eLink</td>
<td>S &lt;eLink_started_task_name&gt;</td>
</tr>
<tr>
<td>Stop eLink</td>
<td>P &lt;eLink_started_task_name&gt;</td>
</tr>
</tbody>
</table>

Display commands

This topic describes the display commands.

The following table lists the `DISPLAY` commands that are used to return information associated with the eLink address space. The displayed information shows what options are active, and not what is stored in the options library.

**eLink MVS operator DISPLAY commands**

<table>
<thead>
<tr>
<th>DISPLAY command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY GROUP</td>
<td>Displays information about eGroup(s) and how eLink is connected to them</td>
</tr>
<tr>
<td>DISPLAY QUEUES</td>
<td>Displays information that is related to the internal processing queues</td>
</tr>
<tr>
<td>DISPLAY TRACE</td>
<td>Displays information about what options are being traced and recorded in the journal</td>
</tr>
<tr>
<td>DISPLAY TRACE TYPE(type) ID(id) LIMIT(nnn) SEQUENCE(nnn)</td>
<td>This command allows you to set the trace type, number of records to display, and sequence number.</td>
</tr>
<tr>
<td>DISPLAY command</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>DISPLAY USERS</td>
<td>Displays information that is associated with active users</td>
</tr>
<tr>
<td>DISPLAY OPTIONS TYPE(ELINK)</td>
<td>Displays the current eLink address space options</td>
</tr>
</tbody>
</table>

### Set commands

This topic describes the **SET** commands.

The following table lists the **SET** commands that are used to reset the journal and trace fields in the eLink address space temporarily.

The changes are only made in memory and are lost when the eLink is reloaded.

#### eLink MVS operator SET commands

<table>
<thead>
<tr>
<th>SET commands</th>
<th>Description</th>
</tr>
</thead>
</table>
| SET JOURNAL STATE(OFF | ON) ID(type,...) | Sets the state of individual journal types to OFF or ON  
More than one journal type can be specified. When the journal type is set to OFF, no journal entries are made for that journal type. Valid journal types vary by address space and can be displayed by using the DISPLAY TRACE command. |
| SET JOURNAL STATE(OFF | ON) ID(ALL) | Changes the state of all individual journal types to OFF or ON  
Entering ALL as the ID type specifies all trace types. |
| SET JOURNAL STATE(OFF | ON) |Suspends or resumes writing information to the journal  
You cannot change journal types with this format. Nothing is written to the journal while it is suspended. Journaling will resume when the state is set to ON. |
| SET JOURNAL STATE(SWITCH) | Switches to a new journal |
| SET TRACE STATE State(Off | On) ID(type,...) | Sets the state of individual trace types to OFF or ON  
More than one trace type can be specified. Tracing for a type does not occur when the state for that type is set to OFF. Valid trace types vary by address space and can be displayed by using the DISPLAY TRACE command. |
| SET TRACE State (Off | On) ID(All) | Changes the state of all individual trace types to OFF or ON  
Using ALL for the ID is the same as entering a list of all trace types. |
| SET TRACE STATE (OFF | ON) |Suspends or resumes tracing without changing the state of individual trace types  
No tracing is performed while tracing is suspended. When tracing resumes, the state of the individual trace types determines what is traced. |

### Reload command (eLink)

This topic describes the reload command.
The following table lists the RELOAD command that is used to reload options and exits.

### eLink MVS operator RELOAD command

<table>
<thead>
<tr>
<th>RELOAD command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELOAD OPTIONS TYPE(ELINK)</td>
<td>dynamically reloads, validates and activates the eLink address space.</td>
</tr>
</tbody>
</table>

### Energizer commands for IMS Connect

Energizer commands are valid and available from the OS console interface to the IMS Connect address space. This section covers the following topics:

- Specifying the target of the command (see page 280)
- DISPLAY commands (IMS Connect address space) (see page 281)
- Set commands to reset the journal and trace fields temporarily (see page 282)
- Reload command (exits and options) (see page 284)
- Reset command (Security and Stats) (see page 284)
- List commands (see page 284)
- EXEC commands (see page 285)

### Specifying the target of the command

All commands are entered by using a modify command that is directed to the eLink address space.

To specify that the command is to be directed to IMS Connect, you must precede the command with the **CON** keyword. By default, the command is sent to all IMS Connect address spaces.

To limit the IMS Connect address spaces that the command executes against, use the following keyword parameters:

GROUP(groupname.jobname@systemname)

- **GROUP** is the keyword.
- **groupname** is the group name; it is always followed by a period.
- **jobname** is the IMS Connect jobname.
- **systemname** is the system on which the IMS Connect is running.

The job name is always followed by @, unless the jobname and system name are each eight characters. To display all active, groups, and IMS Connects, use the eLink **DISPLAY GROUP** command (see Display commands (see page 278)).

To match more than one IMS Connect address space, use * and ? characters in patterns. For example:

```
CON DIS DS GROUP(IPAGRP.CONN@*)
```
DISPLAY commands (IMS Connect address space)

The following table lists the DISPLAY commands that are used to return information associated with the IMS Connect address space.

The displayed information Displays what is memory, not what is stored in the options library.

**IMS Connect MVS operator DISPLAY commands**

<table>
<thead>
<tr>
<th>DISPLAY command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY GROUP</td>
<td>Displays information about the eGroups and how IMS Connect is connected to them</td>
</tr>
<tr>
<td>DISPLAY QUEUES</td>
<td>Displays information that is related to the internal processing queues</td>
</tr>
<tr>
<td>DISPLAY TRACE</td>
<td>Displays information about what options are being traced and recorded in the journal</td>
</tr>
<tr>
<td>DISPLAY TRACE TYPE(type) ID(id) LIMIT (nnn) SEQUENCE(nnnn)</td>
<td>Displays trace records This command allows you to set the trace type, the number of records to display, and the sequence number.</td>
</tr>
<tr>
<td>DISPLAY USERS</td>
<td>Displays information in memory that is associated with any active users</td>
</tr>
<tr>
<td>DISPLAY DATASTOR ID(ALL</td>
<td>datastore-pattern)</td>
</tr>
<tr>
<td>DISPLAY FILTER ID(ALL</td>
<td>filter-pattern)</td>
</tr>
<tr>
<td>DISPLAY ROUTER TYPE(OPTIONS) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
<tr>
<td>DISPLAY ROUTER TYPE(STATUS) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
<tr>
<td>DISPLAY ROUTER TYPE(AFFINITY) ID(ALL</td>
<td>datastore-pattern)</td>
</tr>
<tr>
<td>DISPLAY EXIT TYPE(OPTIONS) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
<tr>
<td>DISPLAY EXIT TYPE(STATUS) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
<tr>
<td>DISPLAY EXIT TYPE(VIRTUAL) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
<tr>
<td>DISPLAY EXIT TYPE(SUMMARY) ID(ALL</td>
<td>exitname-pattern)</td>
</tr>
</tbody>
</table>
### DISPLAY command

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays a statistical summary for transactions, datastores, and exits. Details are available on exits.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays information about the router, exit, eGroup address space, or the IMS Connect address space.</td>
</tr>
</tbody>
</table>

### Set commands to reset the journal and trace fields temporarily

This topic describes the SET commands.

