



**IMS Automation Programmer's Reference and Operator's Guide**





**IMS Automation Programmer's Reference and Operator's Guide**

**Note!**

Before using this information and the product it supports, read the information in "Notices" on page ix.

This edition applies to IBM Tivoli System Automation for z/OS (5698-SA3) Version 3 Release 2, an IBM licensed program, and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Programming Interface Information

This book documents programming interfaces that allow the customer to write programs to obtain the services of IBM Tivoli System Automation for z/OS.

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NetView	OS/390	RACF
S/390	Tivoli	Tivoli Enterprise Console
VTAM	z/OS	

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## About This Book

This book describes how to customize and operate IMS™ automation with IBM® Tivoli® System Automation for z/OS® (SA z/OS) to provide a simple and consistent way to monitor and control all of the IMS regions, both local and remote, within your organization. SA z/OS automates, simplifies, and standardizes console operations and the management of component, application, and production related tasks.

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## Who Should Use This Book

This book is intended for two kinds of users or user groups:

- System programmers, system designers, and application designers who will automate IMS using SA z/OS.

For these users, both parts of the book will be of interest.

Installing and customizing IMS automation requires a programmer's understanding of NetView®, IMS, and SA z/OS, because most of the definitions take place in these programs. Also, you will modify JCL, command lists, and programs for some of the automation functions

- Operators and administrators who manage and monitor IMS subsystems.

These users will mainly need and part 2.

For operators, a working knowledge of IMS will be assumed.

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## What's in This Book

This book contains the following:

### Part 1, "Customizing IMS Automation"

Explains some main concepts of SA z/OS and describes the customization of IMS automation and contains reference sections for MESSAGES policy items, the programming interface, and the monitor routines.

### Part 2, "Using IMS Automation"

Describes the operator interface of IMS automation.

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## Related Publications

### The System Automation for z/OS Library

The following table shows the information units in the System Automation for z/OS library:

Table 1. System Automation for z/OS Library

Title	Order Number
<i>IBM Tivoli System Automation for z/OS Planning and Installation</i>	SC33-8261
<i>IBM Tivoli System Automation for z/OS Customizing and Programming</i>	SC33-8260
<i>IBM Tivoli System Automation for z/OS Defining Automation Policy</i>	SC33-8262
<i>IBM Tivoli System Automation for z/OS User's Guide</i>	SC33-8263
<i>IBM Tivoli System Automation for z/OS Messages and Codes</i>	SC33-8264
<i>IBM Tivoli System Automation for z/OS Operator's Commands</i>	SC33-8265

Table 1. System Automation for z/OS Library (continued)

Title	Order Number
<i>IBM Tivoli System Automation for z/OS Programmer's Reference</i>	SC33-8266
<i>IBM Tivoli System Automation for z/OS CICS Automation Programmer's Reference and Operator's Guide</i>	SC33-8267
<i>IBM Tivoli System Automation for z/OS IMS Automation Programmer's Reference and Operator's Guide</i>	SC33-8268
<i>IBM Tivoli System Automation for z/OS TWS Automation Programmer's Reference and Operator's Guide</i>	SC23-8269
<i>IBM Tivoli System Automation for z/OS End-to-End Automation Adapter</i>	SC33-8271
<i>IBM Tivoli System Automation for z/OS Monitoring Agent Configuration and User's Guide</i>	SC33-8337

The System Automation for z/OS books are also available on CD-ROM as part of the following collection kit:

IBM Online Library z/OS Software Products Collection (SK3T-4270)

#### SA z/OS Home Page

For the latest news on SA z/OS, visit the SA z/OS home page at <http://www.ibm.com/servers/eserver/zseries/software/sa>

## Related Product Information

You can find books in related product libraries that may be useful for support of the SA z/OS base program by visiting the z/OS Internet Library at <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>

## Using LookAt to look up message explanations

LookAt is an online facility that lets you look up explanations for most of the IBM messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can use LookAt from these locations to find IBM message explanations for z/OS elements and features, z/VM<sup>®</sup>, VSE/ESA<sup>™</sup>, and Clusters for AIX<sup>®</sup> and Linux<sup>™</sup>:

- The Internet. You can access IBM message explanations directly from the LookAt Web site at <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/>.
- Your z/OS TSO/E host system. You can install code on your z/OS or z/OS.e systems to access IBM message explanations using LookAt from a TSO/E command line (for example: TSO/E prompt, ISPF, or z/OS UNIX<sup>®</sup> System Services).
- Your Microsoft<sup>®</sup> Windows<sup>®</sup> workstation. You can install LookAt directly from the *z/OS Collection* (SK3T-4269) or the *z/OS and Software Products DVD Collection* (SK3T4271) and use it from the resulting Windows graphical user interface (GUI). The command prompt (also known as the DOS > command line) version can still be used from the directory in which you install the Windows version of LookAt.
- Your wireless handheld device. You can use the LookAt Mobile Edition from <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookatm.html>

with a handheld device that has wireless access and an Internet browser (for example: Internet Explorer for Pocket PCs, Blazer or Eudora for Palm OS, or Opera for Linux handheld devices).

You can obtain code to install LookAt on your host system or Microsoft Windows workstation from:

- A CD-ROM in the *z/OS Collection* (SK3T-4269).
- The *z/OS and Software Products DVD Collection* (SK3T4271).
- The LookAt Web site (click **Download** and then select the platform, release, collection, and location that suit your needs). More information is available in the LOOKAT.ME files available during the download process.

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## Summary of Changes for SC33-8268-03

This document contains information previously presented in System Automation for z/OS V3R1.0 IMS automation Programmer's Reference and Operator's Guide, SC33-8268-02, which supports z/OS Version 1 Release 7.

### New Information

Due to further integration of IMS automation into SA z/OS, there are several new sections:

- "Customization Hints" on page 3 and "Defining IMS Actions" on page 8 in Chapter 1, "IMS Automation Concepts," on page 3
- "Monitoring of Online Log Data Sets (OLDS)" on page 14, "Monitoring of Recovery Control Data Sets (RECON)" on page 17, and "Monitoring of VTAM ACB" on page 18 in Chapter 2, "How to Set Up the Special Functions of IMS Automation," on page 11
- Chapter 5, "Monitor Commands," on page 41
- Chapter 8, "Displaying IMS Dependent Region Information," on page 59

The section "Partial Message IDs and Performance" on page 8 has been added via APAR OA18032

### Changed Information

Due to further integration of IMS automation into SA z/OS, the following sections have been updated:

- "\*IMS Best Practices Policy" on page 3, which has been moved to Chapter 1, "IMS Automation Concepts," on page 3
- The section "Automating Recovery for Application Components" on page 11 in Chapter 2, "How to Set Up the Special Functions of IMS Automation," on page 11
- The section "DFS554A: Respond to Program Abend" on page 27
- Various customization dialog panels
- The panels and panel interaction in Chapter 6, "Using Panels and Working with Subsystems," on page 49 and Chapter 7, "TCO Functions," on page 57
- The panels and panel interaction in

The following sections have been updated via APARs:

- "Using the SA z/OS Exit without the z/OS Exit Router" on page 5
- "Defining IMS Messages" on page 6

## Moved Information

“IMS Message Processing” on page 4 has been moved to Chapter 1, “IMS Automation Concepts,” on page 3

## Deleted Information

Due to enhancements to the \*IMS sample policy and further integration of IMS automation into SA z/OS, several sections of this book have been removed because they are now obsolete, as follows:

- The chapter “Special Functions of IMS automation”
- The section “IMS automation Definitions”
- The sections “Special Start and Stop Dependencies”, “How to Automate Startup and Shutdown of IMS Regions”, “How to Set Up the State/Action Tables”, and “Adding Local Applications to the IMS automation Operator Interface” in Chapter 2, “How to Set Up the Special Functions of IMS Automation,” on page 11
- “Shutdown” and “IMSPlex Support Subsystems” in “How to Automate Startup and Shutdown of IMS Regions”
- References to **MSC Links** have been removed
- “How to Set Up the State/Action Tables”
- The description for the following MESSAGES/USER DATA entries:

<b>ABCODES</b>	Non-XRF abend codes
<b>BRO</b>	Broadcast a message prior to shutdown
<b>CHE</b>	Issue a checkpoint command
<b>CQS0031A</b>	Confirm CQS restart for structure
<b>CQS0032A</b>	Respond to CQS structure restart
<b>CQS0033A</b>	Respond to client takeover restart
<b>CQSET</b>	Issue structure checkpoint at CQS termination
<b>DFS2142</b>	Respond to stopped logical link path message
<b>DFS2161I</b>	Link stopped by other system
<b>DFS2169I</b>	Respond to MSC link disconnection message
<b>DFS3258A</b>	No online data sets available
<b>DFS690A</b>	Shut down dependent regions when no control region is active
<b>DFS810A</b>	Define restart commands
<b>DFS989I</b>	Define restart commands (DBCTL only)
<b>DFS994I</b>	Respond to checkpoint written to the IMS log
<b>HOLDQ</b>	Issue commands at shutdown
<b>OLDS</b>	Define recovery criteria for OLDS
<b>POSTCHKP</b>	Issue commands after IMS shutdown checkpoint
<b>PRECHKP</b>	Issue commands prior to IMS shutdown Checkpoint
<b>RECONS</b>	Set monitoring interval for RECONS
<b>RELEASEQ</b>	Issue commands after shutdown completes
<b>SHUTTYPES</b>	Issue commands at operator shutdown



|           **SNAPQ**            Issue SNAPQ checkpoint command

|           **STOPBMPREGION**

|                            Stop batch message regions

|           **STOPFPREGION**

|                            Stop fast path regions

|           **STOPREGION**

|                            Stop IMS dependent message region

- |           • The following common routines have been removed:

|           **EVIEX002**

|                            Retrieve IMS subsystem data

|           **EVIEX003**

|                            Update IMS subsystem data

|           **IMSBMSG**

|                            Build Message Processor

|           **IMSCMD**

|                            Issue IMS Commands

- |           • The section “Using a Fast Path” in Chapter 6, “Using Panels and Working with Subsystems,” on page 49
- |           • The chapter “Starting and Stopping Resources”
- |           • The panels and panel interaction in Chapter 9, “Displaying Critical Messages,” on page 63
- |           • The chapter “The Status Display Facility”
- |           • The chapter “NMC Display Support”

You may notice changes in the style and structure of some content in this document—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our documents.

This document contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.



---

## Part 1. Customizing IMS Automation

| This part describes the principal concepts of SA z/OS with regard to IMS  
| automation and describes the steps that are necessary to customize and set up IMS  
| automation. The description focuses on those steps that are specific to IMS  
| automation and have to be done in addition to the definition of the basic functions  
| of SA z/OS that are common to all subsystems. Furthermore, it contains reference  
| sections for IMS-specific message IDs in the MESSAGES/USER DATA policy item  
| and for common routines that request information or perform tasks associated with  
| IMS automation.

It consists of the following chapters:

- Chapter 1, "IMS Automation Concepts," on page 3
- Chapter 2, "How to Set Up the Special Functions of IMS Automation," on page 11
- Chapter 3, "MESSAGES/USER DATA Entries for IMS Automation," on page 21
- Chapter 4, "Common Routines," on page 35
- Chapter 5, "Monitor Commands," on page 41



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# Chapter 1. IMS Automation Concepts

This section describes the principal concepts of IMS automation in SA z/OS and gives some hints relating to its customization.

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## \*IMS Best Practices Policy

SA z/OS supplies a sample policy, \*IMS, that provides best practice definitions for running IMS automation.

The \*IMS sample policy builds in FDR to provide best practices for IMS automation in an IMSplex. FDR provides superior, sysplex-aware automated recovery within IMS. It is the recommended solution for high availability of IMS applications.

Diagrams of the sample policies are provided as PDF files that are located in the USS installation path. The default for this path is: /usr/lpp/ing/doc/policies/.

You customize IMS automation for your specific installation by modifying the policy database in the customization dialog. See *IBM Tivoli System Automation for z/OS Defining Automation Policy* and the online help to the \*IMS sample policy for details about how to import the \*IMS add-on sample and modify the definitions that this import has added to your policy database.

---

## Customization Hints

Bear in mind the following hints when customizing the \*IMS add-on sample:

- The \*IMS add-on sample policy database supplies the automation operator definition that is required for IMS automation. It is located in the IMS\_AUTO\_OPS policy object for the AOP entry type.

Automated Function	Operator ID	Message Classes
IMSMSTR	AUTIMS	EVI*

Make sure that this operator ID is defined as a NetView operator.

- All IMS regions must be defined to SA z/OS as APPLICATION objects. The \*IMS add-on sample policy database provides you with a number of sample classes and instances of entry type APL that model IMS regions. Copy and modify them to tailor them to your needs:
  - The names of the APL classes in \*IMS have the prefix C\_IMS\_ or C\_IMS1\_
  - The names of the APL instances in \*IMS have the prefix IMS
- For the following IMS regions, the Application Type field must be set to IMS:
  - IMS Control regions
  - IMS dependent regions for Fast Path and Message Processing regions
  - IMS DL/I Secondary Address Space
  - IMS Database Recovery Control
- Applications of type IMS have an additional IMS-specific Policy Item, IMS CONTROL, that allows you to specify the IMS subsystem ID and the IMS control region type.

### IMS Operation Hint

In the \*IMS add-on sample policy database, relationships have been set up, for example, from monitor resources to the IMS application group to make sure that the monitor resources can rely on all required IMS functions.

