IBM IMS Program Restart Facility for z/OS 2.2

User's Guide and Reference

SC19-3985-08

Note:

Before using this information and the product it supports, read “Notices” on page 169.

Ninth Edition (November 2023)

This edition applies to Version 2.2 of IBM IMS Program Restart Facility for z/OS (program number 5655-E14) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC19-3985-07.

Contents

About this information

IBM® IMS Program Restart Facility for z/OS® (also referred to as IMS Program Restart Facility) helps you recover from and restart abended IMS batch jobs that use the IMS Extended Restart facility.

These topics provide instructions for installing, configuring, and using IMS Program Restart Facility.

These topics are designed to help database administrators, system programmers, application programmers, and system operators perform these tasks:

- Install and operate IMS Program Restart Facility
- Customize your IMS Program Restart Facility environment
- Diagnose and recover from IMS Program Restart Facility problems
- Use IMS Program Restart Facility with other IMS products

To use these topics, you should have a working knowledge of:

- The z/OS operating system
- ISPF
- SMP/E
- IMS

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

https://www.ibm.com/support/pages/node/712955

The IMS Tools Product Documentation web page includes:

- Links to IBM Documentation for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions

Chapter 1. IMS Program Restart Facility overview

IBM IMS Program Restart Facility for z/OS (also referred to as IMS Program Restart Facility) helps you correctly restart abended IMS batch jobs that use the IMS Extended Restart facility.

Topics:

IMS Program Restart Facility puts the checkpoint records that are required to restart jobs into DASD files called *checkpoint tracking data sets* (CTDS). When you restart a job that has ended abnormally, IMS Program Restart Facility automatically supplies the most recent restart checkpoint ID. The CTDS contains copies of the IMS log records that are required for an extended restart.

IMS Program Restart Facility 2.2 can also perform IMS batch backout processing when DLI or DBB IMS batch jobs fail. This feature is the main feature of Batch Backout Manager, which was merged with IMS Program Restart Facility 2.2. When a DLI or DBB batch job ends abnormally, IMS Program Restart Facility closes the log of the DLI or DBB batch job and invokes the IMS batch backout utility. This time-critical process is required to free any IRLM locks that might be held by an IMS batch job. If a system failure occurs, IMS Program Restart Facility uses a *batch backout data set* (BBDS), a small DASD file that tracks DLI and DBB batch jobs, to determine the status of the job, and performs the required IMS log close and batch backout when the job is resubmitted.

IMS Program Restart Facility runs on any currently supported IMS version. To learn about system requirements, see the *Program Directory for IBM IMS Program Restart Facility for z/OS*.

You can use IMS Program Restart Facility to restart jobs that ended abnormally on a different version of IMS. For example, if an IMS job is canceled to allow IMS to be upgraded from 14.1 to 15.1, you can use IMS Program Restart Facility to restart the job instead of backing out the job and starting it over from the beginning.

To use IMS Program Restart Facility, you restart abended jobs as you normally do. You do not have to do the following tasks:

- Specify a checkpoint ID to IMS Extended Restart. IMS Program Restart Facility automatically supplies the most recent restart checkpoint ID for the job that is being restarted.
- Override the JCL to provide the correct log data set names.
- Change your application code.

What's new in IMS Program Restart Facility

This topic summarizes the technical changes for this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

Revision markers follow these general conventions:

- Only technical changes are marked; style and grammatical changes are not marked.
- If part of an element, such as a paragraph, syntax diagram, list item, task step, or figure is changed, the entire element is marked with revision markers, even though only part of the element might have changed.

- If a topic is changed by more than 50%, the entire topic is marked with revision markers (so it might seem to be a new topic, even though it is not).

Revision markers do not necessarily indicate all the changes made to the information because deleted text and graphics cannot be marked with revision markers.