The following table lists the SET commands that are used to reset the journal and trace fields in the IMS Connect address space temporarily.

The changes are only made in memory and are lost when IMS Connect is reloaded.

### IMS Connect Set command

<table>
<thead>
<tr>
<th>SET command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET JOURNAL STATE(OFF</td>
<td>ON) ID(type,...)</td>
</tr>
<tr>
<td>SET JOURNAL STATE(OFF</td>
<td>ON) ID(ALL)</td>
</tr>
<tr>
<td>SET JOURNAL STATE(OFF</td>
<td>ON)</td>
</tr>
<tr>
<td>SET JOURNAL STATE(SWITCH)</td>
<td>Closes the active journal file. Any processing that is done starts the next journal.</td>
</tr>
<tr>
<td>SET command</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>SET TRACE STATE(OFF</td>
<td>ON) ID(type,...)</td>
</tr>
<tr>
<td>SET TRACE STATE(OFF</td>
<td>ON) ID(ALL)</td>
</tr>
<tr>
<td>SET TRACE STATE(OFF</td>
<td>ON)</td>
</tr>
<tr>
<td>SET EXIT TYPE(ROUTER) ID(exitname) STATE(ACTIVE</td>
<td>INACTIVE)</td>
</tr>
<tr>
<td>SET EXIT TYPE(ROUTER) ID(exitname) CLIENT(String 1</td>
<td>String 2) STATE(ACTIVE</td>
</tr>
<tr>
<td>SET EXIT TYPE(EXIT) ID(exitname) CLIENT(String 1</td>
<td>String 2) STATE(ACTIVE</td>
</tr>
<tr>
<td>SET FILTER ID(name) ACTion(ADD) TYPE(TRAN</td>
<td>EVNT</td>
</tr>
<tr>
<td>SET FILTER ID(name) ACTion(REPlace) TYPE(TRAN</td>
<td>EVNT</td>
</tr>
<tr>
<td>SET FILTER ID(name) ACTion(DELete)</td>
<td>deletes a filter. You must specify the ID of an existing filter. If you specify the ID of a filter that does not exist, an error will result.</td>
</tr>
<tr>
<td>SET FILTER ID(name) STATE(ACTive</td>
<td>INACTive)</td>
</tr>
<tr>
<td>SET ROUTER TYPE(OPTIONS) RDBMEMB(new-rdbmember) AFMG(TACTIVE</td>
<td>INACTIVE) LBMGT(ACTIVE</td>
</tr>
<tr>
<td>SET ROUTER TYPE(AFFINITY) ID(label) STATE(ACTIVE</td>
<td>INACTIVE) DEST(datastore)</td>
</tr>
<tr>
<td>SET ROUTER TYPE(DATASTORE) ID(datastore) STATE(ACTIVE</td>
<td>INACTIVE) LOAD(1-100)</td>
</tr>
</tbody>
</table>
Reload command (exits and options)

This topic describes the reload command.

The following table lists the **RELOAD** exits and options commands.

**IMS Connect Reload command**

<table>
<thead>
<tr>
<th>RELOAD command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• RELOAD OPTIONS TYPE(ROUTER) ID(name)</td>
<td>Reloads router, exit, eGroup, and IMS Connect options</td>
</tr>
<tr>
<td>• RELOAD OPTIONS TYPE(EXIT) ID(name)</td>
<td></td>
</tr>
<tr>
<td>• RELOAD OPTIONS TYPE(EGROUP) ID(name)</td>
<td></td>
</tr>
<tr>
<td>• RELOAD OPTIONS TYPE(CONNECT) ID(name)</td>
<td></td>
</tr>
<tr>
<td>• RELOAD EXIT TYPE(SECURITY) ID(exitname)</td>
<td>Reloads customer security exitreloads customer message exit</td>
</tr>
<tr>
<td>• RELOAD EXIT TYPE(MESSAGE) ID(exitname)</td>
<td></td>
</tr>
<tr>
<td>• RELOAD EXIT TYPE(TABLES) ID(exit-name)</td>
<td></td>
</tr>
</tbody>
</table>

Reset command (Security and Stats)

This topic describes the reset command.

The following table lists the **RESET** Security and Stats commands.

**IMS Connect RESET command**

<table>
<thead>
<tr>
<th>RESET command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESET SECURITY TYPE(PROFILES)</td>
<td>Resets the security profiles</td>
</tr>
<tr>
<td>• RESET STATS TYPE(EXIT) ID (ALL</td>
<td>pattern)</td>
</tr>
<tr>
<td>• RESET STATS TYPE(TRAN) ID (ALL</td>
<td>pattern)</td>
</tr>
<tr>
<td>• RESET STATS TYPE(DATASTORE) ID(ALL</td>
<td>pattern)</td>
</tr>
<tr>
<td>• RESET STATS TYPE(ALL) ID(ALL</td>
<td>pattern)</td>
</tr>
</tbody>
</table>

List commands

This topic describes the list commands.

The following table lists the LIST commands that are used to display a list of clients currently active in IMS Connect and the associated information about the clients.

**IMS Connect MVS operator LIST commands**
LIST command Description

| LIST CLIENT TYPE (All) ID( id) PORT( port) | Displays a list of the active clients and other information about the active clients.  
| | The list can be filtered to display active clients by client ID or on specific IMS Connect ports.  
| | The output of this command displays the information for one or more active clients in a more detailed format than the one-line summary list.  |
| LIST CLIENT TYPE ( Summary) ID ( id) PORT( port) | Displays a list of the active clients and other information about the active clients.  
| | The list can be filtered to display active clients by client ID or on specific IMS Connect ports.  
| | The output of this command displays the information for one or more active clients in a one-line summary format.  |

EXEC commands

For more information about these IMS Connect z/OS commands, see the appropriate IBM IMS commands manual.

Trace and journal data

This section discusses Energizer for IMS Connect trace data, how to view the trace data by using the console and by using the ISPF interface, and how to interpret trace and journal data. The section covers the following topics:

- Example of diagnostic trace (see page 285)
- Ensuring that tracing is active (see page 286)
- Starting transaction tracing (see page 287)
- Limiting the number of trace records displayed (see page 288)
- Interpreting trace data (see page 290)
- Interpreting journal data (see page 297)

Example of diagnostic trace

This section shows an example of how a diagnostic trace can help you see what is happening to a transaction.