Be aware that the shutdown of the IMS control region may not be performed due to these defined resource dependencies. You should therefore address the shutdown request to the IMS application group instead of the IMS control region to avoid hanging shutdown requests.

---

### IMS Message Processing

SA z/OS can only automate messages that are issued via WTO. Most IMS system messages that are important are WTO'd. However, there are many IMS messages that are only logged internally. Some of these messages may be useful in automation situations. To enable SA z/OS to process these messages, exits are installed to WTO messages that would not be WTO'd by IMS. In addition, user code might produce messages that are written to IMS. Some of these messages might be of interest in automation situations.

SA z/OS installs an exit to WTO these messages. SA z/OS installs an exit for the AOE Type 2 exit of IMS Control regions.

The messages that are WTO'd from this exit are defined in the MESSAGES/USER DATA policy for the subsystem or the subsystem Class.

### Installing the IMS Message Exits

*IBM Tivoli System Automation for z/OS Planning and Installation* details the basic installation steps to install the exits into IMS. This section details the various parameters and commands that can be used to control the exits.

#### z/OS Exit Router Information

The out-of-the-box configuration of the exit uses the z/OS exit router to enable the user to specify exit modules at three exit points. The exit program is EVIPVEX0 and has a pre-built alias of DFSAOE00. The exit points defined are:

1. **DFSAOE00.CMD**

This is invoked whenever DFSAOE00 is called with AOE0FUNC=1 to initialize the routines and also when AOE0FUNC=2 is called with AOE0FLG2=X'80' (command entered at a terminal), X'20' (ICMD command) or X'10' (internal command).

2. **DFSAOE00.MSG**

This is invoked whenever DFSAOE00 is called with AOE0FUNC=1 to initialize the routines and also when AOE0FUNC=2 is called with AOE0FLG2=X'08' (message segment).

3. **DFSAOE00.CMDRESP**

This is invoked whenever DFSAOE00 is called with AOE0FUNC=1 to initialize the routines and also when AOE0FUNC=2 is called with AOE0FLG2=X'40' (command response segment).

Specification of routines to run at each exit point is done via PROGxx members of SYS1.PARMLIB or via the SETPROG EXIT command.

You may enable or disable exits dynamically at any time.

A required definition of EVIPVEX1 is needed to process the exit information for SA z/OS. However, any number of exit routines may be added at any of the points. The z/OS exit router will execute them one after the other. If exit routines are not specified for an exit point, no action will be taken.

The definitions of the required exit points are:

```
EXIT ADD EXITNAME(DFSAOE00.MSG) MODNAME(EVIPVEX1) DSNAME(ING.SINGMOD1) STATE(ACTIVE)
EXIT ADD EXITNAME(DFSAOE00.CMD) MODNAME(EVIPVEX1) DSNAME(ING.SINGMOD1) STATE(ACTIVE)
```

See *z/OS MVS Initialization and Tuning Reference* for additional parameters that can be supplied to the EXIT statement.

The SA z/OS exit routines EVIPVEX0 and EVIPVEX1 use the last three words of the storage pointed to by SXPLAWRK. If these values are changed, ,,,,unpredictable results may occur.

The SA z/OS exit router will set AOE0RPLY to 1 if there are no exit routines enabled for an exit and a DFSAOUE0 module is present in the IMS system. This rule applies to each exit point independently. This means that the user can disable an exit point and still have their DFSAOUE0 module invoked. In addition if the exit point invoked is EVIPVEX1 as specified, see "Using the SA z/OS Exit without the z/OS Exit Router" for details on invoking DFSAOUE0. Note that it is possible using the z/OS exit router to invoke DFSAOUE0 for all three exit points. This can be achieved by the default definition that does not define an exit point for DFSAOE00.CMDRESP or by disabling this exit point.

### Using the SA z/OS Exit without the z/OS Exit Router

As detailed in the installation manual, it is possible to use the SA z/OS exit in a standalone manner. In this mode, no z/OS exit router is enabled and dynamic management of the exit is not possible. The procedure to enable this function is detailed in the System Automation installation manual. It basically re-defines the DFSAOE00 alias from the EVIPVEX0 module to the EVIPVEX1 module.

The SA z/OS exit will set AOE0RPLY to 1 if there is a DFSAOUE0 module present in the IMS system and any of the following conditions are met:

- AOE0FUNC=2 and AOE0FLG2=AOE0MSG
- AOE0FUNC=2 and AOE0FLG2=AOE0TCMD or AOE0ICMD or AOE0INTC

In effect this means that every system Message or Command will also invoke DFSAOUE0 if it is present. Command Responses will not invoke DFSAOUE0. It is not possible to invoke DFSAOUE0 for command responses in this mode of exit operation. See "z/OS Exit Router Information" on page 4 or "Calling the SA z/OS Exit from Your DFSAOE00 Module" on page 6 for alternatives.

Due to an IMS restriction, when DFSAOUE0 is present in the environment only the first segment of a multi-segment message will be presented to DFSAOE00. Therefore, tokens that are defined in the policy database must be present in the first segment to be matched. However, all segments will be passed to DFSAOUE0.

**Note:**

Make sure that the ING.SINGMOD1 library is not concatenated before of the library that you have redefined the alias in. If it is, the z/OS exit router module will be enabled at the DFSAOE00 exit point.

## Installing the IMS Message Exits

### Calling the SA z/OS Exit from Your DFSAOE00 Module

If neither of the above methods suits your installation, it is possible to directly call the EVIPVEX1 module from your DFSAOE00 exit routine.

Input parameters are:

1. Register 1 points to the SXPL (standard Exit Parameter List) as supplied by IMS to the DFSAOE00 exit.

**Used storage:** The exit uses the last three words of the storage pointed to by SXPLAWRK. They are used by the exit to hold pointers to work area and policy information. If the values are changed, unpredictable results may occur.

You are responsible for the correct setting of the AOE0RPLY field. Note that after calling EVIPVEX1, the AOE0RPLY field will be set as specified in “Using the SA z/OS Exit without the z/OS Exit Router” on page 5.

A sample call is as follows:

```
LA R1,SXPL ; Load address of SXPL
L R15,=V(EVIPVEX1) ; get address of routine
BALR R14,R15 ; invoke the exit
```

## Using the IMS Automation Message Exit

To enable the IMS message exit to process messages, the messages must be defined in the policy database. The MESSAGES/USER DATA policy item is used to define the messages. If there are no messages defined to use the exits, the SA z/OS exit will not process any messages.

Each subsystem has its own policy and does not share policy information, except for CLASS information, with other subsystems. This means that you can update the policy information for a subsystem or set of subsystems and will not affect other subsystems.

### Defining IMS Messages

There are several special keywords that, when added to the message with the USR action, cause the message information to be loaded into the appropriate exit for processing. The keywords and their descriptions are described in Table 2.

*Table 2. Keywords in IMS Message Definitions*

Keyword	Description
OFFSET	This keyword is required to load the message into the exit. It specifies the word number in the message that represents the message ID. Its format is a single integer number.





## Using the IMS Automation Message Exit

To define a message to be WTO'd, do the following:

1. Specify the message ID in the MESSAGES/USER DATA policy item.
2. Enter the USR command against the message ID. Specify OFFSET in the **Keyword** field and the word number that the message ID occurs at in the message in the **Data** field.
3. Optionally, enter the USR command against the message ID and specify TOKEN in the **Keyword** field, and the words and their values that are to be matched in the **Data** field.

### Refreshing Policy Data

To load the information into IMS address spaces issue the INGAMS REFRESH command. As a part of the ACF load, each IMS that had changes to MESSAGES/USER DATA policy will be reloaded with any changes.

If you want to disable the exits, either delete the messages out of the policy or change the OFFSET keyword on every message to some other name, for example, UFFSET, and rebuild and reload the ACF.

### Partial Message IDs and Performance

A partial message ID is one where only a part of the message ID is specified. The partial message ID is restricted to the leftmost part of the message ID. You cannot specify a partial message ID, such as XXX\*\*YY, only XXX would be acceptable. The first three bytes of the message ID are the minimum required to specify a message to trap in the exit. You can specify a partial message ID within this limitation.

It is recommended that you do not use the TOKEN keyword with partial message IDs for messages. This causes a performance degradation because the token data must be matched for the partial message and then again for any specific message.

You can specify MSGDISP policy information on actions for all specific message IDs that match the partial message ID. You do not have to specify more specific message IDs. Instead a partial message ID and a matching set of TOKEN keywords can be used to specify the actions for a message. Be aware that token scanning is much less efficient than message ID scanning.

You can use the partial message IDs to improve exit performance. An extreme example might be if you are trapping messages ABC000-ABC100. You might choose to create partial message IDs for ABC00-ABC10. The partial message IDs would specify MSGDISP=(NONE) to prevent them supplying default actions. This would cause the exit to first scan the set of partial message IDs ABC00-ABC10 or 11 checks. Then, assuming it found a match on ABC10, it would scan the specific messages ABC110-ABC119 for a total of 21 checks as opposed to 101 for the original set. This would require 112 MESSAGES/USER DATA policy definitions. 101 for messages ABC000-ABC100 and 11 for messages ABC00-ABC10. In normal circumstances you can ignore the usage of partial message IDs for performance reasons and use them for functional reasons.

---

## Defining IMS Actions

The recommended way to define automated actions in the SA z/OS automation policy that have to be executed by IMS, is to specify an IMS command, prefixed with the IMS subsystem ID, and issue it with the NetView MVS command. The subsystem ID of the IMS control region can be retrieved from the &SUBSSUBID task global variable.

When specifying the command in the application policy object of a dependent IMS region that has a HasParent relationship to the IMS control region with a defined sequence number, the command can be prefixed with the &SUBPSUBID task global variable to address it to the related IMS control region. But make sure that the IMS control region is in the first position in the list of defined parents.

If a Command Prefix has been defined in the APPLICATION INFO policy item for the IMS control region, you can also use the &SUBSCMDPFX task global variable to prefix the IMS command instead of the subsystem ID.

### Example

The POSTSTART commands for the IMS control region can be specified as shown in Figure 1.

Type	Automated Function/'*'
Command text	
	<u>MVS &amp;SUBSSUBIDCQSET SHUTDOWN SHAREDQ ON STRUCTURE ALL</u>
	<u>MVS &amp;SUBSSUBIDSTA DC</u>
	<u>MVS &amp;SUBSSUBIDCHE</u>

Figure 1. Example POSTSTART Commands for an IMS Control Region

IMS actions can also be defined to be issued as replies to the outstanding WTOR of the IMS control region. This method is only applicable to the DC control region because the DB control region does not allow communication via an outstanding WTOR. Furthermore, issuing a sequence of actions leads to a processing bottleneck. This is because each time it issues a reply, SA z/OS first has to wait for the next outstanding WTOR before it can continue with issuing the next reply. This method is therefore not recommended.

IMS commands can also be issued with IMSCMD. However, for compatibility, IMSCMD acts as a stub for INGIMS and therefore provides only an indirect method of issuing actions. Furthermore, it will be withdrawn in a future release of SA z/OS. This, usage of IMSCMD is not recommended and should be replaced.

## Defining IMS Actions

---

## Chapter 2. How to Set Up the Special Functions of IMS Automation

This chapter explains how to set up the special functions of IMS automation for your specific needs. For the setting up of base functions, like starting and stopping subsystems, see *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

---

### Automating Recovery for Application Components

IMS automation provides automated recovery for transactions and programs and also enables monitoring of:

- Online log data sets (OLDS)
- Recovery control data sets (RECON)
- VTAM Access Method Control Block (ACB)

#### How to Define Transaction Recovery

Customization of transaction recovery consists of:

- Determining which application program (TP) transactions will have recovery automation
- Identifying the batch message region (BMP) transactions that will have recovery automation
- Specifying the error threshold level that a recovery should stop at
- Identifying specific abend codes that you want recovery procedures to occur for
- Specifying the recovery procedure, which usually consists of invoking a command, a routine, and/or sending notifications to an operator

The recovery itself is typically triggered from the NetView automation table by calling the EVIECT0X routine when certain messages arrive at NetView. EVIECT0X then consults the automation policy to find out whether recovery is to be attempted and to determine what has to be done.

The following sections illustrate the configuration process.

#### Specifying the Transactions or Programs to be Recovered

Suppose that recovery is enabled for the IMS10AA application on the application level, and that you also want it enabled for transactions PAYR, DBTS, and BLNG, but not for any other transaction. You must then define four minor resources for IMS10AA in the customization dialog as shown in Figure 2 on page 12.:

## Automating Recovery for Application Components

```

COMMANDS  HELP
-----
AOFPIMR3          Minor Resource Flags          Row 1 of 21
Command ==>>> _____ SCROLL==>>> PAGE

Entry Type : Application          PolicyDB Name  : TEST
Entry Name  : IMS10AA            Enterprise Name : USER_ENTERPRISE

Major Resource: IMS10AA

Action Minor Resource
s      TRAN
      TRAN.BLNG
      TRAN.DBTS
      TRAN.PAYR

```

Figure 2. Defining Minor Resources for Transactions

Set the recovery automation flag to NO for TRAN and to YES for the three second-level minor resources. For example, to do this for TRAN, enter s in the **Action** column and press Enter. The panel shown in Figure 3 is displayed.

```

COMMANDS  ACTIONS  HELP
-----
AOFGFAS1          Automation Flag Specification
Command ==>>> _____

Entry Type : Application          PolicyDB Name  : USER_PDB
Entry Name  : IMS10AA            Enterprise Name : USER_ENTERPRISE
Resource    : IMS10AA.TRAN

Enter level of automation desired.
Automation Flags: Y = Yes  N = No  L = Log  E = Exits

Actions  Flag      Auto  Exits
-----  ---      ---  ---
Automation .  _____  0
Recovery . .  NO      0
Start. . . .  _____  0
Terminate. .  _____  0
Initstart. .  _____  0
Restart. . .  _____  0

Enter or Display times to disable automation . . NO _____ Yes No

```

Figure 3. Automation Flag Panel

Here you specify which flags are set and which are not. For more information, see *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

In the same way you can fine-tune recovery automation for programs. Just replace the TRAN keyword with PROG.

