Cross-System Image Manager
User Guide

Supporting

Cross-System Image Manager version 1.3

August 2010
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- order or download product documentation
- download products and maintenance
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Before contacting BMC

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

- product information
  - product name
  - product version (release number)
  - license number and password (trial or permanent)

- operating system and environment information
  - machine type
  - operating system type, version, and service pack or other maintenance level such as PUT or PTF
  - system hardware configuration
  - serial numbers
  - related software (database, application, and communication) including type, version, and service pack or maintenance level

- sequence of events leading to the issue

- commands and options that you used

- messages received (and the time and date that you received them)
  - product error messages
  - messages from the operating system, such as file system full
  - messages from related software
License key and password information

If you have questions about your license key or password, use one of the following methods to get assistance:

- Send an e-mail message to customer_support@bmc.com.
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About this book

This book contains detailed information about the Cross-System Image Manager (XIM) technology.

Like most BMC documentation, this book is available in printed and online formats. To request printed books or to view online books and notices (such as release notes and technical bulletins), see the Customer Support website at http://www.bmc.com/support. Most product shipments also include the books on a documentation CD.

**NOTE**

Online books are formatted as PDF or HTML files. To view, print, or copy PDF books, use the free Adobe Reader from Adobe Systems. If your product installation does not install the reader, you can obtain the reader at http://www.adobe.com.

The software also offers online Help. To access Help, press F1 within any product or click the Help button in graphical user interfaces (GUIs).

Conventions

This book uses the following special conventions:

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

- Variable text in path names, system messages, or syntax is displayed in *italic* text:

  testsys/instance/fileName

- The symbol => connects items in a menu sequence. For example, **Actions => Create Test** instructs you to choose the Create Test command from the Actions menu.
Syntax statements

The following example shows a sample syntax statement:

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

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

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

The following figure shows the standard format for syntax diagrams:

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

- Read diagrams from left to right and from top to bottom.

- A recursive (left-pointing) arrow above a stack indicates that you may choose more than one item in the stack.

- An underlined item is a default option.

- If a diagram shows punctuation marks, parentheses, or similar symbols, you must enter them as part of the syntax. Asterisks are exceptions. An asterisk in a diagram indicates a reference note.

- In general, MVS commands, keywords, clauses, and data types are displayed in uppercase letters. However, if an item can be shortened, the minimum portion of the MVS command or keyword might be displayed in uppercase letters with the remainder of the word in lowercase letters (for example, CANcel).

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

Summary of changes

This section summarizes changes to the functionality of the product, listing the changes by product version and release date. The summary includes enhancements to the product and any major changes to the documentation.

Revision bars are used in this book to note changes that clarify or correct existing information or that provide new information related to product changes. Revision bars are not used to note editorial and formatting changes or typographical errors that have been corrected unless these updates significantly affect the use of the information.

Version 1.3  August 2010

Removed Chapter 3, "Messages." The following documents now include the messages for Cross-System Image Manager:

- Administrative Products for DB2 Messages Manual
- Database Products for IMS Messages Manual
Version 1.3.00  March 30, 2001

- With this release, XIM now supports the JES3 environment in addition to the JES2 environment. The addition of JES3 support adds no additional programming requirements for the end user. XIM will detect the execution in a JES3 environment and will invoke the new procedures accordingly.

- It is now possible for the XIM-enabled BMC Software utility to override the accounting field for the UOW. Currently, the accounting field built for the UOW is copied from the job statement for the currently executing job. With this change, the utility may supply a replacement accounting field, which will be used in place of the one from the job statement for the currently executing job.

- “Issuing MVS console commands” on page 24 has been updated as follows:
  - Changed the description of the MVS STATUS command, which displays information about an XIM sysplex.

- Chapter 3, "Messages" has been updated as follows:
  - Messages BMC95052W and BMC95053E have been added to inform the user of internal INIT_PROC task start failures.
  - Message BMC95811E has been added to inform the user that a session type other than a UOW_TARGET session cannot be started from an XJS initiator.
  - New error messages have been added that are returned to the caller only when the MSGAREA= and MSGLENGTH= parameters are supplied on the XIMBJDPL macro. These messages include BMC95812E and BMC95450E through BMC95466E.

Version 1.2.00  June 30, 2000

- Chapter 2, “Using XIM” has been updated as follows:
  - Added the minimum lengths for XIM console commands.
  - Added a new XIM console command, DUMPLIMITS, to prevent multiple dumps from being generated when they are not needed.
  - Added a warning about using the MVS CANCEL command (instead of the QUIESCE IMMEDIATE command).
  - Added a new console command, VERSION, to determine the version of your XIM started task.
Chapter 3, "Messages" has been updated as follows:

— BMC95006E explains what happens when XIM discovers another XIM task running in the sysplex at a different version level and for a longer period of time.