In this example, a test IMS Connect (started task IPRITOC), and an Energizer eLink address space (started task IPRLINK) were started. You could use this trace to verify that a new client or customer user message exit is functioning properly. Most commands can be performed by using the console or the MVS Operator commands.
You can use the diagnostic trace with a production IMS Connect just as easily, but the input and output messages may not be contiguous as shown in this example. All trace records contain the SVT address in the first word. All records for a transaction will have the same SVT address.

Ensuring that tracing is active

Use the Energizer ISPF interface, the console, or MVS Operator commands to ensure that tracing is active.

To use Energizer with the ISPF interface

1. From the Energizer Primary Menu, select Energizer Commands, and press Enter.
2. Select Trace and Journal commands, and press Enter.
3. Select option 6, Set Trace State(On) Id(*), and press Enter.

To use the console

1. Right-click the IMS Connect name and choose Execute Command.
2. The Energizer Command window is displayed.
3. Select Set from the Command drop-down list box.
4. Select Trace from the Keyword drop-down list box.
5. Select ALL from the ID drop-down list box.
6. Select On from the State drop-down list box.
7. Click Execute.

To use the MVS operator command

1. Issue the 'F IPRLINK,CON DISPLAY TRACE' command.
2. If tracing is not active, issue the 'F IPRLINK,CON SET TRACE STATE(ON)' command.

In the following figure, transaction (TRAN) tracing is on, but no trace records are captured because IMS Connect has just started.

FIRPLINK,CON DISPLAY TRACE output sample

<table>
<thead>
<tr>
<th>BMCIPA1103I</th>
<th>CON DISPLAY TRACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCIPA1010I</td>
<td>Output from origin system IPRITOC@SYSA</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>TRACE STATUS= ON CURRENT MERGED SEQUENCE= 000900</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>JOURNAL STATUS= ON CURRENT DD= JOURNAL1 CURRENT SEQUENCE= 000079</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>--TYPE-- --TRACE(SEQUENCE)-- --JOURNAL-STATUS--</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>ACTL ON( 000002) ON</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>CMDS ON( 000001) ON</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>COMP ON( 000023) ON</td>
</tr>
</tbody>
</table>
Starting transaction tracing

Starting transaction tracing can be performed by using the Energizer ISPF interface, the console, or MVS operator commands.

To use Energizer with the ISPF interface

1. From the Energizer Primary Menu, select Energizer Commands, and press Enter.
2. Select Trace and Journal commands, and press Enter.
3. Select option 6, Set Trace State(On) Id(*), and press Enter.

To use the console

1. Right-click the IMS Connect name and choose Execute Command.
2. The Energizer Command window is displayed.
3. Select Set from the Command drop-down list box.
4. Select Trace from the Keyword drop-down list box.
5. Select TRAN from the ID drop-down list box.
6. Select On from the State drop-down list box.
7. Click Execute.
   The client starts and issues a 'PART AN960C10' transaction to datastore 'IMSA'.
8. To ensure transaction tracing is on, reissue the display trace command.
   a. Right-click the IMS Connect name and choose Execute Command.
   b. The Energizer Command window is displayed.
   c. Select Display from the Command drop-down list box.
   d. Select Trace from the Keyword drop-down list box.
   e. Select TRAN from the Type drop-down list box.
   f. Click Execute.
To use an MVS operator command

1. Enable TRAN tracing by using the following command:
   
   ```
   F IPRLINK,CON SET TRACE STATE(ON) ID(TRAN)
   ```

   The client starts and issues a 'PART AN960C10' transaction to datastore 'IMSA' as shown in the following figure.

   ```
   F IPRLINK,CON DISPLAY TRACE output sample
   ```

   ```
   BMCIPA1103I CON DISPLAY TRACE
   BMCIPA1010I Output from origin system IPRITOC@SYSA
   BMCIPA1011I TRACE STATUS= ON CURRENT MERGED SEQUENCE= 001119
   BMCIPA1011I JOURNAL STATUS= ON CURRENT DD= JOURNAL1 CURRENT SEQUENCE= 000121
   BMCIPA1011I --TYPE-- --TRACE(SEQUENCE)-- --JOURNAL-STATUS--
   BMCIPA1011I ACTL ON(000002) ON
   BMCIPA1011I CMDS ON(000002) ON
   BMCIPA1011I COMP ON(000023) ON
   BMCIPA1011I ERRS ON(000000) ON
   BMCIPA1011I HIST ON(000000) ON
   BMCIPA1011I SECS ON(000009) ON
   BMCIPA1011I STAT ON(000000) ON
   BMCIPA1011I TRAN ON(000010) ON
   BMCIPA1011I XCFC ON(000008) ON
   BMCIPA1011I DISP ON(MERGED) ON
   BMCIPA1011I JRNL ON(MERGED) --
   BMCIPA1011I LTCH ON(MERGED) ON
   BMCIPA1011I STRG ON(MERGED) ON
   BMCIPA1011I TIMR ON(MERGED) ON
   BMCIPA1099I Command processing complete
   ```

2. To ensure that tracing is on, reissue the display trace command.

   ```
   F IPRLINK,CON DISPLAY TRACE
   ```

   **Note**

   The transaction (TRAN) trace has captured 10 trace records. A normal transaction generates 10 trace records.

Limiting the number of trace records displayed

Limiting the number of trace records displayed can be done by using the console or MVS operator commands LIMIT(nn) parameter.

By default, only the last ten records are displayed.
For more information about reading trace records, see Trace and journal options (see page 210).

To use the Energizer ISPF interface

1. From the Energizer Primary Menu, select Energizer Commands, and press **Enter**.
2. Select Trace and Journal commands.
3. Enter the following information:
   - For Trace/Journal Type, enter TRAN.
   - Enter the Trace Id.
   - Enter the Limit Count.
4. Select option 6, **Set Trace State(On) Id(*)**, and press **Enter**.
   The trace data is displayed.

To use the console

1. Right-click the IMS Connect name and choose **Execute Command**.
2. The Energizer Command window is displayed.
3. Select **Display** from the **Command** drop-down list box.
4. Select **Trace** from the **Keyword** drop-down list box.
5. Select **TRAN** from the **Type** drop-down list box.
6. Enter the trace ID in the **ID** field.
7. Enter a limit in the **Limit** field.
8. Click **Execute**.
   The trace data is displayed.

To use MVS operator commands

1. Use the following MVS operator command to display trace records:
   
   ```
   F IPRLINK,CON DISPLAY TRACE TYPE(TRAN)
   ```

   The trace output is shown the following figure. Comments are interwoven describing the trace records.