### Defining Recovery Thresholds

You can specify that recovery is to be stopped when the number of abends within a certain time interval reaches a certain threshold. To do this, define thresholds in the MINOR RESOURCE THRES policy item of the APPLICATION policy object.

The thresholds must have the name TRAN or TRAN.*tranid*, where the values of the TRAN thresholds will be used for all transactions *tranid* for which no TRAN.*tranid* thresholds exist. The **Critical** value of the thresholds will be used.

If you want to stop recovery specifically for PAYR if two or more abends occur within one hour, you must enter the values on the **Thresholds Definitions** panel

as shown in Figure 4.

```

COMMANDS  HELP
-----
AOFPIZTH                               Thresholds Definition
Command ==> _____

Entry Type : Application                 PolicyDB Name : USER_PDB
Entry Name : IMS10AA                    Enterprise Name : USER_ENTERPRISE

Resource : IMS10AA.TRAN.PAYR

Critical Number . . . . 2                (1 to 50)
Critical Interval . . . 01:00            (hh:mm or hhmm, 00:01 to 24:00)

Frequent Number . . . . 2                (1 to 50)
Frequent Interval . . . 05:00           (hh:mm or hhmm, 00:01 to 24:00)

Infrequent Number . . . 2                (1 to 50)
Infrequent Interval . . 24:00           (hh:mm or hhmm, 00:01 to 24:00)
    
```

Figure 4. Thresholds Definitions Panel

For more details, see *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

For recovery thresholds of programs, you must use PROG instead of TRAN as the first part of the thresholds' name.

## Selecting the Abend Codes

The abend codes that recovery is to take place for are specified in the MESSAGES/USER DATA policy item for IMS10AA through the following keywords:

- The ABCODETRAN keyword for transactions
- The ABCCODEPROG keyword for programs

If you want to initiate recovery for transaction PAYR only when the abend code is U3033 or U907, you need to create an ABCODETRAN.PAYR entry in the MESSAGES/USER DATA policy item and use action "code" on it. This will take you to the Code Processing panel shown in Figure 5.

```

COMMANDS  HELP
-----
AOFMSGK                               Code Processing                               Row 1 of 20
Command ==> _____                               SCROLL==> PAGE

Entry Name : IMS10AA                               Message ID : ABCODETRAN.PAYR

Enter the value to be passed to the calling CLIST when this resource
issues the selected message and the following codes are contained in
the message.

Code 1      Code 2      Code 3      Value Returned
-----
           U3033      _____  INCLUDE
           U907      _____  INCLUDE
           *          _____  EXCLUDE
           _____  _____
           _____  _____
           _____  _____
    
```

Figure 5. Code Processing Panel

For more details, see "ABCODETRAN: Transaction Abend Recovery" on page 24.

## Automating Recovery for Application Components

In a similar way, you can use the ABCODEPROG keyword to include certain abend codes for certain programs in recovery automation.

### Specifying Recovery Actions

You specify the commands to be issued for recovery in the **CMD Processing** panel for the DFS554A message ID of IMS10AA. For example:

```
COMMANDS  HELP
-----
AOFMSGC          CMD Processing          Row 1 to 2 of 20
Command ==>>> _____ SCROLL==>> PAGE

Entry Name : IMS10AA          Message ID : DFS554A

Enter commands to be executed when resource issues the selected message
or define this message as status message.

Status . . . _____ ('?' for selection list)

Pass/Selection Automated Function/'*'
Command Text
PROG
MVS &SUBSSUBIDSTA PGM &EHKVAR2
-----
TRAN
MVS &SUBSSUBIDSTA TRAN &EHKVAR1
-----
```

Figure 6. Command Processing Panel

For more details, see “DFS554A: Respond to Program Abend” on page 27.

## Monitoring of Online Log Data Sets (OLDS)

IMS automation allows monitoring of the online log data sets of IMS control regions and execution of recovery actions if needed. The IMS display command is issued to analyze the status of the OLDS data sets. If needed, OLDS data sets are started or stopped. Any OLDS data sets that have been defined as spare OLDS data sets are started last and stopped first.

The IMS display command can be triggered by incoming messages that report OLDS-related activities, or it can be issued at regular time intervals.

The OLDS monitoring function is optional, that is, some definitions are necessary to get it up and running.

The implementation of the OLDS monitoring function includes the following:

- A monitor resource to monitor the number of available OLDS
- A monitor resource to monitor for excessive switching of the OLDS
- Input parameters for the OLDS monitor function, defined as user data for the message ID OLDS
- Status messages for passive OLDS monitoring
- Command definitions for the health status update that are dependent on the OLDS switch frequency
- Threshold definitions
- Automation flag settings
- Relationships



## Automating Recovery for Application Components

The OLDS monitoring function is optional. For activation the following implementation steps are needed:

### IMS OLDS Monitor Resource

The IMS OLDS monitor resource has to be defined with the MTR policy object with the following characteristics:

Field Name	Field Value
Monitored Object	OLDS
Monitored Jobname	<i>jobname</i> of the IMS control region
Monitor command	INGRMIOL
Monitoring Interval	<i>hh:mm</i> (optional)

Without a specified monitoring interval, the monitor command is issued initially when the monitor resource is started.

Depending on the monitor results, INGRMIOL ends with the following return codes, which are mapped to the related health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	DISPLAY OLDS failed
3	NORMAL	No problem found by OLDS monitoring
4	WARNING	One of the following occurred: <ul style="list-style-type: none"><li>• Needed to start spare OLDS to have the minimum in AVAILABLE status</li><li>• AUTOMATIC ARCHIVE is off</li></ul>
5	MINOR	Could not start enough spare OLDS to have the minimum in AVAILABLE status
6	CRITICAL	Number of OLDS in BACKOUT status exceeds maximum limit

### Message ID OLDS

The input parameters for OLDS monitoring have to be defined as user data for the special message ID OLDS with the MESSAGES/USER DATA policy item of the IMS control region that the monitor resource is associated with.

Keyword	Data	Description
MINIMUM	<i>nn</i>	The minimum number of OLDS that must be available at all times.  The default minimum number is 50% of the normal number of OLDS, where the normal number of OLDS is given in the response of the DISPLAY OLDS command.
SPARES	<i>(nn,nn...)</i>	The spares are OLDS that IMS automation activates when the number of available OLDS drops below the minimum and it is not sufficient to start the stopped OLDS to have the minimum number of OLDS available. The names of the spares are the two-digit numbers taken from the end of the ddname. For example, DFSOLP99 is the spare named 99. Be sure that the names of the spares match the names of existing OLDS.

## Automating Recovery for Application Components

Keyword	Data	Description
BACKOUT	<i>nn</i>	The maximum number of OLDS that can have an OTHER-STS of BACKOUT. Set this number to the total number of acceptable OLDS data sets with an OTHER-STS of BACKOUT.

### Status Messages

Apart from optional active monitoring with the INGRMIOL monitor command after each monitoring interval, the OLDS monitoring function can be implemented with passive monitoring. The following IMS messages can be used to trigger health status updates and recovery actions:

```
DFS3256I OPEN/ALLOCATION FAILED ON ddname
DFS3257I ONLINE LOG NOW SWITCHED - FROM DFSOLPxxx TO ddname2
DFS3258A LAST ONLINE LOG DATA SET IS BEING USED - NEED ARCHIVE
DFS3260I ONLINE LOG DATA SET SHORTAGE - NEED ANOTHER DATA SET
```

These messages only indicate OLDS-related activities that may or may not change the health status of the monitor resource. Therefore the defined monitor command first has to be issued to analyze the actual situation and to evaluate the health status before it can be updated. To achieve this, these messages have to be defined as status messages in the MESSAGES/USER DATA policy item of the OLDS monitor resource with the status Check.

### Automation Flag Settings

Before starting or stopping OLDS data sets, the OLDS monitoring function first checks the Recovery automation flag of the OLDS minor resource for the IMS control region. The recovery actions are only issued if they are allowed by the automation flag.

### IMS OLDS Switch Frequency Monitor

The IMS OLDS switch frequency monitor resource has to be defined in the MTR policy object with the following characteristics:

Field Name	Field Value
Monitored Object	OLDS_SWITCH
Monitored Jobname	<i>jobname</i> of the IMS control region
Monitor command	(none)
Monitoring Interval	<i>hh:mm</i> (optional)

The switch frequency is determined by passive monitoring of message DFS3257I.

### Command Definitions for the Health Status Update Related to the Switch Frequency

To set the health status of the monitor resource, depending on the frequency of the received message DFS3257I, define the following commands for message DFS3257I in the MESSAGES/USER DATA policy item of an IMS control region.

```

Pass/Selection Automated Function/'*'
Command Text
INFR
INGMON OLDS_SWITCH,JOBNAME=&SUBSJOB,STATUS=WARNING,INFO=(MSG,INFREQUENT THRESHO
LDS LIMIT REACHED FOR OLDS SWITCHING)
-----
FREQ
INGMON OLDS_SWITCH,JOBNAME=&SUBSJOB,STATUS=MINOR,INFO=(MSG,FREQUENT OLDS SWITCH
ING DETECTED)
-----
CRIT
INGMON OLDS_SWITCH,JOBNAME=&SUBSJOB,STATUS=CRITICAL,INFO=(MSG,CRITICAL OLDS SWI
TCHING FREQUENCY REACHED)
-----
ALWAYS
INGMON OLDS_SWITCH,JOBNAME=&SUBSJOB,STATUS=NORMAL,INFO=(MSG,OLDS SWITCHING FREQ
UENCY IS NORMAL)
    
```

Figure 7. Command Definitions for the Health Status Update

## Threshold Definitions

Define the threshold levels for the degradation of the health status for the minor resource DFS3257I in the MINOR RESOURCE THRES policy item of the IMS control region.

## Relationships

To propagate the health status of the monitor resources to the health status of the application, HASMONITOR relationships have to be defined between the IMS control region and both monitor resources.

The monitor resources are kept active only during the UP time of the IMS application group with an additional HASPASSIVEPARENT and a FORCEDOWN/WhenObservedDown relationship between each monitor resource and the IMS application group. This ensures that the monitor resources can rely on all required functions.

## Monitoring of Recovery Control Data Sets (RECON)

IMS automation allows the monitoring of recovery control data sets of IMS control regions. The IMS command RMLIST DBRC='RECON STATUS' is issued regularly to analyze the status of the listed RECON data sets in the response to this command.

The RECON monitoring function is optional, that is, some definitions are necessary to get it up and running.

The implementation of the RECON monitoring function includes the following:

- A monitor resource to monitor the number of available RECON data sets
- A status message for passive RECON monitoring

## IMS RECON Monitor Resource

The IMS RECON monitor resource has to be defined in the MTR policy object with the following characteristics:

Field Name	Field Value
Monitored Object	RECON
Monitored Jobname	<i>jobname</i> of the IMS control region
Monitor command	INGRMIRE
Monitoring Interval	<i>hh:mm</i>

## Automating Recovery for Application Components

The monitor command is executed after each monitoring interval. It issues the following command and analyzes the status of the listed RECON data sets in the response to this command:

```
RMLIST DBRC='RECON STATUS'
```

Depending on the monitor results, INGRMIRE ends with the following return codes, which are mapped to the related health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	RMLIST DBRC='RECON STATUS' failed
3	NORMAL	No problem found by RECON monitoring
4	WARNING	No COPY2 found for RECON
5	MINOR	No SPARE found for RECON
6	CRITICAL	Neither COPY2 nor SPARE found for RECON
7	FATAL	No RECON data sets found

### Status Message

Apart from active monitoring with the INGRMIRE monitor command after each monitoring interval, RECON monitoring function can be implemented with passive monitoring. The following IMS message can be used to trigger health status updates:

```
DSP0038I RECON INCONSISTENCY RECON HEADER RECORD NOT FOUND
```

When message DSP0038I is received, the defined monitor command first has to be issued to analyze the actual situation and to evaluate the health status before it can be updated. To achieve this, this message has to be defined as a status message in the MESSAGES/USER DATA policy item of the monitor resource with the status Check.

### Relationships

To propagate the health status of the monitor resource to the health status of the application, a HASMONITOR relationship has to be defined between the IMS control region and the monitor resource.

The monitor resource is kept active only during the UP time of the IMS application group with an additional HASPASSIVEPARENT and a FORCEDOWN/WhenObservedDown relationship between the monitor resource and the IMS application group. This ensures that the monitor resource can rely on all required functions.

## Monitoring of VTAM ACB

IMS automation allows status checking of the VTAM Access Method Control Block (ACB) and the enablement of logons. The IMS command DISPLAY ACTIVE DC is issued regularly after each monitor interval and the response to this command is analyzed.