SC19-3985-08 - November 2023

The following updates have been made for this edition:

Description	Related APARs
Documentation changes related to JBP support. The following topics have been changed: • "What does IMS Program Restart Facility do?" on page 5 • "Inserting checkpoint calls dynamically" on page 86 • "General options reference" on page 40	N/A

SC19-3985-07 - April 2023

The following updates have been made for this edition:

Description	Related APARs
This enhancement adds to the Administer Abended/Active Jobs panel a new option called DispTime, which you can use to switch the time zone (UTC or local) of the timestamp of a checkpoint ID that is displayed as a result of the ShowID (S) line command. The following topics have been changed: • "Administering active and abended jobs" on page 78 • Message IRT551I	PH53280
Chapter 3, "Initial product customization using IMS Tools Setup," on page 29 describes how to set up IMS Program Restart Facility by using the IMS Tools Setup function, which is provided by IBM IMS Tools Base for z/OS.	N/A
Methods for selecting jobs for which IMS Program Restart Facility is activated have been added to Chapter 4, "Advanced configuration tasks," on page 31. The following topics have been added or changed: • "Restricting the jobs for which IMS Program Restart Facility is activated" on page 32 – "Specifying EXCLUDE as a job override option" on page 32 – "Using the exclusion DD name table" on page 33 – "Using the IMS Program Restart Facility initialization user exit IRTUXIN0" on page 33	N/A

Description	Related APARs
Several topics have been rearranged or renamed for better usability. • Topic “Guidelines for creating environments in IMS Program Restart Facility ” on page 31 has been moved from Chapter 2, “Configuring IMS Program Restart Facility,” on page 13 to Chapter 4, “Advanced configuration tasks,” on page 31. • Topic "Configuration summary and checklist" has been removed. • Topic "16. Determining IMS Program Restart Facility activation during job runs (optional)," which was previously in Chapter 2, “Configuring IMS Program Restart Facility,” on page 13, has been moved to Chapter 4, “Advanced configuration tasks,” on page 31 and renamed as “Using the IMS Program Restart Facility initialization user exit IRTUXIN0” on page 33. • Topic “Updating the exclusion DD name table” on page 79, which was previously in Chapter 9, “Using advanced functions,” on page 83, has been moved to Chapter 7, “Viewing and updating product and restart options,” on page 71.	N/A
Other documentation changes: • Messages IRT204W, IRT205I, IRT316I, and IRT551I have been changed. • Messages IRT206W, IRT208I, and IRT209W have been removed.	N/A

SC19-3985-06 - September 2022

The following updates have been made for this edition:

Description	Related APARs
In this enhancement, IMS Program Restart Facility provides a new option that you can use to provide a checkpoint ID by using the CKPTID parameter in the JCL EXEC statement even when there are no CTDS data sets. The following topics have been changed or added: • “General options reference” on page 40 • “IMS PROC override options reference” on page 47 • “Resolving restart abends caused by indoubt checkpoints” on page 65 • Messages IRT038I, IRT054I, and IRTC121E	PH39952
The following topics have been removed: • "4. Removing outdated usermods" in Chapter 2, “Configuring IMS Program Restart Facility,” on page 13 • "Differences between IMS Program Restart Facility 2.1 and 2.2 options" in Chapter 5, “Product options reference,” on page 35 • Messages IRT045W, IRT207W, IRT242E - IRT249E, IRT284I, IRT285I, IRT286W, IRT287I, IRT288I, IRT289W, IRT362E, IRT363E, IRT364W	N/A
Chapters and topics have been rearranged for better usability.	N/A
Other documentation changes in: • “Specifying job override options” on page 75 • Message IRT041W	N/A

SC19-3985-05 - November 2020

The following updates have been made for this edition:

Description	Related APARs
• The following topics have been added: – "Checkpoint insertion" on page 10 – "Checkpoint insertion feature options reference" on page 56 – "Inserting checkpoint calls dynamically" on page 86 • Several messages have been added.	PH25180 (Checkpoint insertion)
• A new option, AUDTOPMD, has been added to global options. See "Global options reference" on page 36. • The following message has been changed: IRTB019E • The following messages have been added: IRTC112E, IRTC113W	PH18911 (New global option: AUDTOPMD)
• Text has been changed in "MVS operator commands" on page 8.	PI55684

SC19-3985-04 - June 2018

The following updates have been made for this edition:

Description	Related APARs
• A paragraph about module IRT#IGNR has been removed from "11-Migration guidelines." (This topic has been removed in the 2022 edition.). • A paragraph has been revised in "Differences between IMS Program Restart Facility 2.1 and 2.2 options". • "Converting options to IMS Program Restart Facility V2.2 format" has been updated. (This topic has been removed in the 2022 edition.)	PI66859
Several messages have been updated or added.	N/A
Message IRT174 has both an informational version (IRT174I) and an error version (IRT174E).	PI74893
Several updates for IMS 15 support.	PI73935