   **F IPRLINK,CON DISPLAY TRACE TYPE(TRAN) output sample**

   ```
   BMCIPA1103I CON DISPLAY TRACE TYPE(TRAN)
   BMCIPA1010I Output from origin system IPRITOC@SYSA
   BMCIPA1011I TRACE TYPE TRAN STATUS = ON SEQUENCE 000001- 000010
   BMCIPA10111
   ```

2. To capture trace information to the journal and print it later, use the journal print utility.
Interpreting trace data

This section discusses sample trace records and how to interpret them.

For more information about obtaining trace records, see Trace and journal options (see page 210).

The trace records in this example were created from a commit mode 1 PART transaction without confirmation.

**ID=READ@EXP**

The first record, shown in the following figure, **ID=READ@EXP**, indicates that the **READ** function of the user exit has been invoked. The registers are shown. R0 contains the SVT address, which can be used to tie related trace records together. After the registers, the parameters that IMS Connect passed to the **READ** exit (EXPRM control block) are listed.

+0, shown in the following figure, is the start of the control block that is mapped by the IBM macro HWSEXPRM.

**ID=READ@EXP output sample**

```
BMCIPA1011I  SEQ  000001.  ID=READ@EXP  TCB=671E88  TIME= 18:38:48.194247  2006.005
BMCIPA1011I  R0-R3  1C05CCD0 00000048 1CFB30CC 00000000  *.................*
BMCIPA1011I  R4-R7  1CA749E8 7F380A24 9C15236C 1C05CCD0  *.x.Y............*
BMCIPA1011I  R8-R11 1CFAB898 7F380858 9C137E20 1CFB3084  *...q''''''''..d*
BMCIPA1011I  R12-15 1C152C6C 7F380E8C 9C1523E8 1C152C6C  *...%........Y%*
BMCIPA1011I  +0000  D9C5C1C4 1CFABB8C 1C001018 1CFB3080  *READ................*
BMCIPA1011I  +0010  00000079 1CFB4040 000002AB 80000000  *...`..  ........*
BMCIPA1011I  +0020  E3C1C3C6 C9C44040 00020509 7F000001  *TACFID .......*  
BMCIPA1011I  +0030  1C05CCD0  
BMCIPA1011I  +0030  1C05CCD0  
```

**ID=READ@MSG**

**ID=READ@MSG**, contains the message that was received from the client with the IRM header that IMS Connect requires.

+0 contains the SVT address, which can be used to tie related trace records together.

+4 contains the length of the message.

+8 is the start of the IRM control block that is mapped by the IBM macro HWSIMSCB.

+68 is the start of the actual IMS segment.

⚠️ **Note**
For security purposes, any non-blank password field is replaced in the trace with asterisks, but the remainder of the message is unchanged.

ID=READ@MSG output sample

<table>
<thead>
<tr>
<th>Offset</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0</td>
<td>&quot;VIRTUAL&quot;</td>
<td>IRM_ID (message ID)</td>
</tr>
<tr>
<td>+1C</td>
<td>'USR1'</td>
<td>IRM_CLIENTID</td>
</tr>
<tr>
<td>+28</td>
<td>'PART'</td>
<td>IRM-TRANCOD</td>
</tr>
</tbody>
</table>

The following table lists some of the fields that you will find in this trace record.

Descriptions of several offsets found in trace record ID=READ@MSG

For more information about the other fields, see the mapping macro.

ID=READ@SVT

Record ID=READ@SVT, shown below, contains abend debugging information.

+0 contains the SVT address, which can be used to tie related trace records together.

The remainder of the record contains the SVT (starting at +4) and the CTTOKEN (starting at +8C).

These are IBM control blocks. No mapping is provided.

ID=READ@SVT output sample
This topic describes the ID=READ@RET.

Record ID=READ@RET - The following figure contains status information that shows what happened in virtual and customer exits.

R0 contains the SVT address, which can be used to tie related trace records together.

+0 is the start of the EXRET section of the control block that is mapped by the IBM macro HWSEXPRM.

+18 is the start of the MXWATRC section of the control block that is mapped by the macro $IPRHMXW. (This macro is located in the IPRSAMP library.)

ID=READ@RET output sample

The following table lists some of the fields that you will find in this trace record.

Descriptions of offsets found in trace record ID=READ@RET
<table>
<thead>
<tr>
<th>Offset</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>0</td>
<td>RETCODE - Final return code from exit processing</td>
</tr>
<tr>
<td>+0004</td>
<td>0</td>
<td>RSNCODE - Final reason code from exit processing</td>
</tr>
<tr>
<td>+0008</td>
<td>549</td>
<td>DATALEN - Length of data returned from exit</td>
</tr>
<tr>
<td>+0010</td>
<td>USR1</td>
<td>CLID - client ID set by exit</td>
</tr>
<tr>
<td>+0018</td>
<td>0</td>
<td>Return code from READ customer exit (if any)</td>
</tr>
<tr>
<td>+001C</td>
<td>0</td>
<td>Return code from governor (non-zero means rejected)</td>
</tr>
<tr>
<td>+0020</td>
<td>0</td>
<td>Return code from router (non-zero means rejected)</td>
</tr>
<tr>
<td>+0028</td>
<td>PART</td>
<td>Transaction code used by affinity manager</td>
</tr>
<tr>
<td>+0030</td>
<td>USR1</td>
<td>UserID used by affinity manager</td>
</tr>
<tr>
<td>+0038</td>
<td></td>
<td>Group used by affinity manager</td>
</tr>
<tr>
<td>+0040</td>
<td>USR1</td>
<td>Client ID used by affinity manager</td>
</tr>
<tr>
<td>+0048</td>
<td>*VIRTUAL</td>
<td>Client string used by affinity manager</td>
</tr>
<tr>
<td>+0050</td>
<td></td>
<td>Datastore from client used by affinity manager</td>
</tr>
<tr>
<td>+0058</td>
<td>4676</td>
<td>Port used by affinity manager</td>
</tr>
<tr>
<td>+0060</td>
<td></td>
<td>Lterm used by affinity manager</td>
</tr>
<tr>
<td>+0070</td>
<td>IMSA</td>
<td>Name of preferred data source</td>
</tr>
<tr>
<td>+007C</td>
<td>8</td>
<td>Number of acceptable Datastores after affinity check</td>
</tr>
<tr>
<td>+0080</td>
<td>IMSA</td>
<td>Datastore set by router</td>
</tr>
</tbody>
</table>

For more information about the other offsets, see the mapping macro.

**ID=READ@OUT**

ID=READ@OUT, shown below, contains the message that was edited by the exit and returned to IMS Connect so it could be sent to the datastore.