— BMC95007W explains what happens when XIM version 1.2.00 or greater discovers another version of XIM that is running at a lower release level and for a lesser amount of time.

— BMC95055E explains XIM abend error recovery.

— BMC95187I explains XIM dump limits.

— BMC98570W and BMC98571I explain the results of issuing the MVS CANCEL command.

— BMC95615 and BMC95616 explain what happens when a named data set could not be allocated by data set services.

Appendix A, “Installation” has been updated as follows:

— Added a syntax rule that comments must be preceded by an asterisk.

— Added three new parameters to the XIM parameter library, DUMPLIMIT_TCB, DUMPLIMIT_SRBI, and DUMPLIMIT_API.

Version 1.1.00  June 30, 1999

Chapter 2, “Using XIM” has been updated as follows:

— “Using XIM data set tracing” on page 30 was added to explain XIM data set tracing.

Chapter 3, "Messages" has been updated as follows:

— The XIM C API error messages were added (BMC95700E-BMC95711E and BMC95731E-BMC95746E).

— The security facility messages were removed (BMC95275E-BMC96280W).

— BMC95005E was added to explain an input parameter error.
Introduction

This chapter explains what the Cross-System Image Manager (XIM) is and how it works. This chapter contains the following topics:

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XCF Services ............................................................... 18

What is XIM?

The Cross-System Image Manager (XIM) technology provides sysplex performance improvements by enabling the distribution and management of discrete units of work (UOW) across one or more MVS systems. BMC Software utility products that exploit XIM can divide single, long-running tasks into multiple parallel tasks to be run across multiple machines in the sysplex, decreasing the overall elapsed time.

XIM provides the following key features:

- automatically distributes workload previously performed in a single utility step across multiple MVS images
- performs dynamic and reactive workload balancing, based on processor speed and resource usage

XIM provides the following benefits:

- reduces the amount of time required to complete utility functions
- increases application availability by reducing the time required to complete utility tasks (minimizing the time your applications are offline)
- optimizes the use of hardware, software, and personnel through workload balancing

- lets you exploit parallel processing for database utility tasks

XIM executes as a separate MVS started task (or as a job step task in a utility address space) and must be started on each MVS/ESA image that will be used to execute distributed utility processes. XIM uses XCF to locate and connect to other instances of itself within your MVS/ESA sysplex. XIM will, by default, distribute any number of utility processes across all known XIM images.

XIM provides a messaging facility that permits the processes to exchange information during execution. This message traffic is managed by XIM through a session that is initiated by the utility process.

XIM uses an event-driven, message-based application programming interface (API). The API reduces the amount of recoding that is necessary to exploit the facilities of IBM sysplex systems.

The architectural design of XIM provides for the use of a single copy of XIM by a product family and the concurrent use of a single copy of XIM by multiple product families.

**XCF Services**

XIM uses cross-system coupling facility (XCF) services to locate and connect to other instances of itself within a sysplex. To permit the distribution of utility processes across multiple operating system images, XCF must be executing in a multisystem environment. For more information, refer to the IBM documentation for the target operating system.

Your site has a defined limit for the number of XCF groups that can be active on a system. You must ensure that using an additional XCF group for XIM does not exceed your defined limit.

To determine whether you can add another XCF group to a system, enter the following console command:

```
DISPLAY XCF,COUPLE
```
In the resulting display, review the MAXGROUP(PEAK) and the MAXMEMBER(PEAK) fields for the primary sysplex couple data set. Use the following rules to determine whether you need to increase the XCF group and member limits:

- If the value for PEAK in the MAXGROUP(PEAK) field is at least one number less than the value for MAXGROUP, such as 20(19), another XCF group can be added and you can start XIM. If the value for PEAK matches the value for MAXGROUP, you must increase the XCF group limit for the system.

- If the value for PEAK in the MAXMEMBER(PEAK) field is at least one number less than the value for MAXMEMBER, such as 20(19), another XCF member can be added and you can start XIM. If the value for PEAK matches the value for MAXMEMBER, you must increase the XCF member limit for the system.

**NOTE**

These values are displayed only when a sysplex couple data set has been defined. When a sysplex couple data set has not been defined, the default values for XCF are used. Refer to the DEFINEDS statement in the IBM documentation.