This monitor function is only useful for an IMS control region, not for a DB control region.

The DC monitoring function is optional, that is, some definitions are necessary to get it up and running.

The implementation of the DC monitoring function includes the following:

- A monitor resource to monitor the status of the VTAM ACB and the enablement of logons
- A status message for passive DC monitoring

### IMS DC Monitor Resource

The IMS DC monitor resource has to be defined in the MTR policy object with the following characteristics:

Field Name	Field Value
Monitored Object	DC
Monitored Jobname	<i>jobname</i> of the IMS control region
Monitor command	INGRMIDC
Monitoring Interval	<i>hh:mm</i>

The monitor command is executed after each monitoring interval. It issues the following IMS command and analyzes the status of the VTAM ACB and the LOGONS enablement:

```
DISPLAY ACTIVE DC
```

If no monitoring interval is specified, the defined monitor command is only issued once initially after the monitor resource has been started.

Depending on the monitor results, INGRMIDC ends with the following return codes, which are mapped to the relating health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	DISPLAY ACTIVE DC failed
3	NORMAL	VTAM ACB is OPEN and LOGONS enabled
4	WARNING	LOGONS are not enabled

### Status Message

Apart from active monitoring with the INGRMIDC monitor command after each monitoring interval, passive monitoring is used to update the health status of the monitor resource. The following IMS message is used to trigger health status update:

```
DFS2111I VTAM ACB CLOSED.
```

When message DFS2111I is received, the health status should be set to WARNING. To achieve this, this message has to be defined as a status message in the MESSAGES/USER DATA policy item of the monitor resource with the status WARNING.

### Relationships

To propagate the health status of the monitor resource to the health status of the application, a HASMONITOR relationship has to be defined between the IMS control region and the monitor resource. The monitor resource is kept active only during the UP time of the IMS application with an additional HASPASSIVEPARENT and a FORCEDOWN/WhenObservedDown relationship between the monitor resource and the IMS control region. This ensures that the monitor resource can rely on all required functions.

## Automating Recovery for Application Components

---

## Chapter 3. MESSAGES/USER DATA Entries for IMS Automation

Because IMS automation is integrated into SA z/OS, you must enter any information for IMS automation in the policy database via the customization dialog. In most cases, the customization dialog itself restricts you to the format that this information must be entered in. There are, however, a number of IMS-specific automation parameters that must or can only be specified as entries in the MESSAGES/USER DATA policy item of the appropriate application policy object. In these cases, the customization panels provide no information about the keywords and the format of their parameters. For further details about the MESSAGES/USER DATA policy item, see *IBM Tivoli System Automation for z/OS Defining Automation Policy*.

This chapter contains detailed descriptions of the automation entries that you have to define for IMS-specific keywords. However, a general understanding of the MESSAGES/USER DATA policy item is assumed.

---

### IMS-Specific MESSAGES/USER DATA Keywords

Most of the following keywords must be specified in the MESSAGES/USER DATA item of the respective *control* region and apply to DB control regions as well as to IMS control regions. They need to be entered in the **MESSAGE ID** field on the Message Processing panel.

## ABCODEPROG: Respond to BMP Region Abends

Use this keyword to define actions to be taken for program abends of program-driven batch message processing (BMP) regions. Only abends for program-driven BMPs use this keyword. Transaction driven BMPs use the ABCODETRAN keyword to determine recovery actions.

Use code processing on the Message Processing panel.

Code 1	Code 2	Code 3	Value Returned
*	<i>acode</i>	<i>progid</i>	INCLUDE or EXCLUDE

**Note:** The ABCODEPROG keyword may be followed with a dot and a program ID *progid*.

### Keyword and Parameter Definitions

#### ABCODEPROG[*.progid*]

You can add the name of a program as a suffix to the keyword. In this case the specifications of the CODE attribute(s) will only apply to this program.

#### CODE=

Use this keyword to define which abends should be included or excluded from recovery.

\* An asterisk as the first positional parameter is required for compatibility with the ABCODETRAN entry. Code an asterisk as shown.

*acode* The abend code. An asterisk (\*) can be used for generic specifications. System abend codes should be prefixed with an S, such as S0C1.

*progid* The program name.

#### INCLUDE | EXCLUDE

Indicates whether to initiate a recovery sequence for this program and abend code combination. Use INCLUDE to initiate a recovery and EXCLUDE if you do not want a recovery initiated. INCLUDE is the default.

### Comments and Usage Notes

If the ABCODEPROG entry is omitted, no recovery takes place and a warning message is issued.

The program name can either be specified as **ABCODEPROG**.*progid* or as the first value of the CODE attribute. Use **ABCODEPROG**.*progid* when you want all of the specifications to apply to one specific program. Use the CODE attribute when you want to code several transactions.

### Example of Usage

In the following example, recovery will not be attempted for program SAMPLE4 when the abend code is U0778. In all other cases, recovery will take place.



COMMANDS HELP

A0FGMSGK Code Processing Row 1 to 10 of 22  
Command ==> SCROLL==> PAGE

Entry Name : IMS10AA Message ID : ABCODEPROG

Enter the value to be passed to the calling CLIST when this resource issues the selected message and the following codes are contained in the message.

Code 1	Code 2	Code 3	Value Returned
*	U0778	SAMPLE4	EXCLUDE
*	*	*	INCLUDE

## ABCODETRAN: Transaction Abend Recovery

Use this keyword to include transaction abend codes in recovery or exclude them from recovery. This includes both transaction-driven message processing regions (MP) and transaction-driven batch message processing (BMP) regions.

Use code processing on the Message Processing panel.

Table 3. Data to Be Entered in the Code Processing Panel for ABCODETRAN

Code 1	Code 2	Code 3	Value Returned
<i>tran</i>	<i>abend</i>	<i>pgm</i>	INCLUDE or EXCLUDE
*	U3033	*	INCLUDE

**Note:** The ABCODETRAN keyword may be followed with a dot and a transaction ID *tran*.

### Keyword and Parameter Definitions

#### ABCODETRAN[.*tran*]

You can add the name of a transaction as a suffix to the keyword. In this case the specifications of the CODE attribute(s) will only apply to this transaction.

#### CODE

Defines which abends are recoverable, as shown in the following descriptions:

- tran* The transaction ID.
- abend* The abend code.
- pgm* The program that abended.

#### INCLUDE|EXCLUDE

Indicates whether to initiate a recovery for this transaction, abend code, and program. Use INCLUDE to initiate a recovery and EXCLUDE if you do not want a recovery initiated.

### Comments and Usage Notes

- The transaction name is either specified as **ABCODETRAN.*tran*** or as the first value of the CODE attribute. Use **ABCODETRAN.*tran*** when you want all of the specifications to apply to one specific transaction. Use the CODE attribute when you want to code several transactions.

### Example of Usage

In the following example, recovery will take place for transaction PAYR on IMS10AA if the abend code is U903 or U3033. No recovery will take place for any other transaction or abend code.

COMMANDS HELP

---

AOFGMSGK Code Processing Row 1 to 10 of 22  
 Command ==> SCROLL==> PAGE

Entry Name : IMS10AA Message ID : ABCODETRAN.PAYR

Enter the value to be passed to the calling CLIST when this resource issues the selected message and the following codes are contained in the message.

Code 1	Code 2	Code 3	Value Returned
*	U3033	*	INCLUDE
*	U907	*	INCLUDE
*	*	*	EXCLUDE

## ACORESTART: Agent Restart

This keyword is used to define the commands that may be issued when the SA z/OS Agent is restarted and the IMS control region is already UP.

Use command processing on the Message Processing panel.

Table 4. Data to Be Entered in the CMD Processing Panel for ACORESTART

Pass/Selection	Automated Function	Command Text
—	—	EVIEE00A &SUBSAPPL

### Keyword and Parameter Definitions

#### EVIEE00A

This command is required to rebuild internal data from an already running IMS control region.

The command is required only on Control Regions, both DC control regions and DB control regions.

### Example of Usage

```

COMMANDS  HELP
-----
                                CMD Processing                Row 1 to 7 of 21
Command ==> _____                SCROLL==> PAGE

Entry Name : IMS911_CONTROL      Message ID : ACORESTART

Enter commands to be executed when resource issues the selected message.
or define this message as status message.

Status . . . _____ ('?' for selection list)

Pass/Selection Automated Function/'*'
Command Text

EVIEE00A &SUBSAPPL
_____
_____
_____
_____

```

## DFS554A: Respond to Program Abend

This keyword is used to define commands or replies to be issued in response to the application program abend message DFS554A.

When message DFS554A indicates that a transaction has stopped, the defined commands or replies to the selection name TRAN are issued to restart the transaction.

When message DFS554A indicates that a program has stopped, the defined commands or replies to selection name PROG are issued to restart the program.

### Variables

Beyond the task global variables that are provided by AOCQRY, the following variables can be used when specifying the command or reply. The variables are replaced by their corresponding value during run time.

Variable	Value
&EHKVAR1	Transaction name
&EHKVAR2	Program name
&EHKVAR3	Job identifier
&EHKVAR4	Region identifier
&EHKVAR5	User abend code
&EHKVAR6	System abend code

### Example of Usage

```

COMMANDS  HELP
-----
                                CMD Processing                Row 1 to 7 of 21
Command ==> _____ SCROLL==> PAGE

Entry Name : IMS1CTL                Message ID : DFS554A

Enter commands to be executed when resource issues the selected message.
or define this message as status message.

Status . . . _____ ('?' for selection list)

Pass/Selection Automated Function/'*'
Command Text
PROG
MVS &SUBSSUBIDSTA PGM &EHKVAR2
_____

TRAN
MVS &SUBSSUBIDSTA TRAN &EHKVAR1
_____

```

## IMSINFO: Display Information

These commands are issued when the INGIMS REQ=INFO command is used to display the state of the selected IMS Control or DBCTL region. The commands are issued via the IMS subsystem ID on an MVS™ EMCS console and the resulting messages are either displayed on the INGIMS panel or written to the users NetView console.

For further information about the INFO request, see the description of the INGIMS command in *IBM Tivoli System Automation for z/OS Operator's Commands*.

Use user processing on the Message Processing panel.

Table 5. Data to Be Entered in the User Defined Data Panel for IMSINFO

Keyword	Data
IMSCMD	('description','IMS command')

### Keyword and Parameter Definitions

#### *description*

The description is text that will be placed before the output of the IMS command. This can be used to identify the command output in the output stream. The description can be any string, but must be enclosed in quotes.

#### *IMS command*

The IMS command is the command to be executed. This command will be appended to the IMS subsystem ID and issued as an MVS command to an EMCS console. The output will be collected and displayed. The command can be any valid IMS DBCTL or Control region command. The command must be enclosed in quotes.

You may code multiple IMS commands, separated by a comma, in order to group results under a common description.

### Comments and Usage Notes

This policy is required for correct operation of the INFO request of the INGIMS command, and also for the PF10 function key of the DISPINFO panel.

### Example of Usage

```

COMMANDS  HELP
-----
AOFMSGU           User Defined Data           Row 1 to 3 of 22
Command ==>>> _____ SCROLL==>>> PAGE

Entry Name : IMS711C4           Message ID : IMSINFO

To change keyword-data pair, specify the following:

Keyword
Data
IMSCMD
('CQS DATA','DIS CQS')
_____
_____

IMSCMD
('Comms','DIS A DC')
_____
_____
_____
_____
_____

```

## RESTARTABORT: Emergency Restart Commands

This keyword is used to define the emergency restart commands required (for response to the DFS033I, DFS166, DFS0618A, DFS3131I, and DFS3626I messages) following an abort termination of the restart process.

To create the definition, select the MESSAGES/USER DATA policy item to get to the Message Processing panel. Then enter the RESTARTABORT keyword in the MESSAGE ID field.

- For IMS control regions, use reply processing on the Message Processing panel and fill in the data in Table 6.
- For DB control regions, use command processing on the Message Processing panel and fill in the data in Table 7.

Table 6. Data to Be Entered in the Reply Processing Panel for RESTARTABORT

Pass/Selection	Retry Count	Reply Text
OVERRIDE	<i>n</i>	<i>command</i>
ERE	<i>n</i>	<i>command</i>

Table 7. Data to Be Entered in the CMD Processing Panel for RESTARTABORT

Pass/Selection	Automated Function/'*'	Command Text
OVERRIDE	—	<i>command</i>
ERE	—	<i>command</i>

### Keyword and Parameter Definitions

#### OVERRIDE

When messages DFS0618A or DFS3626I are issued, the OVERRIDE reply is issued.

#### ERE

When messages DFS166, DFS3626I, or DFS033I are issued for an IMS subsystem and a valid checkpoint was not found during a restart, the ERE reply will be issued. ERE can be issued for DFS3626I if one of the messages DFS3131I, DFS166, or DFS033 precedes it.

#### *command*

Code the *command* for OVERRIDE and ERE replies as specified in the example below.

# RESTARTABORT

## Example of Usage

This example shows an entry for an IMS control region.

```
COMMANDS  HELP
-----
AOFMSGMR          Reply Processing          Row 1 to 8 of 22
Command ==> _____ SCROLL==> PAGE

Entry Name : IMSIMSZ          Message ID : RESTARTABORT

Enter replies to be issued when this resource issues the selected message
or define this message as status message.

Status . . .          ('?' for selection list)

Pass/      Retry Reply Text
Selection  Count
OVERRIDE   5    /ERE OVERRIDE.
ERE        5    /ERE.
-----
-----
-----
-----
-----
```



## TCO: Issue Commands for Time-Driven Procedures

This entry allows commands to be issued to initiate, change, start, or stop time-driven procedures for any IMS operation.