The message begins with the OTMA header. (The BPE header is not included in the trace.) Because trace records are limited in size, this message is often truncated. The actual PART transaction has been truncated; it appears at the end of the message after the header. If journaling is active, the entire message is placed in the journal.

+0 contains the SVT address, which can be used to identify related trace records.

+4 is the start of the OTMA headers that are mapped by the IBM macro HWSOMPFX.

**ID=READ@OUT output sample**

```
BMCIPA101I SEQ 000005. ID=READ@OUT TCB=671E88 TIME= 18:38:48.200427 2006.005
```
**ID=XMIT@EXP**

This record indicates that the XMIT function of the user exit has been invoked.

The registers are shown. R0 contains the SVT address, which can be used to tie related trace records together. After the registers, the parameters that IMS Connect passed to the XMIT exit (EXPRM control block) are listed.

+0, shown below, is the start of control block that is mapped by the IBM macro HWSEXPRM.

**ID=XMIT@EXP output sample**

```
BMCIPA1011I SEQ 000006. ID=XMIT@EXP TCB=671E88 TIME= 18:38:48.207629  2006.005
BMCIPA1011I R0-R3  1C05CCDO 1CFAC000 1CFB3040 1CA71790   *............x.*
BMCIPA1011I R4-R7  1CA749E8 7F32E3AC 9C15236C 1C05CCD0   *.x.Y'.T....%....*
BMCIPA1011I R8-R11 1CFAA5B0 7F32E1E0 9C137E20 1CFB4080   *...v.'../..=... .*
BMCIPA1011I R12-15 1C1532EA 7F32E814 9C152546 1C1532EA   *....'.Y.........*
BMCIPA1011I +0000  E7D4C9E3 1CFAA800 1C001018 1CFB4080   *XMIT..y........ .*
BMCIPA1011I +0010  000034E1 CFBB3080 0000038E 80000000   *....*.............*
```

**ID=XMIT@MSG**

This topic describes the ID=XMIT@MSG.

Record ID=XMIT@MSG, shown below, contains the message that was received from the datastore. This message includes the OTMA header and will usually be truncated in the trace.

+0 contains the SVT address, which can be used to identify related trace records.

+4 is the start of the OTMA headers that are mapped by the IBM macro HWSOMPFX.
**ID=XMIT@MSG output sample**

BMCIPA1011I SEQ 000007. ID=XMIT@MSG TCB=671E88 TIME= 18:38:48.207629 2006.005
BMCIPA1011I +0000 1C05CCD0 01800000 0000F0F0 F0F0F0F6 *...........00046*
BMCIPA1011I +0010 F7F680F0 00000002 00000000 00000000 *76.0.............*
BMCIPA1011I +0020 00010000 00481020 00040404 40404040 *.............*
BMCIPA1011I +0030 40400000 00000000 00000000 00000000 *................*
BMCIPA1011I +0040 00000000 0000BE2B 62964967 *................*
BMCIPA1011I +0050 D2030000 00000000 00000000 00000000 *................*
BMCIPA1011I +0060 00004040 40404040 40400000 006AC60A *.............*
BMCIPA1011I +0070 0902C4C7 E6F84040 40400903 40404040 *..USR1 ....*
BMCIPA1011I +0080 40404040 00000000 00000000 00000000 *................*
BMCIPA1011I +0090 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I +00A0 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I +00B0 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I +00C0 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I +00D0 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I

**ID=XMIT@SVT**

Record ID=XMIT@SVT contains debugging information.

+0, shown below, contains the SVT address, which can be used to identify related trace records.

The remainder of the record contains the SVT (starting at +4) and the CTTOKEN (starting at +8C).

**ID=XMIT@SVT output sample**

BMCIPA1011I SEQ 000008. ID=XMIT@SVT TCB=671E88 TIME= 18:38:48.207630 2006.005
BMCIPA1011I +0000 1C05CCD0 E2E5E340 F0F0F0F0 F4F6F7F6 *SVT 0004676*
BMCIPA1011I +0010 E4E2D9F1 40404040 BE2B6296 4709D209 *USR1 ......RK.*
BMCIPA1011I +0020 00000000 1C060DE8 1CC987E8 0001B918 *........Y.IgY.....*
BMCIPA1011I +0030 1CFAC000 1CC86000 E7D4C9E3 00802C00 *...H-..XMIT.....*
BMCIPA1011I +0040 00000000 00000000 00000000 00000000 *................*
BMCIPA1011I +0050 00000000 1C0786E0 BE2B6296 C9D4E2C1 *......f/...IMA*
BMCIPA1011I +0060 40404040 1CB0DC48 1C05AE78 00000000 *A .............*
BMCIPA1011I +0070 00000000 BE2B6296 4B27D2CE 00000000 *......O.K.......
BMCIPA1011I +0080 00000000 BE2B6296 4967D203 1E3CD7C3 *......O.K.TCPC*
BMCIPA1011I +0090 1CC86000 00000000 1C0F9110 1CC93000 *...H-.......I...*
BMCIPA1011I +00A0 9C0A0A18 12440000 0001A000 00000000 *................*
BMCIPA1011I +00B0 00205009 7F000001 E4E2D9F1 40404040 *...USR1 .....*
BMCIPA1011I +00C0 C8E6E2E5 C9D9E3F0 1C152240 000002AB *HWSVIRT0.......
BMCIPA1011I

**ID=XMIT@RET**

This topic describes the ID=XMIT@RET.
Record ID=XMIT@RET contains status information that shows what happened in virtual and customer exits.

R0 contains the SVT address, which can be used to tie related trace records together.

+0 is the start of the EXRET section of the control block that is mapped by the IBM macro HWSEXPRM.

+18 is the start of the MXWATRC section of the control block that is mapped by the BMC software macro $IPRHMXW.

**ID=XMIT@RET output sample**

The following table lists some of the fields that you will find in this trace record.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0</td>
<td>0</td>
<td>RETCODE--return code from XMIT processing</td>
</tr>
<tr>
<td>+4</td>
<td>0</td>
<td>RSNCODE--reason code from XMIT processing</td>
</tr>
<tr>
<td>+8</td>
<td>296</td>
<td>DATALEN--length of data returned from exit</td>
</tr>
</tbody>
</table>

For more information about the other fields, see the mapping macro.

**ID=XMIT@OUT**

Record ID=XMIT@OUT, shown below, contains the message that was edited by the exit and returned to IMS Connect so it could be sent to the client. This message normally has the OTMA header stripped off and just displays the output from IMS. In this case, it is the response from the PART transaction describing part AN960C10. (The data is truncated.)
+0 contains the SVT address, which can be used to tie related trace records together.

+4 is the start of the message that was edited by the exit and returned to IMS Connect so it could be sent to the client.