SC19-3985-03 - September 2016

The following updates have been made for this edition:

Description	Related APARs
• Maintenance roll-up • Packaged for inclusion in IBM IMS System Management for z/OS	N/A

SC19-3985-02 - October 2015

The following updates have been made for this edition:

Description	Related APARs
• Numerous additions and corrections related to these APARs • Addition of bypass logging options topic • Reorganization and title changes for some topics	PI46448 and PI46450

SC19-3985-01 - July 2014

The following updates have been made for this edition:

Description	Related APARs
To support this APAR, messages IRT097I and IRT098I were added, and message IRT250E was updated.	PI14105

What does IMS Program Restart Facility do?

IMS Program Restart Facility helps you restart abended jobs, prevent certain kinds of abends, reduce the processing load that is related to taking checkpoint IDs, and manage BMPs and JBPs. It also assists with managing the backout and restart of IMS DLI and DBB batch jobs.

IMS Program Restart Facility helps you restart a job at the correct checkpoint and prevent data corruption. IMS Program Restart Facility prevents data corruption by automatically providing the correct checkpoint IDs to IMS Extended Restart.

Without IMS Program Restart Facility, data corruption can result from restarts that are performed without specifying a checkpoint ID or that are performed by specifying an incorrect checkpoint ID. This corruption can require a costly and time-consuming database recovery.

If the corruption is not detected immediately, you can experience more delays and longer periods of database unavailability. Therefore, IMS Program Restart Facility can increase both the efficiency and reliability of your system.

Several other uses of IMS Program Restart Facility are described in the following list. These uses might require JCL and application programming changes if you decide to remove IMS Program Restart Facility from your system.

- IMS Program Restart Facility can reduce the processing load that is incurred by applications that take checkpoints too frequently.

  This processing load is reduced by using *bypass checkpoint processing*, which is a feature of IMS Program Restart Facility.

  Bypass checkpoint processing prevents a job step from taking checkpoints more frequently than the minimum time interval that you specify for the job. This reduction in processing can result in faster run times for you, possibly reducing the batch window.
- For DLI and DBB IMS batch jobs, IMS Program Restart Facility automates the log close and batch backout processes that are required when such jobs abend.

  This automated process is done either when an abend occurs or, in the case that it is not possible to start the process when the abend occurs, when the job is resubmitted.

  This automated process removes the need to manually create and run IMS log close utility jobs and IMS batch backout jobs and significantly reduces manual intervention when a DLI or DBB IMS batch job abends, improving recovery time and reducing the need for manual intervention.
- Applications that terminate with a nonzero return code and are considered abended can be flagged as abended and restarted automatically.
- For DLI and DBB type IMS batch jobs, IMS Program Restart Facility provides capabilities to standardize and automate IMS batch log data set naming conventions.

The product can deallocate existing log data sets in the JCL of a job, and reallocate new log data sets with data set names and DCB attributes that you specify.

- After changing your IMS version, you can restart jobs that ended abnormally on your previous version.

  Normally, such jobs need to be backed out under the old IMS version and then started over from the beginning under the new IMS version. By using IMS Program Restart Facility, you can restart an abended job under a different IMS version without manual intervention. Some restrictions apply to this capability.

  For more information, see "Restarting a job on a different version of IMS" on page 64.
- If you migrate to data sharing, you can specify values for the DBRC, IRLM, and IRLMNM parameters.

  You can specify parameters both globally and for individual jobs without changing JCL or running system definitions.
- You can use IMS Program Restart Facility to specify values for most IMS BMP and DLI batch job parameters, both globally and for individual jobs, without changing any JCL.

  By using this feature, you can update execution-time parameters by specifying IMS Program Restart Facility options instead of having to change job JCL.

  For example, if all jobs must have the LOCKMAX parameter updated, one change to the global LOCKMAX option updates every IMS batch job with the new value. No JCL changes are necessary.
- You can use IMS Program Restart Facility to specify a list of candidate IMSIDs, as part of an IMSGROUP, that BMPs can sign on to.