Use reply processing on the Message Processing panel.

Table 8. Data to Be Entered in the Reply Processing Panel for TCO

Pass/Selection	Retry Count	Reply Text
INIT	—	DFSTCF LOAD DFSTCF .
SPEC	—	DFSTCF LOAD &EHKVAR1 .
START	—	/START LTERM DFSTCF1 .
STOP	—	/PSTOP LTERM DFSTCF1 .

### Keyword and Parameter Definitions

#### INIT

This entry specifies the IMS command required to start the initial time driven procedure DFSTCF.

#### SPEC

This entry specifies the IMS command required to change from the current TCO script to a script name entered from the operator interface.

#### START

This entry specifies the IMS command required to start TCO.

#### STOP

This entry specifies the IMS command required to stop TCO.

### Comments and Usage Notes

1. For more information on TCO, refer to the *IMS Operations Guide*.
2. &EHKVAR1 is the name entered from the IMS automation operator interface TCO function.

## TCOMEMBERS: Define TCO Members

This keyword serves to create a list of members that appear in a pop-up IMS Automation TCO Member Load panel. The panel is shown in the example below:

```

EVIKMT10      IMS Automation: TCO Member Load                      Page: 1 of 1
                                                         Date: 05/23/02
Resource/Domain => IMS711C4/APL/KEY1                          Time: 13:01
                                                         Domain: IPSNM

TCO Status . . . . . : Available

Member      +-----+
            | Select one of the user supplied TCO members          |
            | - STRTLNES          START LINES                      |
Alterna     | - ASGNTRAN         ASSIGN TRANSACTIONS              |
            | - DISPROG          DISPLAY ACTIVE PROGRAMS          |
Maximum     |                                                       |
            |                                                       |
            | F1=Help   F3=Cancel                                  |
            +-----+

Command ==>
F1=Help   F2=End   F3=Return   F4=IMS Menu   F6=Roll
    
```

Use user processing on the Message Processing panel.

Table 9. Data to Be Entered in the User Defined Data Panel for TCOMEMBERS

Keyword	Data
NAME	( <i>membername</i> , ' <i>comment</i> ')

### Format

►►—TCOMEMBERS—NAME=(*membername*, '*comment*')—◄◄

### Keyword and Parameter Definitions

#### *membername*

This is the 8-character name of the member previously defined in the IMS TCO member library. The library is associated with the DFSTCF DD statement in the IMS start up JCL.

#### *comment*

This is a comment, up to 32 characters long.

### Comments and Usage Notes

For more information on TCO, refer to Chapter 7, "TCO Functions," on page 57.

## Example of Usage

```

COMMANDS  HELP
-----
AOFMSGU           User Defined Data           Row 1 to 3 of 20
Command ==> _____ SCROLL==> PAGE

Entry Name : IMS01A           Message ID : TCOMEMBERS

To change keyword-data pair, specify the following:

Keyword
Data
NAME _____
(STRTLNES, 'START LINES')
_____

NAME _____
(ASGNTRAN, 'ASSIGN TRANSACTIONS')
_____

```

## TCOMEMBERS

---

## Chapter 4. Common Routines

This chapter describes IMS automation common routines which request information or perform tasks associated with IMS automation. You can use these common routines in automation procedures you create. Examples, sample routines, and data area information are given to show how this might be done.

IMS automation provides routines to retrieve and update IMS automation-unique information. These routines can also be used in user-written extensions of IMS automation. The following routines are arranged alphabetically for easy reference.

### Operator Command

The following command is an operator command and can be invoked by operators or via PIPES:

- INGIMS: Issue IMS console commands

### Application Programming Interfaces

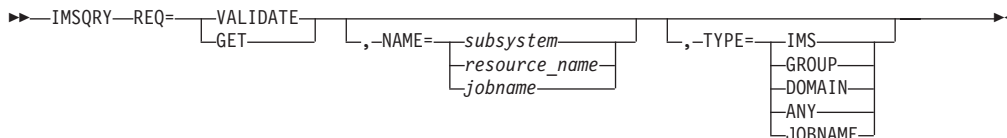
The following commands should be executed from the automation policy:

- IMSQRY: Name Lookup
- IMSRCMD: Request an IMS function

## IMSQRV: Name Lookup

Use this routine to retrieve IMS subsystem information.

Note that IMSQRV does not recognize subsystems that are in FALLBACK or MOVED status.



## Keyword and Parameter Definitions

### REQ=

The request type. The request types are:

#### VALIDATE

IMS automation searches for the name (NAME=) and type (TYPE=) specified to validate the name.

#### GET

IMS automation searches for a specific IMS subsystem to retrieve the subsystem characteristics. NAME= is valid with this request.

**NAME={*subsystem* | *resource\_name* | *jobname*}**

Used with VALIDATE to provide a specific subsystem, resource or job name for the search. Used with GET to provide a specific subsystem value. Valid values for the NAME= variables are:

<i>subsystem</i>	The name by which an IMS subsystem is known to SA z/OS
<i>resource_name</i>	The resource name in the <i>name/APL/system</i> format. Thus, the type must be APL; APG, for example, is not valid.
<i>jobname</i>	The jobname by which an IMS subsystem is known to SA z/OS.

### TYPE=

Used to provide a specific type. The types are:

#### IMS

Search for a specific IMS subsystem name, as it is known to SA z/OS. This is the default type. IMS is used with VALIDATE.

#### ANY

Search for an IMS name first, then a domain, then a group name. If the name is longer than 5 characters the search for a domain is bypassed. ANY is used with VALIDATE.

#### DOMAIN

The NetView domain name.

#### GROUP

If you specify GROUP, IMSQRV returns the name of the group to which the subsystem belongs in the EVILOOKUP\_GROUP variable.

#### JOBNAME

Used with GET to provide a specific jobname. Works only when NAME=jobname.

## Comments and Usage Notes

- Valid IMSQRV return codes include:

RC	Meaning
0	Good.
4	An internal error occurred.
8	A timeout occurred on a request forwarded to a remote system.
12	An internal error occurred.
20	A subsystem, group, or domain was not found for the search criteria specified.
24	The parameters for this request are invalid.
28	An internal error occurred.
32	Unsupported function.
36	Resource name is ambiguous (more than one resource of the same name exists within the sysplex but none are defined on the local system).
40	System name where the IMS resource resides is not unique within the enterprise.
44	The IMS resource is not unique within the enterprise and its resource tree contains more than one MOVE vgroup (MOVE groups within MOVE groups are not supported by IMSQRV).

2. The following are set in the caller's variable pool:

**EVILOOKUP\_NAME**

Set to the value of the NAME= parameter, otherwise set to null.

**EVILOOKUP\_TYPE**

Set to the value of the TYPE= parameter, unless TYPE=ANY in which case it is set to IMS or DOMAIN or GROUP as appropriate.

**EVILOOKUP\_JOBNAME**

The jobname associated with the subsystem.

**EVILOOKUP\_DOMAIN**

The NetView domain on which the SA z/OS managing this subsystem is running.

**EVILOOKUP\_AUTOOPS**

The NetView automated operator that handles automation for this subsystem.

**EVILOOKUP\_USERVAR**

The VTAM<sup>®</sup> USERVAR (or generic application ID) associated with this subsystem. This is set to '\*\*\*\*\*' if a VTAM USERVAR is not defined.

**EVILOOKUP\_SUBTYPE**

The value of the **Subtype** field in the IMS ENVIRON policy item .

**EVILOOKUP\_APPLID**

The specific VTAM application ID associated with this subsystem.

**EVILOOKUP\_RESHOME**

The location of the resource in the following format:

*sysplex.domain.system\VxRyMz*

**EVILOOKUP\_RESLIST**

The resource name in the following format

*name/type/system*

**EVILOOKUP\_AGENTDATA**

Information about the agent responsible for the subsystem in the following format

*agent\_name sysplex\_name system domain agent\_version [NetView\_version]*

## IMSQRY

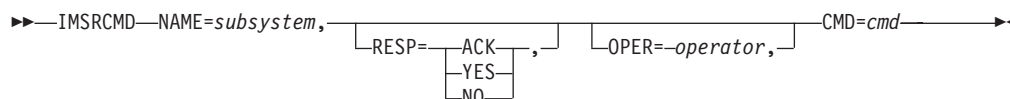
### EVILOOKUP\_GROUP

The name of the group(s) to which the resource belongs.



## IMSRCMD: Request an IMS Function

This common routine is used to perform the requested function (CMD=) on the domain where the named IMS resides, whether local or remote. The calling program does not have to be aware of where the IMS resides. It is particularly useful with single-point-of-control as IMSRCMD first determines the domain in which the subsystem resides before building and issuing the request. It then either calls the requested function if the subsystem is on the local domain, or it forwards the command to the remote domain, thus allowing cross-domain communications.



## Keyword and Parameter Definitions

### NAME=

The name by which the target IMS subsystem is known to SA z/OS, as defined in the APPLICATION policy object.

### RESP=

Send back a response (YES or NO) or just send an acknowledgement (ACK).

### OPER=

The operator, on the target domain, that will execute this command. If this is omitted, the work operator assigned to the subsystem will be used.

### CMD=

The requested function to be performed. This may be delimited by single quotes, double quotes, or slashes.

## Comments and Usage Notes

The return codes are:

RC	Meaning
0	Good
4	Subsystem name was not supplied
8	Function to be performed was not supplied
12	Incorrect keyword supplied
16	Incorrect parameter for RESP supplied
20	Subsystem was not found on any domain

### **INGIMS: Issue List of Defined Transactions and View the Output**

The INGIMS command lets you:

- Issue any console-enabled IMS command
- Broadcast messages to all or selected IMS users
- Issue a list of defined transactions and view the output
- Display the output of IMS transactions in full-screen or pipeable line mode

For a detailed description of the INGIMS command, refer to *IBM Tivoli System Automation for z/OS Operator's Commands*.

---

## Chapter 5. Monitor Commands

The following routines should be used as a MONITOR command when defining monitor resources for IMS automation.

## INGRMIOL Routine for OLDS Monitoring

This routine should be used as the monitor command for a monitor resource. It is issued after each monitoring interval to check the status of the online log data sets (OLDS) of an IMS control region and to take recovery actions if needed. To achieve this, the IMS command DISPLAY OLDS is issued to analyze the status of the listed OLDS data sets. If needed, OLDS data sets are started or stopped. Any OLDS data sets that have been defined as spare OLDS data sets are started last and stopped first.

The health status of the monitored OLDS data sets is considered to be NORMAL when the number of available OLDS data sets is not less than a given minimum number, and the AUTOMATIC ARCHIVE is switched on. In all other cases a degraded health status is returned.

### Format

▶▶—INGRMIOL—▶▶

### Restrictions

This monitor routine is assumed to be defined as the monitor command for a monitor resource with the following restrictions:

- The monitor resource is related to an IMS control region that is defined as an IMS subsystem of subcategory CTL.
- OLDS is specified as the monitored object.
- Automation actions in INGRMIOL are only taken if the recovery automation flag for minor resource OLDS is on.

### Comments and Usage Notes

The automation settings for OLDS monitoring are taken from user data for the special message ID OLDS, which is defined in the MESSAGES/USER DATA policy item of the IMS control region with the following keyword-data pairs:

Keyword	Data	Description
MINIMUM	<i>nn</i>	The minimum number of OLDS data sets that must be in AVAILABLE status.  Half of the number of listed OLDS data sets in the response of the DISPLAY OLDS command is assumed as the default value.
SPARES	<i>(nn,nn...)</i>	These specified spare OLDS data sets are started last or stopped first when OLDS data sets have to be started or stopped in order to have the minimum number of OLDS data sets in status AVAILABLE.
BACKOUT	<i>nn</i>	The maximum number of OLDS that are allowed to be in a BACKOUT status.

All of these settings are optional.

### Return Codes

Depending on the monitor results, INGRMIOL ends with the following return codes, which are mapped to the related health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	DISPLAY OLDS failed
3	NORMAL	No problem found by OLDS monitoring
4	WARNING	One of the following occurred: <ul style="list-style-type: none"><li>• Needed to start spare OLDS to have the minimum in AVAILABLE status</li><li>• AUTOMATIC ARCHIVE is off</li></ul>
5	MINOR	Could not start enough spare OLDS to have the minimum in AVAILABLE status
6	CRITICAL	Number of OLDS in BACKOUT status exceeds maximum limit

## INGRMIRE Routine for RECON Monitoring

This routine should be used as the monitor command for a monitor resource. It is issued after each monitoring interval to check the status of the recovery control data sets (RECON) of an IMS control region. To achieve this, the IMS command RMLIST DBRC='RECON STATUS' is issued to analyze the status of the listed RECON data sets in the response to this command.

The health status of the monitored RECON data sets is considered to be NORMAL when three RECON data sets are found in the status COPY1, COPY2 and SPARE. A degraded health status is returned in all other cases.

### Format

▶—INGRMIRE—▶

### Restrictions

This monitor routine is assumed to be defined as the monitor command for a monitor resource with the following restrictions:

- The monitor resource is related to an IMS control region that is defined as an IMS subsystem of subcategory CTL.
- RECON is specified as the monitored object.