**ID=XMIT@OUT output sample**

<table>
<thead>
<tr>
<th>BMCIPA1011I</th>
<th>SEQ 000010. ID=XMIT@OUT TCB=671E88 TIME= 18:38:48.207644 2006.005</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCIPA1011I</td>
<td>+0000 1C05CCD0 00500300 40404040 40404040 <em>.....&amp;..</em></td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0010 4B404040 4040C1D5 F9F6F0C3 F1F05E40 * AN960C10;</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0030 C485A283 4B4B4B4B 4B4B4B4B 4B4B4B4B <em>Desc..............</em></td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0040 E6C1E2C8 C5D94040 40404040 40404040 <em>WASHER</em></td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0050 40404040 00440300 40404040 40404040 *                *</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0060 4040799 968340C3 9684854B 4B4B4B4B * Proc Code.....*</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0070 4B404040 40404040 40404040 F7F45E40 * 74;                *</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0080 C995A540 C3968485 4B4B4B4B 4B4B4B4B <em>Inv Code............</em></td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+0090 40404040 404040F2 00440300 40404040 * 2....                *</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+00A0 40404040 40404081 928540C4 8597A34B * Make Dept.*</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+00B0 4B4B4B4B 4B4B4B4B 4B4B4B4B *                          12-*</td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+00C0 F0F0E40 D7938195 4D9B5A5 4D5A494 <em>00; Plan Rev Num</em></td>
</tr>
<tr>
<td>BMCIPA1011I</td>
<td>+00D0 4B4B4B4B 40404040 40404040 00440300 *                   ....*</td>
</tr>
</tbody>
</table>

BMCIPA1099I Command processing complete

**Interpreting journal data**

This section discusses sample journal records and how to interpret them.

For more information about obtaining journal records, see Trace and journal options (see page 210).

The journal entries are grouped into the following sections:

- **READ**—input parameters and message
- **READ**—return values
- **READ**—output buffer
- **XMIT**—input parameters and message
- **XMIT**—return values
- **XMIT**—output buffer

The following samples are for a commit mode 1 PART transaction without confirmation. This is the same transaction for which sample trace records were displayed in the previous section. The same information is contained in journal records in a slightly different format.
In the journal, all control blocks are displayed separately, in sections. Sections from different transactions might be intermixed. Each section contains an SVT header. All messages that are part of the same transaction will have the same SVT address. In this example, the SVT address is 1405CCD0.

**READ—input parameters and message**

This topic describes the READ—input parameters and message samples.

The EXPRM control block is mapped by the IBM macro HWSEXPRM and it is passed as input to the READ exit.

**EXPRM Journal sample**

```
EXPRM AT 94FAB898 FOR HEX 0000010C BYTES (X'00' TRUNCATED)
+00000000 D9C5C1C4 1CFABB8C 1C001018 1CFB3080 ... *READ.
... ........*
+00000020 E3C1C3C6 C9C44040 00020509 7F000001 1C05CCD0 *TACFID
... .........)
```

The IRM/MSG block contains the complete message that was received from the client. The first word contains the length, followed by the IRM header, which is mapped by the IBM macro HWSIMSCB.

**IRM/MSG Journal sample**

```
IRM/MSG AT 14FB3080 FOR HEX 00000079 BYTES
+00000000 00000079 00600000 5CE5C9D9 E3E4C1D3 ... *...
*VIRTUAL.......USR1 *
+00000020 E3C1C3C6 C9C44040 00020509 7F000001 ... *
PART USR1*
+00000040 40404040 40404040 40404040 5C5C5C5C ... *
*************** *
+00000060 40404040 00110000 D7C1D9E3 40C1D5F9 * ....PART
AN960C10.... *
```

The SVT is an IBM control block, which can be used to tie related journal sections together. No mapping is provided.

**SVT Journal sample**

```
SVT AT 1405CCD0 FOR HEX 00000088 BYTES
+00000000 E2E5E340 F0F0F0F0 F4F6F7F6 C4C5D3C4 ... *SVT
0000467DELDUMMY.....RK.......
+00000020 1C060DE8 1CC987E8 0001B918 1CFAC000 ... *...Y.I.Y.....|{..H--
RECV...........
```
The CTT or CTTOKEN is an IBM control block. No mapping is provided.

**CTT Journal sample**

```plaintext
CTT      AT 94FAC000 FOR HEX 0000004C BYTES (X'00' TRUNCATED)
+00000000  E3C3D7C3 1CC86000 00000000 1C0E9110    ...
I..............*
+00000020  00000000 00205097 F000001 00000000    *
HWSVIRT0... *
+00000040  000002AB *
```

**READ—return values**

The EXRET, shown below, is a portion of the control block that is mapped by the IBM macro HWSEXPRM, which starts at label EXRET.

This area is used by the exit to return values to IMS Connect.

**EXRET Journal sample**

```plaintext
EXRET    AT 14FAB8E0 FOR HEX 00000018 BYTES
+00000000  00000000 00000000 00000225 00000000    *
USR1            *
```

The MXWA, shown below, is BMC data that is mapped by the macro $IPRHMXW. This macro is provided in the IPRSAMP data set.

**MXWA Journal sample**

```plaintext
MXWA     AT F7380A24 FOR HEX 000000F8 BYTES (X'00' TRUNCATED)
+00000000  C9D7D9C8 D487E6C1 1C05CDD0 1CFAC000    *
Y......../....*
+00000020  00000000 00000000 00000000 00000000    *
PART.....USR1...*
+00000040  00000000 00000000 E482D9F1 00000000    *
*VIRTUAL........*  +00000060  F00F0F0F0 F4F6F7F6 00000000 00000000    *
*00004676..................IMSA    *
```
READ—output buffer

This topic describes the READ—output buffer.

The SVT, shown below, is an IBM control block, which can be used to tie related journal sections together.

**SVT Journal sample**

```
SVT      AT 1405CCD0 FOR HEX 00000004 BYTES
+00000000  E2E5E340                                             *SVT
```

The OUTBUF block, shown below, contains the message that was returned to IMS Connect to be sent to the datastore. It does not include the BPE header. It starts with the OTMA headers, which are mapped by the IBM macro HWSOMPFX.

**OUTBUF Journal sample**

```
OUTBUF   AT 14FB4080 FOR HEX 000001E5 BYTES
+00000000  01400000 00000000 00000000 0000A0F0    ...          *...}....IMSA

..............
+0000000A  0E2B693E 4589AB0C 1C082748 1C082648    ...          *.............................

M.|.0....
+000000C0  1CFB4156 1CFB40DE 1CFB40EE 00000000    ...          *...... ...

....................
+000000E0  00040000 00110000                     *

SU...
```
XMIT—input parameters and message

This topic describes XMIT—input parameters and messages.

The EXPRM, shown in the following figure, is the control block that is mapped by the IBM macro HWSEXPRM, and is passed as input to the XMIT exit.