  With this feature, you can prevent U0688 abends without changing the OPT= specification and without waiting for an operator reply to message DFS690A.
- You can use MVS™ commands with IMS Program Restart Facility to stop, hold, or restart a BMP job without having to cancel and resubmit the job.

  You can take a database offline even when a BMP that is using the database is running.
- IMS Program Restart Facility can work with IMS Online Reorganization Facility to automatically pause BMPs that use databases that are being reorganized by an online reorganization.

  IMS Online Reorganization Facility automatically restarts a paused BMP when the online reorganization is complete.
- You can insert checkpoint calls dynamically into application programs that do not have any or enough checkpoint calls. By using this feature, you can add commit points to batch jobs or add checkpoint calls to application programs that require more checkpoints without having to change the programs. This capability, which is provided by the checkpoint insertion feature, can be applied to various types of applications. For example, you can use this feature when migrating programs from DLIBATCH to BMP or adding checkpoint calls to existing BMP programs.

IMS Program Restart Facility features

In general, you can implement IMS Program Restart Facility for IMS BMP and DLI batch jobs without changing those jobs. IMS Program Restart Facility software is copied into the IMS RESLIB or another load library that is already included in the STEPLIB of every IMS batch job, so making job STEPLIB changes is unnecessary.

You enable IMS Program Restart Facility features by activating the relevant options for the jobs that IMS Program Restart Facility will manage. Depending on how you set the IMS Program Restart Facility options, you can:

- Disable IMS Program Restart Facility for all jobs and then selectively enable IMS Program Restart Facility for selected jobs.
- Enable IMS Program Restart Facility for all jobs and select the jobs to exclude from IMS Program Restart Facility management.

You can also disable IMS Program Restart Facility for a job by adding a `//IRT$IGNR DD DUMMY` statement to the JCL of the IMS job step. The DD name that is specified in this statement can be changed in your installation by using the exclusion DD name table.

IMS Program Restart Facility job options can be specified in the IMS Program Restart Facility options data set (the IRTOPT data set). You can also override options by entering a `//IRT$CNTL DD *` statement in the JCL of the IMS job step. In a development environment, application programmers and testers can use the DD statement method to override default options to meet the requirements of restarting or testing job execution. Using this methodology allows a central coordinator to control overall IMS Program Restart Facility options, even in a development environment, but also allows a developer to easily override IMS Program Restart Facility options as necessary.

Automatic job restart

Automatic job restart is the central feature of the product IMS Program Restart Facility. This feature provides automatic assistance when an IMS batch job is resubmitted after an abend or job failure. IMS Program Restart Facility automatically determines the proper checkpoint for restarting the BMP or DLI batch job, dynamically allocates the required log data sets to enable restart to occur, and passes the restart checkpoint ID to IMS. IMS then performs a restart from the checkpoint ID provided by IMS Program Restart Facility.

IMS Program Restart Facility requires that your IMS batch job already have checkpoint and restart logic coded in your application program. IMS Program Restart Facility automates the manual process of allocating the appropriate IMS logs and specifying the proper checkpoint ID required to restart the job.

IMS Program Restart Facility enhances restart processing by saving restart checkpoint data in small DASD data sets called checkpoint tracking data sets (CTDSs). Saving the restart checkpoint data allows job restart to occur without the need to mount old IMS logs, or manually code IMS log data set names and volume serial numbers in the JCL of a restarted job.

Checkpoint tracking data sets contain all the data necessary to restart a job, so you can restart a BMP on either the same IMS system it was connected to when the abend occurred, or on a different IMS system in the IMSplex. IMS Program Restart Facility IMS group definitions can enable IMS Program Restart Facility to automatically select an active IMS system from the IMSplex, changing the IMS system that the BMP connects to automatically.

IMS Program Restart Facility also enables a BMP or DLI batch job to be restarted under a different IMS version that it abended under. Because the IMS base product does not support restarting a batch job under a different release of IMS, this IMS Program Restart Facility capability enables an easier migration path when upgrading to a new version of IMS. You can abend any BMPs or batch jobs that are running, upgrade IMS to a new version, and then restart the batch job without any complications because of the change in IMS release. You can also abend IMS batch jobs, switch from a new version of IMS to an old version, and then restart the batch jobs. This capability, however, is only available for IMS Version 10 and later.