The performance of XIM and other products can be adversely affected by limited buffer availability within XCF. You must ensure that sufficient XCF buffer space is specified for proper XIM execution. Refer to the IBM documentation.
Using XIM

This chapter provides information concerning Cross-System Image Manager (XIM) constraints, startup procedures, console commands, and data set tracing. This chapter contains the following topics:

- Introduction ................................................................. 21
- Requirements ............................................................... 23
- Limitations ................................................................. 23
- Starting XIM ................................................................. 23
- Issuing MVS console commands ....................................... 24
  - ACTIVATE .................................................................. 25
  - DUMPLIMITS .............................................................. 25
  - QUIESCE .................................................................. 26
  - SHUTDOWN ................................................................. 28
  - STATUS ...................................................................... 29
  - VERSION ................................................................. 29
- Using XIM data set tracing .................................................. 30

Introduction

XIM is initiated by BMC Software products to manage copies of various types of utilities. Copies of these various types of utilities are processed on one or more MVS images, as shown in Figure 1. A copy of the utility is known as a unit of work (UOW). Each BMC Software product determines the extent of a UOW. For example, a UOW can be the reorganization of a subset of an IMS database or the unload of a DB2 table space partition.
XIM executes as a separate MVS job or started task. You must start XIM on each image where products will use XIM as a distribution point for UOWs. XIM uses the services of the IBM cross-system coupling facility (XCF) to locate and connect to other instances of itself within your MVS sysplex. By default, XIM distributes UOWs across all known XIM images in an XIM group.

The installation process for XIM constructs the started task procedure and the initiator procedure in the HLQJCL data set (HLQ is the high-level qualifier that you choose when installing XIM). The default name of the XIM started task procedure is XIMBMC. The default name of the XIM initiator procedure is either the name you entered on the screen as the value for the INIT_PROC option or the default of XIMI. You must copy these two procedures into a procedure library recognized by your JES subsystem. For more information, see Appendix A, “Installation.”
Requirements

XIM requires the following items before it can work in your sysplex environment:

- XCF services
- MVS/ESA Version 4.3 or later (XIM execution is not supported for earlier releases of MVS/ESA)
- sufficient system linkage indexes (LXs) for your MVS subsystems (you can increase the number of available system LXs by increasing the NSYSLX value in the IEASYSxx member of PARMLIB and reissuing the initial program load or IPL procedure for your site)

For more information about system LXs, see the IBM documentation.

- identical volume definitions (for DASD or tape units) across the sysplex (a unit defined on one MVS image must be defined on all MVS images to avoid unpredictable results)

Limitations

With the introduction of XIM version 1.2, the following applies to temporary data sets utilized by UOWs. Except for what XIM interprets as a work data set, all temporary data sets that are written to by a UOW are eligible for sharing with steps subsequent to the initiating step. Work data sets, those with no data set name supplied, and a normal disposition of DELETE, are not shared between the initiating step and the UOW. Therefore, the data set used by the UOW is new and unique to the UOW and not accessible by the initiating step or any step subsequent to the initiating step. VIO data sets fall into the work data set category regardless of the specification of data set name or disposition.

Starting XIM

XIM should be started on each MVS image that will process work for a BMC Software product. To start XIM, issue the following command:

`s ximstc`

In this example, `ximstc` is the name of the XIM started task procedure (the default name of the XIM started task procedure is XIMBMC).
Issuing MVS console commands

You can issue XIM console commands from the MVS console to modify the XIM environment.

This section describes the following XIM console commands:

- ACTIVATE
- DUMPLIMITS
- QUIESCE
- SHUTDOWN
- STATUS
- VERSION

An example of how to issue the XIM console command follows each description. In the examples, ximstc indicates the XIM started task name or job name.

**NOTE**

When you issue any of the following MVS console commands check the system log to ensure that the command completed successfully. XIM responds with messages indicating that the command was initiated and completed.

Table 1 shows that each command can be abbreviated to a minimum length.

<table>
<thead>
<tr>
<th>Command name</th>
<th>Minimum length</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVATE</td>
<td>3</td>
</tr>
<tr>
<td>DUMPLIMITS</td>
<td>5</td>
</tr>
<tr>
<td>QUIESCE</td>
<td>3</td>
</tr>
<tr>
<td>SHUTDOWN</td>
<td>3</td>
</tr>
<tr>
<td>STATUS</td>
<td>4</td>
</tr>
<tr>
<td>VERSION</td>
<td>3</td>
</tr>
</tbody>
</table>

If a user abbreviates these commands to less than the specified minimum, the following error message will be displayed:

BMC 95199I XIM Command command not recognized ximJobName

This means that an invalid XIM command was issued. command is the command that was not recognized. The command is ignored. ximJobName is the XIM step name. This message is for information only.
ACTIVATE

Use the ACTIVATE command to reverse the process of the QUIESCE command and allow work to continue.

Figure 2  ACTIVATE command

ACTIVATE

ACTIVATE places XIM in normal processing status and resets any flags on the active XIM initiators so that they do not drain. XIM begins to accept work. Additional initiators are started as necessary.