**EXPRM Journal sample**

```
EXPRM AT 94FAA5B0 FOR HEX 0000010C BYTES (X'00' TRUNCATED)
+00000000 E7D4C9E3 1CFAA800 1C001018 1CFB4080 ... *XMIT.|........ ....
+............
```

The HWSOMCTL block, shown in the following figure, is mapped by the IBM macro HWSOMPFX. This block contains the message received from the datastore, starting with the OTMA headers.

**HWSOMCTL Journal sample**

```
HWSOMCTL AT 14FB4080 FOR HEX 0000034E
BYTES
+00000000 01800000 0000F0F0 F0F0F4F6 F7F680F0 ... *......
00004676.0 ................
+00000020 00481020 00004040 40404040 40400000 ... *......
K....................... *
+00000040 00000000 0000BE2B 62964967 D2030000 ... *.........
K....................... *
+00000060 40404040 40400000 006AC60A 0902C4C7 ... * ..F...USR1
.. *
+00000080 00000000 00000000 00000000 00000000 ... *
+000000A0 00000000 00000000 00000000 00000000 ... *
*........................
+000000C0 00000000 00000000 00000000 00000000 ... *..............
IMSA DG*
+000000E0 E6F84040 404000F0 F0F0F4F6 F7F6BE2B ... *W8 00004676.....
```

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The SVT, shown in the following figure, is an IBM control block, which can be used to tie related journal sections together. No mapping is provided.

**SVT Journal sample**

```plaintext
SVT AT 1405CCD0 FOR HEX 00000088 BYTES
+00000000 E2E5E340 F0F0F0F0 F4F6F7F6 E4E2D9F1 ... *SVT 00004676USR1
......RK......
+00000020 1C060DE8 1CC987E8 0001B918 1CFAC000 ... *...Y.I.Y.....}.{R-.
XMIT.......*
+00000040 00000000 00000000 00000000 00000000 ... *..............
/....IMA*
```
The CTT or CTTOKEN, shown in the following figure, is an IBM control block. No mapping is provided.

**CTT Journal sample**

```
+00000060 1CB0DC48 1C05AE78 00000000 19000000 ... *......................
K............*
+00000080 BE2B6296 4967D203 *......
K. *
```

**XMIT—return values**

The SVT, shown below, is an IBM control block, which can be used to tie related journal sections together. No mapping is provided.

**SVT Journal sample**

```
SVT AT 1405CCD0 FOR HEX 00000004 BYTES (X'00' TRUNCATED)
+00000000 E3C3D7C3 1CC86000 00000000 1C0E9110 ... *TCPC.H-..........
I.............*
+00000020 00000000 00020509 7F000001 E4E2D9F1 ... *......'...USR1
HWSVIRT0... *
+00000040 000002AB *
*..... *
```

The EXRET, shown below, is a portion of the control block that is mapped by the IBM macro HWSEXPRM, which starts at label EXRET. This area is used by the exit to return values to IMS Connect.

**EXRET Journal sample**

```
EXRET AT 14FAA5F8 FOR HEX 00000018 BYTES
+00000000 00000000 00000000 000000128 00000000 ... *
*......................... *
```

The MXWA, shown below, is BMC data that is mapped by the macro $IPRHMXW. This macro is provided in the IPRSAMP data set.

**MXWA Journal sample**

```
```
XMIT—output buffer

The SVT, shown below, is an IBM control block, which can be used to tie related journal sections together. No mapping is provided. No mapping is provided.

SVT Journal sample

```
SVT      AT 1405C000 FOR HEX 00000004
BYTES
+00000000  E2E5E340
*SVT
```

The OUTBUF block, shown below, contains the message that was edited by the exit and returned to IMS Connect so it could be sent to the client. There is no mapping macro.

OUTBUF Journal sample

```
OUTBUF   AT 14FB3080 FOR HEX 00000128
BYTES
+00000000  00500300 40404040 40404040 4040D781 ... *.&.. P......... *  
+00000020  4040C1D5 F9F6FOC3 F1F05E40 C485A283 ... * AN960C10; D......... WASH* .... P.*  
+00000060  968340C3 9684854B 4B4B4B4B 4B4B4B4B 4B4B4B4B ... *.. C......... 74; I.. 
+00000080  C3968485 4B4B4B4B 4B4B4B4B 4B4B4B4B 4B4B4B4B 40404040 ... *C......... 2.... 
+000000A0  4040D481 928540C4 8597A34B 4B4B4B4B ... * M... D......... 12-00; 
+000000C0  D7938195 40D985A5 40D5A494 4B4B4B4B 4B4B4B4B ... *P... R.. N.... .... *
```
Event trace and journal data

This section discusses each event that Energizer for IMS Connect displays. Events are comprised of trace and journal data that is generated by various IBM macros. Event tracing is available in IMS Connect version 2.2 and higher. This section covers the following topics:

- Overview (event trace and journal data) (see page 305)
- Viewing event trace data (see page 305)
- Interpreting event trace data (see page 307)
- Interpreting event journal data (see page 307)

Overview (event trace and journal data)

Energizer displays event trace and journal data that is generated by various IBM macros.

Each event is documented with the offset values that the IBM macro uses. For more information about the events and the IBM macros that are used to generate these events, see the IMS Connect Guide and Reference manual.

Viewing event trace data

You can display events in the ISPF interface or the console.

For more information about activating trace, selecting events, defining the trace parameters, and interpreting trace data, see Trace and journal data (see page 285).

To view event tracing by using the ISPF interface

1. From the Energizer Primary Menu, select Query IMS Connects (option 2), and press Enter.
2. Select Events trace (option 5), and press Enter.
   The events trace panel, below, is displayed.

Sample events trace panel

```
Events Trace                   Row 1 from 100
Command ===> _______________________________________croll ===> PAGE
Commands: Locate Select SORT REFresh RESet
```
Type one or more action codes. Then press Enter.