Abend retry tables

You can use abend retry tables to define which abend codes represent transitory errors, and have the IMS batch job automatically recover from the abend and automatically restart. You do not need to resubmit the job.

For example, suppose that a job ends abnormally because of a U0775 abend. This abend occurs for an IMS BMP when the PI pool space is exhausted. Normally, the BMP would abend, the job would terminate, and manual intervention would be required to set up the job for restart and resubmit the job.

For this example, you can specify that IMS Program Restart Facility should detect and automatically retry U0775 abends. In this case, IMS Program Restart Facility would intercept the U0775 abend and retry the abend. IMS Program Restart Facility will automatically reattach to IMS, perform a restart of the BMP, and the BMP will continue processing. This process would occur with no intervention from any production job control personnel.

There are other abends that can be automatically retried, such as database record deadlock conditions. You can specify any system or user abend code that you want IMS Program Restart Facility to automatically retry.

IMS groups

You can define IMS groups to IMS Program Restart Facility. IMS groups allow IMS Program Restart Facility to automatically select an active IMS system under which a BMP runs.

For example, suppose that IMS1 is coded as the IMSID in a BMP job. However, you have three IMS systems that share the databases that are used by IMS1. If IMS1 is not available on the system that JES selects to run the job, IMS Program Restart Facility uses IMS group definitions to select any of the three IMS systems where the job could successfully run.

IMS groups reduce the amount of manual intervention that is required to change the IMSID parameter that is coded in the JCL of the job. IMS group selection can be used when a job is initially submitted, or when a job has ended abnormally and is being restarted.

An IMS group should include only IMS systems that are at the same IMS release level because the IMS RESLIB in the JCL of the job must match the release of IMS that is associated with the IMS ID used by the BMP. If IMS Program Restart Facility chooses an IMS ID at a different release level than the IMS RESLIB data set in the JCL of the BMP, an abend occurs during IMS initialization.

Bypass checkpoint processing

IMS checkpoints are the basis of recovery for IMS batch jobs. Application programs must initiate IMS checkpoint calls at unit of work boundaries so that proper backout can occur. Unfortunately, IMS checkpoints can be resource-intensive operations, possibly requiring significant machine resources and processing time. If application programs do not implement easy ways to control how often checkpoints are taken, altering how often checkpoints are taken can require application program coding changes.

IMS Program Restart Facility provides the capability to skip checkpoint calls that are issued too frequently, reducing processor usage and improving job elapsed time and system performance. You enable bypass checkpoint processing by enabling the BYPCHKP option and setting a bypass checkpoint interval in the BCDINTVL option. The bypass checkpoint interval specifies a minimum time interval that the IMS Program Restart Facility allows between checkpoints. If an application program makes a checkpoint call twenty times per second, and you specify a bypass checkpoint interval of one second, IMS Program Restart Facility causes nineteen of the checkpoints to be bypassed.

MVS operator commands

Similar to the IMS **/STOP REGION** command for BMPs, IMS Program Restart Facility commands can be used to stop DLI and DBB type batch jobs, as well as BMP jobs, at the next checkpoint call.

You can also pause a BMP. This can be useful if you must create a sync point for a database recovery or the IMS Program Restart Facility **HOLD** command causes the job to abend, although the job does not end. When the **HOLD** command is issued, IMS Program Restart Facility waits for an **XRST** command, IMS Program Restart Facility reattaches to IMS and allows the job to restart and continue processing. This process occurs without any user intervention other than the issuing of the **HOLD** and **XRST** commands.

Program testing options

Application programmers can use IMS Program Restart Facility to test restart logic. IMS Program Restart Facility provides the capability to force an abend after a specified checkpoint number is taken. After the abend occurs, application programmers can use the next execution of the job to test the restart processing logic of the program.

Application programmers can use the CHKPCNT, CHKPCMP, and FABXRST options to control when an abend occurs, the abend code that is issued, and whether a restarted program ends abnormally again.

Enable these testing options by adding the following code to the JCL of a job:

```
//IRT$CNTL DD  *
CHKPCMP=3619
CHKPCNT=12
FABXRST=NO
/*
```

In this example, the statements will cause the program to abend with a U3619 abend code after the 12th checkpoint call completes. After the program restarts, it will complete without abending.