Figure 3 shows an example of how to use the ACTIVATE command to reactivate an XIM subsystem and reverse the QUIESCE command.

Figure 3  Example of ACTIVATE command

F ximstc.ACTIVATE
BMC95100I XIM ACTIVATE Command Accepted, XIM ACTIVATE in progress
ximstc

DUMPLimits

Use the DUMPLIMITS command to change the limits for parameter types TCB, SRB, and API, the three parameter types that XIM uses to categorize an unexpected system abend. The intent of these parameters is to prevent multiple dumps from being generated when they are not needed.

Figure 4 shows how to display the current values by entering the DUMPLIMITS command without any operands that follow the command.

Figure 4  DUMPLIMITS command

DUMPLIMITS

F ximstc,DUMPLIMITS
The example in Figure 5 shows how to use the DUMPLIMITS command to change the limits for types TCB, SRB, and API respectively, where \( n \) represents a limit count of 0 through 100, which may be initialized to the parameter value at XIM start up time. In this example, all three new values must be entered.

**Figure 5   Example of DUMPLIMITS command**

```
DUMPLIMITS
F ximstc,DUMPLIMITS n, n, n
```

**QUIESCE**

Use the QUIESCE command to drain all inactive XIM initiators. This command flags all active initiators to be drained after the initiators become inactive. When all initiators have been drained and XIM has become dormant, you can issue the SHUTDOWN command to terminate XIM.

**Figure 6   QUIESCE command**

```
QUIESCE
F ximstc,QUIESCE
```

Use one of the following keywords with the QUIESCE command:

**ALL**

ALL is the default. It changes XIM status to prevent additional work from being accepted and additional XIM initiators from being started.

**Figure 7** shows an example of how to quiesce an XIM subsystem with the QUIESCE command (default is QUIESCE ALL).

**Figure 7   Example of QUIESCE ALL command (part 1 of 2)**

```
F ximstc,QUIESCE
BMC951001 XIM QUIESCE Command Accepted, XIM QUIESCE in progress ximstc
BMC951921 XIM Command DRAIN ALL failed, no ACTIVE Initiators found ximstc
BMC951001 XIM STOP Command Accepted, Initiator termination in progress ximstc
```
NEW

NEW allows products that are being executed to complete their work before termination. It changes XIM status to allow additional new units of work to be accepted from products that are connected to XIM. XIM will not allow any work to be accepted from other instances of XIM or any additional XIM initiators from being started by programs that are not already communicating with XIM.

Figure 8 shows an example of how to quiesce an XIM subsystem with the QUIESCE NEW command.

IMMEDIATE

IMMEDIATE allows products that are in execution to complete their current work before termination, but it will not allow any new work to start (no additional XIM initiators will be started).

Figure 9 shows an example of how to quiesce an XIM subsystem with the QUIESCE IMMEDIATE command.

WARNING

If you attempt to use the MVS CANCEL command (instead of the QUIESCE IMMEDIATE command), the XIM started task will be intercepted by XJS and changed to a QUIESCE IMMEDIATE command. You must wait for XIM to stop automatically, cancel your batch jobs and cause XIM to terminate, issue the same CANCEL command again, or issue the ACTIVATE command to reverse the status change initiated by CANCEL.
Use the SHUTDOWN command to terminate inactive XIM initiators and XIM if there are no active sessions between XIM and a BMC Software product. A utility product may be connected to XIM and not have any active initiators on that MVS image because the UOWs were shipped to an XIM on another MVS image. In this case, no active initiators would appear for the MVS image. You can issue the QUIESCE NEW command to allow all currently active work to terminate normally before XIM terminates.

**Figure 10**  SHUTDOWN command

![Figure 11 shows an example of normal termination of an XIM subsystem.](image)

If active sessions exist between XIM and a BMC Software product or XIM initiators are active, the XIM SHUTDOWN command will not perform an orderly or immediate shutdown of XIM and all initiators. In this case you must issue the QUIESCE NEW command to allow all active work to terminate normally before XIM terminates.

**Figure 12**  Example of SHUTDOWN command when active sessions exist

```
F ximstc,SHUTDOWN
BMC951961 XID Command SHUTDOWN ignored, XID is not dormant ximstc
```
**STATUS**

Use the STATUS command (see Figure 13) to display information about an XIM sysplex, jobs connected to an XIM, or details about a specific job connected to XIM.

**Figure 13**  STATUS command

![STATUS command diagram](image)

Figure 14 shows an example of how to obtain XIM status information.