S=Display report

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Event</th>
<th>Event type</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/02/09 11:12:32</td>
<td>62</td>
<td>User message exit return</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>74</td>
<td>Write socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>12</td>
<td>Begin close socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>13</td>
<td>End close socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>72</td>
<td>Trigger event</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>11</td>
<td>End Accept socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>10</td>
<td>Begin Accept socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>60</td>
<td>Prepare for socket read</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>73</td>
<td>Read socket</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>61</td>
<td>User message exit entered</td>
</tr>
<tr>
<td>06/02/09 11:12:32</td>
<td>62</td>
<td>User message exit return</td>
</tr>
</tbody>
</table>

3. To display a report, type an S next to the item and press Enter.

Sample Query Report

```
Query Report
Command ===> Scroll ===> 
PAGE
Commands: ROUTe
SAVE
Cols 001 132
************** Top of Data
**************
Event #010 ID=EVR0@BAS  Time: 06/02/09 11:12:32.62 Begin Accept socket
  0. 000A0000 C5E5D5E3 40404040 00280100 *....EVNT ....
  * 10. 02020001 2BF70000 00008000 00000000 *.....7..........* 20. 00000000 00000000 00000000 00000000 *.............* 30. 00000000 4CC5D6C4 6E404040 *....<eod>*
************** Bottom of Data

To view event tracing by using the console

1. Right-click the **IMS Connect name** and choose **Execute Command**.
2. The Energizer Command window is displayed.
3. Select **Display** from the **Command** drop-down list box.
4. Select **Trace** from the **Keyword** drop-down list box.
5. Select **EVNT** from the **Type** drop-down list box.
6. (optional) Enter values in the ID, Limit, and Sequence fields.
7. Click **Execute**.
Trace output is displayed.

Interpreting event trace data

This topic discusses how Energizer displays event trace data that is generated by the IBM macros.

All events begin with the following format:

+0 displays the event number in HEX format

+4 displays the event key, which is an EVNT (a single process), or an SVTOKEN address space (a multiple process related event).

All events ends with an <EOD> (end of data).

⚠️ Note

EVENTS details are described in the Energizer IMSAMP/IPRSAMP member IPR#EVNT.

Interpreting event journal data

This section discusses sample journal records and how to interpret them.

For more information about obtaining journal records, see Trace and journal options fields (see page 251).

For each trace event that is described in this section, there is a corresponding journal entry. Journal entries map events by the same method that trace entries are mapped. However, some journal entries contain larger segments of the specified control blocks. For more information about a particular event, see the event that is listed in the Interpreting event trace data (see page 307).

The following figure shows Energizer journal output for event 026.

**Energizer ISPF journal output for event #026 ID=EVR0@URI**

| IPRHEVR0: MSG EXIT INIT CALL EVENT(EVR0@URI) |
| EVENT AT 220B290C FOR HEX 00000010 BYTES |
| +00000000 001A0000 C5E5D5E3 40404040 00010012 |
| EXPRM AT 220B22B0 FOR HEX 00000080 BYTES |
| +00000000 C9D5C9E3 220B2509 213F2468 00000000 00000000 00000000 00000000 00000000 |
| +00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 |
| +00000004 00000000 00000000 00000000 00000000 00000000 00000000 5CC8E6E2 D1C1E55C 2A485753 4A41562A |
| +00000060 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 |
Operating the UIM server

This section discusses the operations that you can perform by using the UIM server, and covers the following topics:

- Overview of the UIM server (see page 308)
- Starting and stopping the UIM server (see page 308)
- Verifying that the UIM server is running (see page 309)
- Accessing the BMC UIM server Commands web page (see page 309)
- Viewing active users (see page 311)
- Changing the security authorization timeout feature temporarily (see page 311)
- Enabling or disabling the overall tracing option temporarily (see page 312)
- Enabling or disabling specific tracing options temporarily (see page 313)
- Refreshing the UIM server content (see page 314)

Overview of 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 MVS 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

Issue the following MVS operator command:

```
S uimServerName
```
uimServerName is the name of the UIM server started task.

To stop the UIM server

Issue the following MVS operator command:

\[ \text{P uimServerName} \]

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 or not by reviewing the JESMSGLG SYSOUT file.

To verify that the UIM server is running

To verify that the UIM server is running, review the \text{JESMSGLG SYSOUT} file for the following messages:

- \text{BMC340290I UIM server, Level V.R.MM MM,DD,YY, initialization complete!}
- \text{BMC340122I Ready for MVS Operator Commands}

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.

\text{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>
</tbody>
</table>
### ALLOW_NETCMD setting | Description
---|---
**YES** | The BMC UIM server Commands web page is enabled.
**AUTH** | 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.

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 (see page 310).

**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://sysco: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://sysco: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
   http:// uimServerHostName : uimPortNumber /UIMLogoff
   ```

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 To access the BMC UIM server Commands web page (see page ).
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.

### Changing the security authorization timeout feature temporarily

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 To access the BMC UIM server Commands web page (see page).
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 temporarily

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 To access the BMC UIM server Commands web page (see page).
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 temporarily

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 To access the BMC UIM server Commands web page (see page ).
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.

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 To access the BMC UIM server Commands web page (see page ).
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.

Questions and Scenarios

This section answers the following user questions about Energizer.

- Is it possible to issue Energizer commands IMS commands and transactions in batch mode? See Issuing commands in batch mode (see page 314).
- When using IVTN0 as a sample transaction and entered as part of the transaction input: Why does the ISPF IVP function not provide trailing blanks (space) x40? See Using a period to end an input string (see page 315).
- How does the Energizer ISPF interface communicate with IMS Connect? See Communication between Energizer and IMS Connect (see page 315).

Issuing commands in batch mode

BMC Software provides a CLIST located in the IPRSAMP library called IPRTCPIC which you can use to issue IMS commands and Energizer commands.

This CLIST also has the ability to issue IMS transactions to allow you to test the IMS Connect functionality. The IPRTCPIC CLIST contains documentation on how to use the CLIST.

BMC also provides a sample JCL (IPRCNTL library member IPR#REXX) that gives examples on how to invoke IPRTCPIC CLIST in batch mode.
Using a period to end an input string

You must use a period to end the input string with the number of blanks you need in your input string as seen in this example:

| Type the message(s) and select options. Then press Enter. |
|------------------|------------------|
| IVTNO DISPLAY LAST4 . <= use a period |

Communication between Energizer and IMS Connect

BMC Software uses an internal IMS Connect exit called IPRCMDS0 for communication between the Energizer ISPF interface and IMS Connect.

If you want to invoke the ISPF interface, use the provided sample CLIST IPRCI@00 located in the IPRSAMP library. For more information on how to install the ISPF Interface, see Quick Start — Using Energizer with the ISPF interface (see page 18).

If this is an upgrade of an existing installation of Energizer prior to version 1.2.04 that did not include the ISPF interface, you can still use your existing options library. However, IPRCMDS0 needs to be added to your existing library.

If you do not have an existing options library, IPRCMDS0 needs to be added to your NEW EXITS Options member.

The following instructions show you how to add IPRCMDS0 to your library.

To add IPRCMDS0:

1. Select the Exits Member from the Configuration Menu.
2. Enter I (for insert of a new EXIT) on the command line.
3. Select option 6 to create the IPRCMDS0 exit.
4. To save the information and exit, press END.
   An updated Configuration panel is displayed.
5. On the Configuration panel, select the IMS Connect Option members that use this Exit Options and reload the IMS Connect Options dynamically.
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