### Return Codes

Depending on the monitor results, INGRMIRE ends with the following return codes, which are mapped to the related health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	RMLIST DBRC='RECON STATUS' failed
3	NORMAL	No problem found by RECON monitoring
4	WARNING	No COPY2 found for RECON
5	MINOR	No SPARE found for RECON
6	CRITICAL	Neither COPY2 nor SPARE found for RECON
7	FATAL	No RECON data sets found

## INGRMIDC Routine for DC Monitoring

This routine should be used as the monitor command for a monitor resource. It is issued after each monitoring interval to check whether the VTAM ACB of an IMS control region is OPEN and LOGONS are ENABLED. To achieve this, the response to the IMS command DISPLAY ACTIVE DC is analyzed.

The health status is considered to be NORMAL when the VTAM ACB of the IMS control region is OPEN and LOGONS are ENABLED. A degraded health status is returned in all other cases.

### Format

▶▶—INGRMIDC—◀◀

### Restrictions

This monitor routine is assumed to be defined as the monitor command for a monitor resource with the following restrictions:

- The monitor resource is related to an IMS control region that is defined as an IMS subsystem of subcategory CTL. It should not be used for a DB control region.
- DC is specified as the monitored object.

### Return Codes

Depending on the monitor results, INGRMIDC ends with the following return codes, which are mapped to the related health status for the monitor resource.

Return Code	Health status	Description
1	BROKEN	Monitor encountered a severe error
2	FAILED	DISPLAY ACTIVE DC failed
3	NORMAL	VTAM ACB is OPEN and LOGONS enabled
4	WARNING	LOGONS are not enabled





---

## Part 2. Using IMS Automation

This part describes the tasks of the operator who manages IMS subsystems through IMS automation.

It consists of the following chapters:

- Chapter 6, "Using Panels and Working with Subsystems," on page 49
- Chapter 7, "TCO Functions," on page 57
- Chapter 8, "Displaying IMS Dependent Region Information," on page 59
- Chapter 9, "Displaying Critical Messages," on page 63
- Chapter 10, "Broadcasting Messages, Issuing Commands, and Listing Information for an IMS Resource," on page 65



## Chapter 6. Using Panels and Working with Subsystems

This chapter explains how to use the IMS automation panels and to work with subsystems. We assume that you have used and are familiar with the SA z/OS operator interface. This chapter is devoted to describing those characteristics unique to IMS automation. We try to provide plentiful details to guide you. But to thoroughly understand your role as the IMS automation operator, you will need some hands-on experience with SA z/OS.

### Using IMS Automation Panels

This section explains:

- Panel characteristics
- How to select tasks from panels
- How to use panel fields and function (F) keys
- Options available from the Main Menu.

To start an IMS automation operator session and display the IMS Automation Main Menu, enter **IMS** on a NetView command line.

### Panel Characteristics

All IMS automation panels have similar characteristics, as illustrated in Figure 8.

```

EVIK0000          SA z/OS - Command Dialogs
Domain ID = IPSFM  ----- IMS -----      Date = 05/04/07
Operator ID = OPER                               Time = 14:50:51

Resource  1   => _____ Format: name/type/system
System    2   => _____ System name, domain ID or sysplex name

Action => 1. Inquire      Display an IMS control reg.
          2. Start        Start an IMS subsystem
          3. Shutdown     Shutdown an IMS subsystem
          4. Triggers     Display trigger conditions
          5. Service Periods Perform scheduling functions
          6. Master Terminal Perform Master Terminal Cmds
          7. Critical messages Display critical messages
          8. Broadcast     Send message to users
          9. TCO Management Load/Start/Stop TCO
          10. Dependent Regions Manage Dependent Regions
          99. Local Functions Provide access to user defined local
                    functions

ING006I THERE IS NO RESOURCE IMS711X1/APL/KEY1 3
Command ==> 4 _____
PF1=Help    PF2=End    PF3=Return    PF6=Ro11 5
PF12=Retrieve
```

Figure 8. Common Characteristics of IMS automation Panels

The list below identifies common characteristics of IMS automation panels:

- 1** In this field, you must specify the resource that you will work with. Most of the IMS automation panels have this field, allowing you to change resources without having to return to the main menu.

By entering a question mark ("?) in position one of the **Resource** field and pressing Enter, you can call a list of all IMS control regions from the

## Using IMS Automation Panels

current sysplex that are defined to SA z/OS. You can then select a subsystem from this list. To obtain this list for another sysplex other than the current one, specify the respective sysplex in the **System** field, before you press Enter.

Note however that many of the menu options are not valid for remote sysplexes.

- 2** In this field, you can specify the system, domain, or sysplex that the command that you call by selecting an option is to be routed to. If you specify a sysplex name and then enter a question mark in the **Resource** field you call a list of all the IMS control regions in the specified sysplex. For the current sysplex, you need not enter the sysplex name.
- 3** IMS automation messages display here.
- 4** From the command line, you can enter IMS automation operator commands, as well as any other command that can be entered from a NetView panel. You also select from the current menu by entering the option number in the command line.
- 5** You use the function keys primarily to navigate through the panels. Each function key has a self-explanatory label. However, if you see an unfamiliar function key, refer to the panel help information by pressing PF1.

## Using the Main Menu

The main menu panel lists all of the tasks available with the operator interface.

```

EVIK0000          SA z/OS - Command Dialogs
Domain ID = IPSFM  ----- IMS -----      Date = 05/04/07
Operator ID = OPER                               Time = 14:50:51

Resource          => _____ Format: name/type/system
System            => _____ System name, domain ID or sysplex name

Action =>  ___  1. Inquire          Display an IMS control reg.
              2. Start             Start an IMS subsystem
              3. Shutdown          Shutdown an IMS subsystem
              4. Triggers           Display trigger conditions
              5. Service Periods    Perform scheduling functions
              6. Master Terminal    Perform Master Terminal Cmds
              7. Critical messages  Display critical messages
              8. Broadcast          Send message to users
              9. TCO Management     Load/Start/Stop TCO
             10. Dependent Regions  Manage Dependent Regions
             99. Local Functions    Provide access to user defined local
                                   functions

Command ==> _____
PF1=Help      PF2=End      PF3=Return          PF6=Ro11
                                   PF12=Retrieve
```

Figure 9. IMS automation Main Menu

The following list describes the options you can select from the main menu:

### Inquire

Use this option to retrieve detailed information for an IMS resource. See “Getting Detailed Status” on page 52.

### Start

Use this option to initiate the startup process of a resource. By choosing this option you call the INGREQ command of SA z/OS.

### Shutdown

Use this option to initiate the shutdown process of a resource. By choosing this option you call the INGREQ command of SA z/OS.

### Triggers

Use this option if you want to display the triggers associated with a resource. By choosing this option you call the DISPTRG command of SA z/OS. See *IBM Tivoli System Automation for z/OS Operator's Commands*.

### Service Periods

Use this option if you want to display or override the schedule associated with a resource. By choosing this option you call the INGSCHED command of SA z/OS. See *IBM Tivoli System Automation for z/OS Operator's Commands*.

### Master Terminal

Use this option to issue a command to a specific subsystem. By choosing this option you call the INGIMS REQ=CMD command. See *IBM Tivoli System Automation for z/OS Operator's Commands* for details.

### Critical Messages

This facility displays critical messages in a scrollable format. Once displayed, messages can be deleted. See Chapter 9, "Displaying Critical Messages," on page 63.

### Broadcast

Use this option to send a message to a specific subsystem. By choosing this option you call the INGIMS REQ=BROADCAST command of SA z/OS. See *IBM Tivoli System Automation for z/OS Operator's Commands* for details.

### TCO Management

Use this option to manage the TCO functions of a specific subsystem. See Chapter 7, "TCO Functions," on page 57 for details.

### Dependent Regions

This option displays information about IMS dependent regions that you can issue commands against. See Chapter 8, "Displaying IMS Dependent Region Information," on page 59 for details.

### Local Functions

IMS automation allows your system programmer to add functions to this operator interface. If functions have been added at your installation, select this option to view a menu of them.

**Note:** When option 99 is selected from the IMS automation main menu, the module EVIEU000 is called. This module is not part of SA z/OS, but should be provided by you as a user-defined application.

#### Important

Options 1 (Inquire) and 6 through 99 are only valid for the local sysplex. You cannot access a remote sysplex with any of these functions.

---

## Selecting and Viewing Subsystems

This section explains how to select a resource from a list of available resources and how to display detailed information about a subsystem.

## Selecting and Viewing Subsystems

### Selecting a Subsystem

You can specify the resource you want to work with by simply entering its name in the **Subsystem** or **Resource** field of the respective panel. On the IMS-specific panels you can call up a list of the available IMS control regions by entering a question mark at position one of the **Subsystem** or **Resource** field. On the panels that belong to basic SA z/OS commands (INGREQ, INGSCHED, DISPTRG), you can use an asterisk (\*) as a wildcard.

Figure 10 shows a list of IMS control regions generated with the question mark function.

```
INGKYSTS                      SA z/OS - Command Dialogs      Line 1    of 34
Domain ID   = IPSFM          ----- Selection Panel -----   Date = 08/22/05
Operator ID = OPER           Sysplex = KEY1PLEX                Time = 06:27:50

CMD: S Select                                     / scroll
CMD Name      Type System  Compound      Desired      Observed      Nature
-----
s  IMS641C4    APL KEY2      INHIBITED    AVAILABLE    UNKNOWN
-  IMS711C4    APL KEY1      INAUTO       UNAVAILABLE  STARTING
-  IMS711DL    APL KEY1      INAUTO       AVAILABLE    STARTING
-  IMS711F1    APL KEY1      SATISFACTORY UNAVAILABLE  SOFTDOWN
-  IMS711M1    APL KEY1      SATISFACTORY UNAVAILABLE  SOFTDOWN
-  IMS711RC    APL KEY1      INAUTO       AVAILABLE    STARTING
-  IMS712CX    APL KEY1      SATISFACTORY AVAILABLE     AVAILABLE
-  IMS712DL    APL KEY1      SATISFACTORY AVAILABLE     AVAILABLE
-  IMS712F1    APL KEY1      PROBLEM      UNAVAILABLE  HARDDOWN
-  IMS712M1    APL KEY1      PROBLEM      UNAVAILABLE  HARDDOWN
-  IMS712RC    APL KEY1      SATISFACTORY AVAILABLE     AVAILABLE
-  IMS713C4    APL KEY1      AWAITING     UNAVAILABLE  AVAILABLE
-  IMS713DL    APL KEY1      INAUTO       UNAVAILABLE  STOPPING

Command ==>
PF1=Help    PF2=End      PF3=Return   PF6=Ro11
PF9=Refresh PF10=Previous PF11=Next    PF12=Retrieve
```

Figure 10. Selection Panel for IMS Resources

The list contains all IMS subsystems of the KEY1PLEX sysplex (see line 3 of the panel) that are defined to SA z/OS. You can use it not only to select a subsystem (by entering **s** in the **CMD** column), but also to get an overview of the sysplex. Columns 5 through 7, for example, contain status information for the subsystems. For more details on the different status types, see *IBM Tivoli System Automation for z/OS User's Guide*.

You can scroll horizontally through the list to the right by pressing PF11, and to the left by pressing PF10. The first three columns, which make up the resource name of the subsystem, are fixed.

### Getting Detailed Status

To view the status of a specified subsystem in detail, select option **1** on the main menu panel and press Enter. This displays the panel shown in Figure 11 on page 53

```

AOFKINFO          SA z/OS - Command Dialogs          Line 1 of 221
Domain ID = IPSFM ----- DISPINFO -----          Date = 10/26/07
Operator ID = OPER                                         Time = 15:42:45

Subsystem ==> IMS1CTL   System ==> KEYC   System name, domain ID
                                         or sysplex name
Subsystem   : IMS1CTL   on System : KEYC

Description : IMS Control Region

Inform list : SDF

Class chain : C_IMS_DCCTL Class for IMS DCCTL regions
              C_IMSCTL   Class for IMS Control regions

Job Name    : IMS9A1C4
ASID       : 005D

Job Type    : MVS

Category    : IMS - CTL

Current status : UP
Last Monitored : 12:17:16 on 10/25/07
Last Changed  : 13:12:01 on 10/25/07
Last Message
AOF571I 13:12:01 : IMS1CTL SUBSYSTEM STATUS FOR JOB IMS9A1C4 IS UP
- UP MESSAGE RECEIVED

Monitor      : INGPJMON
Monitor Status : ACTIVE
Monitor Interval : None specified

Primary WTOR reply IDs : 46

Last termination : 10:26:28 on 08/27/07   Type : NORM
Last start       : 13:12:01 on 10/25/07   Type : NORM

ARM Element Name : None

Command ==>
PF1=Help   PF2=End   PF3=Return   PF4=INGINFO   PF6=Roll
PF8=Forward PF9=Refresh PF10=IMS Info PF12=Retrieve
    
```

Figure 11. Detailed Subsystem Information Panel for an IMS Control Region

If the startup or shutdown occurred while NetView was up and running, the **Last termination** and **Last start** data will be accurate. If NetView was not running when the startup or shutdown occurred, the data may be inaccurate.

To display any regions that are defined to the subsystem, select option 2 from the Inquire Subsystems Components panel. Figure 12 on page 54 shows the panel for an IMS control region, and Figure 13 on page 54 shows the panel for a DB control region.