**Figure 14**  Example of STATUS command

```
F ximstc,STATUS
BMC95100I XIM STATUS Command Accepted, XIM STATUS in progress ximstc
BMC95183I STATUS, XIM ACTIVE
BMC95181I STATUS, 2 XIM Members(s) ACTIVE in XIM Group XIMGRP01 ximstc
BMC95180I STATUS, 1 Environment session(s) ACTIVE ximstc
BMC95180I STATUS, 2 Control session(s) ACTIVE ximstc
BMC95180I STATUS, 4 Unit of Work session(s) ACTIVE ximstc
BMC95180I STATUS, 6 Data Stream session(s) ACTIVE ximstc
BMC95182I STATUS, XIM Initiator, XIMXISI, ASID(0055) Active ximstc
BMC95182I STATUS, XIM Initiator, XIMXISI, ASID(0053) Inactive ximstc
```

**VERSION**

Use the VERSION command (see Figure 15) to determine the version of your XIM started task.

**Figure 15**  VERSION command

![VERSION command diagram](image)
Figure 16 shows an example of how to use the VERSION command to determine the version of your XIM started task.

Figure 16  Example of VERSION command

```
F ximstc,VERSION
BMC951851 XIM VERSION V1.0.02 03/31/1999 13.34.00
```

Using XIM data set tracing

XIM data set tracing was introduced with version 1.1 as a method for diagnosing problems. This facility is optional and is only active when ddname XIM$DTRC is allocated to a DASD data set. The purpose of data set tracing is to copy the trace table entries to a wrap-around data set in a similar concept as the wrap-around memory trace table, except that the data set will hold many more entries. When reporting a problem to BMC that may be related to XIM, it may be very helpful to provide a portion of this trace data set. Even when an SVCDUMP is available, there may be essential information in the data set that is no longer in memory.

The following steps are recommended for installing the data set trace option and capturing the trace data if a problem occurs:

1. Allocate a separate trace data set for each system image in the sysplex. At least five cylinders should be allocated to the first extent (only the first extent of the data set is used). A sequential data set with almost any DCB attributes is sufficient, or use RECFM=FB,LRECL=64,BLKSIZE=23476.

2. Use either a different XIM procedure name for each image in the sysplex (for example, XIMSYSY, XIMSYSB, etc.), or always start the XIM procedure with a parameter (START XIM,SYS=sysa) and use that parameter in the procedure as one of the data set qualifiers on the XIM$DTRC DD statement.

3. Add a DD statement to the XIM procedure:

   ```
   //XIM$DTRC DD DISP=SHR,DSN=XIM.DATATRC.SYSA
   or, if you are starting the XIM procedure with a procedure override
   "S XIM,SYS=sysa" :
   //XIM$DTRC DD DISP=SHR,DSN=XIM.DATATRC.&SYS
   ```
4. If a suspected XIM problem occurs, the trace data set information for the applicable time range needs to be saved before XIM writes new trace entries replacing the old. How quickly this occurs depends on the amount of space given to the trace data set and how active the XIM task is. The easiest procedure is to IEBGENER the trace data set that was in use on the system that encountered the problem, and if different, also the trace data set on the system where the BMC utility product was initially executed.
Installation

This appendix provides an overview and explains the prerequisites for installing and using the BMC Software Cross-System Image Manager (XIM) technology:

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Overview

Cross-System Image Manager (XIM) provides the facilities to BMC Software utility products to exploit the MVS/ESA sysplex environment. These facilities include, but are not limited to, the communication among multiple instances of utility programs and the distribution and execution of utility program processes across all images in a sysplex. By using XIM, these utility products can realize improved workload distribution and reduced elapsed time.
Prerequisites

To use XIM you must have the following:

- MVS/ESA Version 4.3 or later
- product LOAD libraries with required APF authorization
- XCF services executing in a multisystem environment
- JES2
- sufficient system linkage indexes (LXs) for your MVS subsystems

Installation considerations

The installation process constructs the XIM started task procedure and the XIM initiator procedure in the HLQ.JCL data set (HLQ is the high-level qualifier that you choose when installing XIM). The default name of the XIM started task procedure is XIMBMC. The default name of the XIM initiator procedure is either the name you entered on the screen as the value for the INIT_PROC option or the default of XIMBMCI. You must copy these two procedures into a procedure library recognized by your JES subsystem. Refer to Figure 20 and Figure 21 on page 43 for examples of XIM procedures.

You must specify the SUFFIX parameter (within the XIM started task procedure) that XIM receives as part of the XIM parameter options member name. The SUFFIX parameter identifies the last one to five characters of a PDS member that begins with the character string XIM (XIMxxxxx). The default name of the SUFFIX is PARMS.

**NOTE**

You do not need to specify a valid SSID parameter within the XIM initiator procedure. XIM generates this value internally.