## Selecting and Viewing Subsystems

```

EVIKQA00  IMS Automation: Subsystem/Defined Regions Display  Page: 1 of 1
                                                    Date: 08/22/05
Resource/Domain => IMS711C4/APL/KEY1                (? for list) Time: 17:04:30
                                                    Domain: IPSNM
Subtype: CTL      Subsystem: IMS10A1  JOB: IMS10AA  Status: UP
Outstanding Reply: 11  AVM: ON  XRF: YES  DC Status: UP
XRF Mode: ACTIVE  XRF Status: ACTIVE  ALTSYS: ON  Last HSBID: 1
-----
Subtype Region  Job      Status      Subtype Region  Job      Status
-----
DBRC  DBRIMSAA  DBRIMSAA  UP
DLS   DLIIMSAA  DLIIMSAA  UP
TP    MSGIMSAA  MSGIMSAA  UP
TP    MSGIMSAB  MSGIMSAB  UP
TP    MSGIMSAC  MSGIMSAC  UP
FP    FPIMSAA  FPIMSAA  STOPPED
BMP   BMPIMSAA  BMPIMSAA  STOPPED

Command ==>
F1=Help  F2=End  F3=Return  F4=IMS Menu  F5=Refresh  F6=Roll

```

Figure 12. Subsystem/Defined Regions Display Panel for an IMS Control Region

All defined regions display whether they are currently active. In Figure 12, the subsystem is IMS10A1 and the job is IMS10AA. For each region, the panel displays the subtype, region, job name, and status. Subtypes include:

- DBRC** Database recovery control region
- DLS** DL/I Address Space
- TP** Normal online message region (transaction processing)
- FP** Fast path message region
- BMP** Batch message processing region

```

EVIKQA00  IMS Automation: Subsystem/Defined Regions Display  Page: 1 of 1
                                                    Date: 08/22/05
                                                    Time: 17:04:30
Subtype: CTL      Subsystem: IMS01C  JOB: IMS401C  Status: UP
IMSID:  I41C      Command Character: ?
-----
Subtype Region  Job      Status      Subtype Region  Job      Status
-----
DBRC  DBRIMSC  DBRIMSC  UP
DLS   DLIIMSC  DLIIMSC  UP
BMP   BMPIMSAA  BMPIMSAA  STOPPED
BMP   BMPIMSCA  BMPIMSCA  STOPPED
BMP   BMPIMSCB  BMPIMSCB  STOPPED
BMP   BMPIMSCC  BMPIMSCC  UP

Command ==>
F1=Help  F2=End  F3=Return  F4=IMS Menu  F5=Refresh  F6=Roll

```

Figure 13. Subsystem/Defined Regions Display Panel for a DB Control Region



## Selecting and Viewing Subsystems

To display only the dependent regions that are currently active, select option 3 from the Inquire Subsystems Components panel. Figure 14 shows the panel for an IMS control region, and Figure 15 shows the panel for a DB control region.

```
EVIKQD00 IMS Automation: Subsystem/Active Regions Display      Page: 1 of 1
                                                    Date: 08/22/05
Resource/Domain => IMS711C4/APL/KEY1                (? for list) Time: 17:05:00
                                                    Domain: IPSNM
      Subsystem Job: IMS10AA          DBRC Job: DBRIMSAA      DLI Job: DLIIMSAA
      Subsystem Status: UP           DBRC Status: ACTIVE     DLI Status: ACTIVE
      DC Status: UP
-----
      Subsystem Name: IMS10A1          Active Regions: 4
      ID   Type  Job      Taskname  ID   Type  Job      Taskname
      --   ---  -
      4    TP   MSGIMSAB  WAITING  |
      3    TP   MSGIMSAC  WAITING  |
      2    TP   MSGIMSAA  WAITING  |
      1    BMP   PPIIMSA   PPIIMSA  |
-----
Command ==>
F1=Help      F2=End      F3=Return   F4=IMS Menu  F5=Refresh   F6=Roll
              F9=Autoref
```

Figure 14. Subsystem/Active Regions Display for an IMS Control Region

```
EVIKQD00 IMS Automation: Subsystem/Active Regions Display      Page: 1 of 1
                                                    Date: 08/22/05
                                                    Time: 17:05:00
      Subsystem Job: IMS401C          DBRC Job: DBRIMSC      DLI Job: DLIIMSC
      Subsystem Status: UP           DBRC Status: ACTIVE     DLI Status: ACTIVE
      Command Character: ?
-----
      Subsystem Name: IMS401C          Active Regions: 1
      ID   Type  Job      Taskname  ID   Type  Job      Taskname
      --   ---  -
      1    BMP   BMPIMSCC  WAITING  |
-----
Command ==>
F1=Help      F2=End      F3=Return   F4=IMS Menu  F5=Refresh   F6=Roll
              F9=Autoref
```

Figure 15. Subsystem/Active Regions Display for a DB Control Region

## Selecting and Viewing Subsystems

---

## Chapter 7. TCO Functions

The master terminal functions provide a fullscreen panel interface to perform Time Controlled Operations (TCO) functions. Select option 9, TCO Management, to display the IMS TCO Status panel, as shown in Figure 16.

```

EVIKYTC0          SA z/OS - Command Dialogs      Line 1    of 7
Domain ID = IPSFP  ----- IMS TCO Status ----- Date = 05/04/07
Operator ID = OPER                               Time = 18:48:24
Control Reg.= IMS2CTL/APL/KEY4
CMD: A Load      B Start      C Stop
                                                    / scroll

CMD Name      Type      Status      Description
-----
- DFSTCF      LTERM      ACTIVE
- BITEST1     MEMBER
- BITEST2     MEMBER      DISPLAY MESSAGE QUEUE *QBUF* PLU
- BITEST3     MEMBER      DISPLAY MESSAGE QUEUE *QBUF* PLU
- DFSTCF      MEMBER      DEFAULT MEMBER
- DFSTC0      MEMBER      HUGOA ALTERNATE MEMBER
- SVDFSTC     MEMBER      ALTERNATE MEMBER

Command ==>
PF1=Help      PF2=End      PF3=Return      PF6=Ro11
               PF9=Refresh      PF12=Retrieve

```

Figure 16. IMS TCO Status Panel

The Time Controlled Operations (TCO) interface lets you issue TCO commands from the IMS automation interface.

From this panel you can:

- Load a specific member
- Start or stop TCO processing for a logical terminal

---

### Load a Specific Member

Enter command code A against an object of type MEMBER to load that member. The member is loaded into TCO via the IMS control region outstanding reply. The reply text that is used is defined in the ACF via the TCO entry and has a selection of SPEC. Typically it is defined as DFSTCF LOAD &EHKVAR1 . in the ACF, where the EHKVAR1 variable is set to the member name that the line command is executed against.

---

### Start or Stop TCO Processing

Enter command code B or C against an object of type LTERM to start or stop TCO processing for that member. This invokes INGIMS with the command of /START LTERM *name* or /STOP LTERM *name* where *name* is the name of the logical terminal.



## Chapter 8. Displaying IMS Dependent Region Information

This option displays details about the IMS dependent regions that are being processed by the specified IMS Control Region, as shown in Figure 17. All dependent regions that are currently active are displayed. Those that are defined to SA z/OS are displayed as SA z/OS resources. The remainder have only their job names and IMS information displayed.

```

EVIKYDP0          SA z/OS - Command Dialogs      Line 1    of 5
Domain ID = IPSFP  ---- Dependent Regions ----   Date = 08/03/07
Operator ID = OPER                               Time = 12:44:37
Control Reg.= IMSCTL/APL/KEY4
CMD: A Update   B Start   C Stop   D INGRELS   E INGVOTE   F INGINFO
      H DISPTRG   I INGSCHED N /ASSIGN P /PSTOP   / scroll
CMD Name       Type System Reg.Id Type Trans/Step Program  IMS Status
-----
-  IMSDBRC     APL KEY4          DBRC
-  IMSDLS     APL KEY4          DLS
-  IMSFP1     APL KEY4 1       FPME NO MSG.   DFSIVP4
-  IMSMP1     APL KEY4 2         TP              WAITING
-  IMSPPI     APL KEY4 3         BMP  IMS941PP  EVIRYPPI

Command ==>
PF1=Help   PF2=End       PF3=Return      PF6=Ro11
PF9=Refresh PF10=Previous PF11=Next      PF12=Retrieve
  
```

Figure 17. IMS Dependent Regions Panel

For each resource the following information is shown:

**Name** The name of the resource. This is the job name from the /DIS ACTIVE display if the dependent region is not defined to SA z/OS.

**Type** The type of the resource. This is blank if the dependent region is not defined to SA z/OS.

**System**

The name of the system where the resource resides. This is blank if the dependent region is not defined to SA z/OS.

The following fields are displayed on a series of screens that you can move through with the PF10 or PF11 key:

**Reg.Id** The IMS dependent region number.

**Type** The second type column is the IMS dependent region type.

**Trans/Step**

Transaction code being processed by region, or NONE, if there are no regions of that type.

**Program**

Name of the program processing in the region.

**IMS Status**

Status of the region, which can be one of the following:

Status	Meaning
ACTIVE-DBCMD	A /DBD or a /DBR command is in progress and waiting for the region to terminate before the /DBD or /DBR can complete.
AVAILABLE	The active threads are available. The region is available to schedule an application.
SCHEDULED	The application program is being scheduled.
TERMINATING	The application program is being terminated.
UNAVAILABLE	An active DBT thread is unavailable. An application is using the region, even though the application is not currently scheduled. This region is therefore not available to any other application.
WAITING	The MPP region is waiting for work.
WAIT-AOI	An AO application issued a GMSG call with the WAITAOI subfunction specified, but there are no messages for the AO application to retrieve.
WAIT-BLOCKMOVER	An application control block cannot be loaded because the ACB block mover is busy.
WAIT-CMD/PENDING	A /DBDUMP, /DBRECOVERY, or /START command is in progress.
WAIT-INPUT	The application program is in WAIT-FOR-INPUT (WFI) mode.
WAIT-INTENT	The application program's intent for a database conflicts with the use of the database by a scheduled program.
WAIT-INTENT/POOL	Indicates that either the application program's intent for a database conflicts with the use of the database by a scheduled program, or a temporary shortage of DMB, PSB, or PSB work area pool space exists.
WAIT-INTENT SCHED	The IMS transaction scheduler detected an application scheduling intent, for example, Load Balancing.
WAIT-I/O PREVEN	A BMP region that accesses a GSAM database cannot schedule until I/O prevention has completed.
WAIT-MESSAGE	The application program is in a pseudo WAIT-FOR-INPUT (WFI) mode. The application is scheduled and is waiting for a message.
WAIT-POOLSPACE	A temporary shortage of DMB, PSB, or PSB work area pool space exists.
WAIT-SWITCHOVER	The alternate system is tracking the active system.
WAIT-SYNCPOINT	The application in the region is now in SYNC POINT.
WAIT-EPCB POOL	A temporary shortage of EPCB pool space exists.
WAIT-RRS PC	The application program has a protected conversation with an OTMA client that is processing a synchronization point (or sync point). Sync point can continue after the OTMA client issues either an SRRCMIT or SRRBACK call. Alternatively, the application program is part of a cascaded family and is processing a sync point. APPC/OTMA SMQ Enablement uses RRS cascaded transaction support to synchronize the backend and frontend system.

|  
| **IMS Classes**

| One of the classes that is associated with the region. The region can have  
| from one to four classes, whose values range from 1 to 999.

| **Compound**

| The compound status of the resource. This is a summary of all statuses of  
| the resource and provides a single value that tells you whether the  
| resource is OK or it has a problem.

| **Observed**

| The current status of the resource as observed by the automation agent.

| **Desired**

| The status that the automation manager is trying to move the resource to.  
| It can be either available or unavailable.

| **Automation**

| The status representing the automation agents automation for the resource.

| **Startable**

| Indicates whether it is possible to start the resource if the automation  
| manager is asked to do so at this point in time.

| **Health**

| The health status of the resource. Shows N/A if the resource is not  
| connected to a monitor.

| **Auto**

| Shows the automation flag that is maintained by the automation manager.  
| No automation is done for the resource by the automation manager when  
| the flag is off.

| **Hold**

| Shows the hold flag that is maintained by the automation manager.

| **Starttype**

| The preset start type that will be used the next time the resource is made  
| available (started). This value is set by INGSET and will override any  
| TYPE value that is specified (or defaulted to) in the next INGREQ start  
| request.

| **Stoptype**

| The preset stop type that will be used the next time the resource is made  
| unavailable (shut down). This value is set by INGSET and will override  
| any TYPE value specified (or defaulted to) in the next INGREQ stop  
| request. However, a stop type of FORCE, wherever specified, will always  
| be honored.

| **Trigger**

| The trigger that is associated with the resource.

| **Category**

| Shows the category of the resource, such as CICS, DB2 or IMS.

| **Subtype**

| The subtype of the resource. Applies to resources of category CICS, DB2,  
| IMS and OPC.

| **Description**

| Descriptive information about the resource.

|  
| Different colors are used to indicate when a particular status is viewed as  
| abnormal, as follows:

Color	Meaning
Blue	The desired status is UNAVAILABLE
Pink	The compound status is DENIED or INHIBITED
Red	The compound status is PROBLEM The observed status is HARDDOWN or PROBLEM
Yellow	The compound status is DEGRADED The observed status is not in line with the desired status

You can use one of the following command codes to invoke another command dialog:

- A** Update resource settings (SA z/OS resources only).
- B** Start resource (make available). SA z/OS resources will invoke INGREQ, non-SA z/OS regions will invoke INGIMS with a command of /START REGION *xxxxx*, where *xxxxx* is the job name.
- C** Stop resource (make unavailable). SA z/OS resources will invoke INGREQ, non-SA z/OS regions will invoke INGIMS with a command of /STOP REGION JOBNAME *xxxxx*, where *xxxxx* is the job name.
- D** Show resource relationships. (This invokes INGRELS).
- E** Show resource requests or votes. (This invokes INGVOTE).
- F** Show resource details. (This invokes INGINFO).
- H** Show trigger details for resource. (This invokes DISPTRG).
- I** Show schedules for resource. (This invokes INGSCHED).
- N** Invoke the /ASSIGN command. Use the assign command to assign additional classes to the region. It invokes INGIMS with the command /ASSIGN CLASS *xx* REGION *nn*, where *nn* is the region number. You can overtype the command to supply the classes.
- P** Invoke the /PSTOP command. Use the pstop command to stop a transaction. It invokes INGIMS with the command /PSTOP REGION *nn* TRANSACTION *xx*, where *nn* is the region number and *xx* is taken from the **Trans/Step** column. You can overtype the command before executing it.

**Note:** This action code will not check whether the control region or the dependent region supports the command. You can adjust the command to suit your purpose if the TRANSACTION format of the command is not suitable.

Additionally you can use the slash character (/) to make the selected line the first line of the display.

You can also use the FIND(F), RFIND(RF), and SORT subcommands on this panel.



---

## Chapter 9. Displaying Critical Messages

Through the Critical Message Manager, IMS automation uses the SA z/OS Status Display Facility (SDF). The Critical Message Manager displays critical messages in a prioritized, scrollable format. Messages are defined as critical in the NetView automation table (AT).

SDF's IMS Monitor Panel lists categories of critical messages. If the CMM has accumulated any critical messages for a category, that category will be highlighted, according to severity of message.

In addition to SDF, many IMS messages are captured via Captured Message support. These can be displayed from the DISPINFO command for the subsystem.

Failing transactions and programs are shown in SDF and NMC. For more details refer to *IBM Tivoli System Automation for z/OS User's Guide* and *IBM Tivoli System Automation for z/OS Customizing and Programming*.



---

## Chapter 10. Broadcasting Messages, Issuing Commands, and Listing Information for an IMS Resource

With the INGIMS command dialog you can issue any IMS operator commands, broadcast messages to all or selected IMS users, and display information about IMS resources.

For a detailed description of the INGIMS command, refer to *IBM Tivoli System Automation for z/OS Operator's Commands*.

```
EVIKYCMD          SA z/OS - Command Dialogs          Line
Domain ID   = IPSFM   ----- INGIMS -----      Date = 08/22/05
Operator ID = ASTA                                Time = 16:41:03

Resource      => IMS721C4/APL/KEY2                Format: name/type/system
System        =>                                     System name, domain ID or sysplex name
Request       => BROADCAST                         CMD, BROADCAST or INFO
IMS Command   => BROADCAST
IMS Route     => ACTIVE
IMS Message   =>
              =>

Command ==>
PF1=Help      PF2=End      PF3=Return    PF4=DISPINFO    PF6=Ro11
               PF9=Refresh  PF12=Retrieve
```

Figure 18. INGIMS Command Dialog

You can specify the following:

### Resource

Specifies the name of an IMS resource. The format is name/type/system or name/type for sysplex resources. Wildcard characters are supported.

### System

Is the name of the system (system name, domain ID, or sysplex name) to which the command is issued. This is only necessary when the resource is not part of the local sysplex.

### Request

Specifies the request to be issued to the IMS subsystem. It can be one of the following: CMD, BROADCAST or INFO.

### IMS Command

Specifies the IMS transaction and its parameters to be executed. The IMS command field is automatically filled with the text above. You can make changes to it before pressing Enter to execute the transaction.

### IMS Route

Specifies the routing information. The routing information format is the same as specified for the /BRO command.

### IMS Message

Specifies the message to be sent to all or selected IMS users or terminals. For example, you can notify users of a planned shutdown.

With PF4 DISPINFO, you can display detailed information about the specified subsystem.

---

## Glossary of IMS Automation Terms

This glossary defines special IMS terms used in the library and words used with other than their everyday meaning. In some cases, a definition may not be the only one applicable to a term, but it gives the particular sense in which it is used in the IMS automation library.

**abend.** Abnormal end of task.

**ACB.** Access Method Control Block (VTAM and VSAM).

**access method.** A technique for moving data between main storage and input/output devices.

**ANSI.** American National Standards Institute.

**AOST.** Automated Operator Station Task.

**APAR.** Authorized program analysis report.

**application program.** A program written for or by a user that applies to the user's work. In data communication, a program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

**automation.** Computer system control of operation processes.

**authorized program analysis report (APAR).** A request for correction of a problem caused by a defect in a current unaltered release of a program.

**batch.** An accumulation of data to be processed.

**batch message processing.** In IMS/VS, a batch processing program that accesses online data bases and message queues.

**BMP.** Batch Message Processing Region.

**CCTL.** Coordinator Controller.

**central processing complex (CPC).** A conglomeration of several processors and other devices in one or more physical units. This usually means several processors running under the control of a single MVS/ESA operating system. For example, a 3090 model 400 processor complex can run as a four-processor CPC, or it can be partitioned into the equivalent of two 3090 model 200s, each of which runs as a CPC with its own operating system.

**CICS.** Customer Information Control System.

**CLIST.** Command List.

**CNM.** Communications Network Management.

**command.** In IMS, an instruction similar in format to a high-level programming language statement.

**command list (CLIST).** A list of commands and statements designed to perform a specific function for the user. Command lists can be written in REXX or in NetView Command List Language.

**concurrent.** Pertaining to the occurrence of two or more activities within a given interval of time.

**CPC.** Central Processing Complex.

**CSA.** Common Storage Area.

**CSH.** Common State Handler.

**database.** A collection of data fundamental to a system.

**database backout.** The function of removing changes made to user data sets by in-flight transactions.

**database recovery.** The function of restoring the user data sets, starting with a backup copy and applying all changes made to each data set after the backup was taken.

**data security.** The protection of data against unauthorized disclosure, transfer, modifications, or destruction, whether accidental or intentional.

**data set.** The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

**DBCTL.** Data Base Control.

**DEDB.** Data Entry Data Base.

**DLISAS.** Data Language Interface Separate Address Space (IMS Batch).

**domain.** In IMS, a set of subsystems on a specific NetView domain defined by the system programmer in the control file.

**end user.** In IMS, anyone using IMS to do a job, usually by interacting with an application program (transaction) by means of a terminal.

**exception.** An abnormal condition such as an I/O error encountered in processing a data set or a file, or using any resource.

**Fast Path Message Region.** In IMS, a region that executes programs that require good response characteristics and that have large transaction volumes. Message processing is grouped for load balancing and synchronized for database integrity and recovery.

**focal point system.** In IMS, a system in which multiple subsystems are interconnected. One subsystem serves as a focal point of control, and the others are referred to as intermediate or distributed systems.

**HM.** Help Message.

**HSBID.** Hot Standby Identifier.

**HSSP.** High-Speed Sequential Processing.

**initial program load (IPL).** The initialization procedure that causes an operating system to commence operation.

**initialization.** Actions performed by IMS to construct the environment in the IMS region to enable IMS applications to be run. A process started by SA z/OS to construct the environment that automation will occur in.

**installation.** A particular computing system, in terms of the work it does and the people who manage it, operate it, apply it to problems, service it and use the work it produces. The task of making a program ready to do useful work. This task includes generating a program, initializing it, and applying PTFs to it.

**Installation Verification Procedure (INSTALL/IVP).** Procedure distributed with the system that tests the newly generated system to verify that the basic facilities are functioning correctly.

**INSTALL/IVP.** Install/Installation Verification Procedure.

**Integrated Resource Lock Manager (IRLM).** In IMS automation, this facility is used as a lock manager, both as a single lock manager and in a data sharing environment.

**intercommunication facilities.** A generic term covering intersystem communication (ISC) and multiregion operation (MRO).

**intersystem communication (ISC).** Communication between separate systems by means of SNA networking facilities or by means of the application-to-application facilities of an SNA access method. ISC links IMS systems, and it may be used for user application-to-user application communication, or for transparently executing IMS functions on a remote IMS system.

**IPL.** Initial Program Load.

**IRC.** Interregion communication.

**IRLM.** Integrated Resource Lock Manager.

**ISC.** Intersystem Communication.

**IVP.** Installation Verification Procedure.

**keyword.** A symbol that identifies a parameter. A part of a command operand that consists of a specific character string.

**local.** In data communication, pertaining to devices that are attached to a CPC by cables, rather than data links.

**local device.** A device, such as a terminal, whose control unit is directly attached to a computer's data channel. No data link is used. Contrast with remote device.

**lock manager.** Feature of IMS automation responsible for serializing the recovery process in areas where multiple subsystems can invoke recovery actions.

**member.** See partitioned data set.

**MPP.** Message Processing Program.

**MSC.** Multiple Systems Coupling.

**MSDB.** Main Storage Data Base.

**MTO.** Master Terminal Operator.

**Multiple Systems Coupling (MSC).** An IMS/VS feature that permits geographically dispersed IMS/VS systems to communicate with each other.

**NCCF.** Network Communications Control Facility.

**network.** An interconnected group of nodes. The assembly of equipment through which connections are made between data stations.

**network configuration.** In SNA, the group of links, nodes, machine features, devices, and programs that make up a data processing system, a network, or a communication system.

**Network Communications Control Facility (NCCF).** IBM licensed program consisting of a base for command processors that can monitor, control, and improve network operations.

**non-XRF (non-XRF IMS).** Represent IMS in a non-XRF configuration.

**NPDA.** Network Problem Determination Aid/Application.

**OLDS.** Online Log Data Set.

**online.** Pertaining to a user's ability to interact with a computer. Pertaining to a user's access to a computer via a terminal.

**panel.** In IMS automation, the set of information displayed on a single screen of the user interface.

**parameter.** (ISO) A variable that is given a constant value for a specified application and that may denote the application.

**partitioned data set (PDS).** A data set in direct access storage that is divided into partitions, called members, each of which can contain a program, part of a program, or data. Synonymous with program library.

**PDS.** Partitioned Data Set.

**preprocessor.** Routine in IMS automation that enables the programmer to define unique GLOBALV names to store the state value of certain processes.

**processor (ISO).** In a computer, a functional unit that interprets and executes instructions.

**PTF.** Program Temporary Fix.

**PUT.** Program update tape.

**RACF.** Resource Access Control Facility.

**RDS.** Restart Data Set.

**RECON.** Recovery Control.

**recovery routine.** A routine entered when an error occurs during the performance of an associated operation. It isolates the error, assesses the extent of the error, and attempts to correct the error and resume operation.

**remote.** In data communication, pertaining to devices that are connected to a data processing system through a data link.

**remote device.** A device, such as a terminal, connected to a data processing system through a data link.

**remote system.** In IMS intercommunication, a system that the local IMS system accesses via intersystem communication or multiregion operation.

**Resource Access Control Facility (RACF).** A licensed program that provides for access control by identifying and verifying users to the system, authorizing access to DASD data sets, logging detected unauthorized access attempts, and logging detected accesses to protected data sets.

**RMF.** Resource Management Facility.

**roll.** In IMS automation, the option to begin or rollover to another NetView session. This action is assigned to the PF6 key.

**SDF.** Status Display Facility. The display facility for SA z/OS.

**security.** Prevention of access to or use of data or programs without authorization.

**service.** The carrying out of effective problem determination, diagnosis, and repair on a data processing system or software product.

**single-point-of-control.** Feature of IMS automation enabling the operator to monitor and control IMS subsystems from a single NetView console.

**SLDS.** System Log Data Set.

**SMU.** Security Maintenance Utility.

**SNA.** Systems Network Architecture.

**software.** (ISO) Programs, procedures, rules, and any associated documentation pertaining to the operation of a computer system. Contrast with hardware.

**startup.** The operation of starting up IMS by the system operator.

**status code.** In IMS/VS, a two-character code in the program communication block (PCB) mask that indicates the results of a DL/1 call.

**system.** In IMS, an assembly of hardware and software capable of providing the facilities of IMS for a particular installation.

**system initialization table.** A table containing user-specified data that will control a system initialization process.

**systems network architecture (SNA).** The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

**task.** (ISO) A basic unit of work to be accomplished by a computer. Under IMS, the execution of a transaction for a particular user.

**TCO.** Timer-Controlled Operations.

**terminal.** A point in a system or communication network at which data can either enter or leave. In IMS, a device, often equipped with a keyboard and some kind of display, capable of sending and receiving information over a communication channel.

**terminal operator.** The user of a terminal.

**transaction.** A transaction may be regarded as a unit of processing (consisting of one or more application programs) initiated by a single request, often from a terminal. A transaction may require the initiation of one or more tasks for its execution.

**update.** To modify a file with current information.

**VSCR.** Virtual Storage Constraint Relief.

**VTAM.** Virtual Telecommunications Access Method.  
VTAM is one of the ways IMS communicates with terminals.

**WTOR.** Write To Operator with Reply.

**XRF.** Extended recovery facility, a software function that minimizes the effects of various failures on the end users.



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