The installation process constructs a default parameter options member named XIMPARMS in the HLQ.DATA data set. This member contains the default parameter settings for the XIM started task procedure. A PDS data set is required to contain these default parameter settings. Do not use a sequential file. Additionally, all XIM images must reference the same PDS member for startup parameters.
XIMCHECK

XIMCHECK is a utility designed to aid in the installation process. It takes a single product distribution library, defined by the SYSLIB DD statement, and searches all LINKLIST data sets and the link pack area (LPA) for the modules contained in the distribution library. In addition, it will search any number of product level data sets (such as distribution data sets residing on the current system or LINKLIST data sets or LPA libraries on other systems). For any modules found XIMCHECK will then determine which module is at the highest maintenance level and produce a list of what must be copied where to get the system to the required maintenance level for the distributed product to work.

XIMCHECK, as well as producing the written report, can generate a job stream to accomplish the necessary copies. In addition to producing the list of modules to be copied and the job stream, XIMCHECK can produce an extensive cross reference of the modules that reside in SYSLIB and another location.

Parameter options

XIMCHECK accepts the following parameter options:

CHECK
NOCHECK

The CHECK operand specifies that module regression checking is to be done. The default is NOCHECK. If CHECK is not specified, only the cross reference reports will be generated (no job stream will be produced, and no regression checking will be performed).

XREF
NOXREF

Specifying XREF will produce a detailed report specifying which level of modules exist in which data sets. The default is NOXREF.

NOLINKLIST

The NOLINKLIST parameter specifies that the data sets in LINKLIST and link pack area are not to be Processed. Only those product level data sets represented by the PDS parameter will be processed.
Parameter options

**ALLPDSUPGRADE**

The ALLPDSUPGRADE parameter specifies that all product level data sets are to be upgraded. The default is not to upgrade all of the product level data sets, just the LINKLIST.

**SYSLIB(ddname)**

The SYSLIB parameter specifies an alternate DDNAME for SYSLIB. SYSLIB should represent the distribution data set from the product tape. This must be a single data set only. The default DDNAME is SYSLIB.

**SYSPRINT(ddname)**

The SYSPRINT parameter specifies an alternate DDNAME to use for SYSPRINT. The default is SYSPRINT.

**PDS(ddname)**

The PDS parameter is used to specify that product library data sets are to be checked, and an optional DDNAME prefix for those data sets. The members of these data sets will be matched with the members from the SYSLIB data sets. There is no default, however if just PDS is specified the default prefix will also be PDS.

**REPORT(ddname)**

The REPORT parameter specifies an optional DDNAME to use for the report produced by the XREF option. The default DDNAME is REPORT. Specifying REPORT without XREF is ignored.

**JCLLIB(ddname)**

The JCLLIB parameter specifies that a job stream is to be produced. It also allows specification of an optional DDNAME that is to be written to. The default is JCLLIB.

**PREFIX(prefix1,[prefix2],[...])**

By default XIMCHECK will process all members of the SYSLIB data set. The PREFIX parameter may be used to limit the checking to only those members which match the prefix qualifications. The default is to process all members in the SYSLIB data set.
Return codes

Table 2 explains the return codes for XIMCHECK.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X’00’</td>
<td>No action is necessary because the modules found in existing data sets can be used with the product.</td>
</tr>
<tr>
<td>X’08’</td>
<td>Some modules in to specified SYSLIB should be installed in the LINKLIST. The names of the modules to be included or excluded are printed in the process log.</td>
</tr>
<tr>
<td>X’0C’</td>
<td>All modules in the specified SYSLIB should be installed.</td>
</tr>
<tr>
<td>X’80’</td>
<td>The specified SYSLIB DDNAME was not found.</td>
</tr>
</tbody>
</table>

Sample XIMCHECK JCL

Figure 17 shows sample JCL that may be used to execute XIMCHECK. Sample XIM JCL is also in your sample library.

Figure 17  Sample XIM JCL

```// anyname JOB (...)  
//*  
// CHECK   EXEC PGM=XIMCHECK,PARM='XREF,CHECK,JCLLIB,PDS,NOLINKLIST'  
// STEPLIB DD DISP=SHR,DSN=an.xim.product.dataset  
// SYSPRINT DD SYSOUT=*  
// REPORT DD SYSOUT=*  
// JCLLIB DD SYSOUT=*  
// SYSUDUMP DD SYSOUT=*  
// SYSLIB DD DISP=SHR,DSN=new.xim.product.dataset  
// PDS001 DD DISP=SHR,DSN=some.xim.product.dataset  
// PDS002 DD DISP=SHR,DSN=another.xim.product.dataset```
Controlling access

If your site uses the IBM Resource Access Control Facility (RACF) or eTrust CA-Top Secret Security, you can authorize the procedures for the XIM subsystem as started tasks in the started procedures table. If your site uses eTrust CA-ACF2 Security, you can authorize the procedures for the XIM subsystem as started tasks under the started task control.

Table 3 Authorizing XIM procedures

<table>
<thead>
<tr>
<th>Product</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF or eTrust CA-Top Secret Security</td>
<td>Authorize the procedures for the following subsystems as started tasks in the started procedures table:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If you are running RACF version 2.1 or higher, you can use the STARTED class to add or modify RACF security definitions for started procedures without having to reIPL the system.</td>
</tr>
<tr>
<td></td>
<td>The STARTED class allows you to modify the security definitions dynamically through the RDEFINE, RALTER, and RLIST commands. For more information about using the STARTED class, see the IBM documentation.</td>
</tr>
<tr>
<td>eTrust CA-ACF2 Security</td>
<td>Authorize the procedures for the following subsystems as started tasks under the started task control:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For more information, see the appropriate eTrust CA-ACF2 Security documentation.</td>
</tr>
</tbody>
</table>
Default options

This section describes how to set the global level or MVS image level parameters for XIM. This section also includes an alphabetical listing of XIM parameters with syntax and valid values.

Global parameters vs. MVS image parameters

XIM provides parameters for establishing the scope of XIM processing in a sysplex environment. You can set all parameters at a global level and some at the MVS image level. When parameters are not set at the global level, XIM default values apply. When values are not set at the MVS image level, the values that are set (or defaulted) at the global level apply.

You can set the following parameters at the global level:

- DUMPLIMIT_TCB
- DUMPLIMIT_SRIB
- DUMPLIMIT_API
- INITIATORS
- INIT_PROC
- SYSALLDA
- XCF_GROUP
- XIM_GROUP

Figure 18 shows a sample parameter list that you might provide for XIM. This sample provides values for the global level and provides additional values for two MVS images. The global values apply to all MVS images in the sysplex if you start all XIMs with the same PDS member as input. The MVS image values apply only to the MVS image identified by the system name.

Figure 18 Sample XIM Parameter List

<table>
<thead>
<tr>
<th>XCF_GROUP=XCFBMC</th>
<th>Global Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>INIT_PROC=XIMBMCI</td>
<td></td>
</tr>
<tr>
<td>INITIATORS=1</td>
<td></td>
</tr>
<tr>
<td>SYSALLDA=SYSALLDA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DO SYSA</th>
<th>SYSA MVS Image Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>INIT_PROC=XIMIA</td>
<td></td>
</tr>
<tr>
<td>INITIATORS=0</td>
<td></td>
</tr>
<tr>
<td>END</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DO SYSB</th>
<th>SYSB MVS Image Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIATORS=4</td>
<td></td>
</tr>
<tr>
<td>END</td>
<td></td>
</tr>
</tbody>
</table>
Parameter specifications

DUMPLIMIT_TCB
DUMPLIMIT_SR
DUMPLIMIT_API

Global level and MVS image level parameters. These are the three types that XIM uses to categorize an unexpected system abend. Each type is given a limit count of 0-100 which may be initialized to the parameter value at XIM start up time. The count is decremented at the time that the particular type of abend occurs. If the count is already zero at the time of the abend, a system dump is bypassed. The intent of these parameters is to prevent multiple dumps from being generated when they are not needed.

This counter can also be modified with the DUMPLIMITS \(n,n,n\) console command to change the limits for types TCB, SRB, and API respectively (all three new values must be entered). Also, the DUMPLIMITS command without any following operands will display the current values.

The default value for each parameter is 3.

INITIATORS

The INITIATORS parameter has the following syntax:

\[
\text{INITIATORS} = xxx
\]

where \(xxx\) is the number of initiators to start. Valid values are 0 through 256. The default value is 16.

To prevent XIM initiators from starting on the MVS image, use INITIATORS=0 for that particular MVS image.

The INITIATORS parameter is valid at the global level and the MVS image level. The following definitions apply to the INITIATORS parameter:

- When issued at the global level, the INITIATORS parameter specifies the number of XIM initiators that can be started for each MVS image in the sysplex before the desired work load capacity of the image would be exceeded.

- When issued at the MVS image level, the INITIATORS parameter specifies the number of XIM initiators that can be started for the MVS image before the desired work load capacity of the image would be exceeded.
**INIT_PROC**

The INIT_PROC parameter has the following syntax:

```
INIT_PROC=procName
```

where `procName` is the procedure name. Use any valid PDS member name.

The default value is XIMBMCI.

The INIT_PROC parameter is valid at the global level and the MVS image level. The INIT_PROC parameter identifies a procedure name that initializes an XIM initiator.

**SYSALLDA**

The SYSALLDA parameter has the following syntax:

```
SYSALLDA=sysallda
```

where `sysallda` is the MVS system unit name for all DASD devices. This standard name allows you to allocate a data set on any or all DASD devices in your environment. If your systems programmer or DASD administrator has specified a different unit name than the default value of `sysallda`, you can use the SYSALLDA parameter in your XIM started task procedure to specify the equivalent unit name for your environment.

**XCF_GROUP**

The XCF_GROUP parameter has the following syntax:

```
XCF_GROUP=groupName
```

where `groupName` is the eight-character XCF group name; if you use less than eight characters, pad to the right with blanks. Valid characters are A to Z, 0 to 9, and special characters ($, #, and @). To avoid using reserved names, do not begin group names with the letters A through I or the character string SYS. The default value is XCFBMC.

The XCF_GROUP parameter is only valid at the global level. The XCF_GROUP parameter allows multiple XIM subsystems to connect or communicate with each other through the XCF coupling facility or through a CTCA (Channel to Channel Adapter). XIM uses the XCF group name to locate and connect to other instances of itself within the sysplex.
**XIM_GROUP**

The XIM_GROUP parameter has the following syntax:

\[
\text{XIM\_GROUP=\textit{groupName}}
\]

where \textit{groupName} is the eight-character XIM group name; if you use less than eight characters, pad to the right with blanks. Valid characters are A to Z, 0 to 9, and special characters ($, #, and @). To avoid using reserved names, do not begin group names with the letters A through I or the character string SYS. The default value is XIMBMCU.

The XIM_GROUP parameter is only valid at the global level. The XIM_GROUP parameter allows the BMC Software utility products to connect to the XIM subsystem. Currently, you should not change the XIM_GROUP name because it must be identical to the XIM_GROUP name used by the BMC Software utility product.

**Default options syntax**

Use the following syntax rules when creating or modifying the startup parameter list:

- Use columns 1 through 71.
- Use one parameter per statement.
- Do not continue a parameter onto a second line.
- Do not use duplicate parameters.
- Anything following a parameter and its value is considered a comment.
- An asterisk (*) must precede a comment line.
- The equal sign (=) is the required delimiter.
- Spaces to the left and right of the equal sign are permitted.
- Blank lines (columns 1 through 71) and lines beginning with an asterisk are ignored.

**Default XIM parameter list**

Figure 19 shows the sample global parameter list provided for XIM in the HLQ.DATAXIMPARMS data set. This sample provides values for the global level. The global values apply to all MVS images in the sysplex if you start all XIMs with the same PDS member as input.
Sample JCL procedures

Figure 20 shows example JCL for an XIM procedure.

Figure 20  XIM procedure

```
*********************************************************
//*-----------------------------------------------------*
//*        XIM PROCEDURE                                   *
//*-----------------------------------------------------*
//DBUXIM00 PROC
//XIMMAIN  EXEC PGM=XIMMAIN,                                
//         ACCT=5410,TIME=1439,REGION=0M,                  
//         PARM='SUFFIX=DBU00'                               
//* *--- ---------------------------*                   
//* * STEPLIB MUST BE APF-AUTHORIZED,                    *
//* *-----------------------------------*               
//STEPLIB  DD DISP=SHR,DSN=BMCXIM.V1R3.DIST.LOAD         
//* *----------------------------------*             
//*  * XIMPARM LIBRARY MUST CONTAIN XIM|SUFFIX.          *
//* *----------------------------------*             
//XIMPARM DD DISP=SHR,DSN=your.PROCLIB                   
//XIMPRINT DD SYSOUT=*,HOLD=YES                         
*********************************************************
```

Figure 21 shows example JCL for an XIM initiator procedure.

Figure 21  XIM initiator procedure

```
//******************************************************
//*        XIM INITIATOR PROCEDURE                      *
//******************************************************
//DBUXIMJS PROC SSID=XJS0                                
//XJSINI2  EXEC PGM=IEFIIC,                              
//         PARM='&SSID',                                 
//         DPRTY=12,                                    
//         ACCT=6010                                    
//SYSUDUMP DD SYSOUT=*                                 
```
Glossary

A

API
Application program interface. An interface supplied by a licensed program that allows an application program to use the functions of the licensed program.

S

sysplex
A multiple-MVS system environment that allows consoles to receive messages and send commands across systems.

U

UOW
Unit of work. At the highest level, an entire job step. At the lowest level, the reorganization of a subset of an IMS database or the unload of a DB2 table space partition. Each BMC Software product determines the extent of a UOW (it can be whatever the using product desires it to be).

X

XCF
Cross-System Coupling Facility. An IBM facility used by XIM as the communication vehicle for communicating with every instance of XIM.

XCF group
The XCF group is the group to which XIM joins when initiated. This group name is determined by the product group and is unique for each product group.
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