IMS PROC overrides

IMS Program Restart Facility can automatically override IMS PROC parameters that are used to pass options to IMS. For example, you can set parameters such as DBRC, IRLM, and IRLMNM on a job or global level, and the values that are entered in the IMS Program Restart Facility options will automatically override the values that are set in the JCL of the job. This feature can be useful if DBRC or IRLM is being implemented for the first time in your environment.

You can use IMS Program Restart Facility to override 16 different IMS PROC values without changing the JCL of any job.

Automated batch backout

When a DLI or DBB type batch job ends abnormally, timely batch backout is critical to releasing locks that are held on any database records that were updated since the last checkpoint. IMS Program Restart Facility enhances IMS DLI and DBB batch processing by intercepting any abends, and automatically closing the abended IMS log and performing an IMS batch backout. This capability not only improves database availability, but reduces the manual intervention that is required to code JCL to perform the batch backout and run the backout.

If a system fails while a DLI or DBB batch job is running, IMS Program Restart Facility initiates batch backout processing when the job is resubmitted.

IMS batch log data sets

IMS Program Restart Facility provides the capability to automatically change the IMS log data sets that are coded in the JCL of the job by altering the IEFRDER and IEFRDER2 DD statements.

IMS Program Restart Facility can automatically deallocate the logs that are specified in the JCL of a job, and specify different data set names, space allocations, retention periods, or SMS management classes, among other options. You can enforce data set naming conventions, convert to new SMS storage or management classes, or change the unit name that is allocated to the IMS logs. You can make these changes by updating IMS Program Restart Facility options, which can be done globally or for selected jobs, and without updating any application JCL.

IMS Program Restart Facility message output

By using IMS Program Restart Facility 2.2, you can set the SHOWOPTS option to PRINT. When this value is set, IMS Program Restart Facility dynamically allocates DD name IRTPRINT (if the DD is not already present in the JCL of the job) to the SYSOUT class that is specified in the SYSOUT option.

When SHOWOPTS=PRINT is specified, IMS Program Restart Facility writes more option information and status messages to the SYSOUT file. When SHOWOPTS is set to other values, IMS Program Restart Facility writes selected messages to the JESLOG of the job. All error messages are always written to the JESLOG of the job, but the IRTPRINT output provides more option and status information when SHOWOPTS=PRINT is enabled.

Recommendation: Specify SHOWOPTS=PRINT. The extra option information and status messages can be helpful if an IMS Program Restart Facility processing error occurs.

Checkpoint insertion

In a 24x7 operating environment, most of the databases in the production environment must be operable 24 hours a day for 365 days a year. Therefore, many users find it necessary to migrate their DLIBATCH programs, which are run during the maintenance period, to BMP programs, which run in IMS online systems. To release the database resources to other programs, batch programs in data-sharing environments and BMP programs that run in IMS online systems need to issue checkpoint calls more frequently than regular batch programs.

However, many DLIBATCH programs that do not assume to be run in those environments are not coded that way; they do not have any or enough processes to issue checkpoint calls. So, if you want to migrate DLIBATCH programs to BMP programs, you might need to modify those programs to add more commit points.

By using the checkpoint insertion feature of IMS Program Restart Facility, you can add checkpoint calls dynamically without having to change the programs. This feature supports applications that do or do not currently issue checkpoint calls, so you can use it on various applications, such as the programs that are to be migrated from DLIBATCH to BMP or those that require more checkpoint calls.

For more information about the procedures and considerations on this feature, see "Inserting checkpoint calls dynamically" on page 86.

IMS Program Restart Facility components

The components of IMS Program Restart Facility provide checkpoint IDs to IMS Extended Restart and store the parameters that you set for jobs.

IMS Program Restart Facility has the following main components:

- IMS Extended Restart processing
- Checkpoint ID tracking data sets
- Automated IMS batch backout
- IMS Program Restart Facility options

IMS Extended Restart processing

If an abended batch job must be restarted, IMS Program Restart Facility interacts with IMS Extended Restart by doing these actions:

1. Dynamically allocates the original checkpoint ID tracking data sets (CTDSs) that were created by the abended job
2. Retrieves the latest committed checkpoint ID that was provided on the last extended checkpoint call
3. Provides the checkpoint ID to IMS Extended Restart

Checkpoint ID tracking data sets

IMS Program Restart Facility dynamically allocates a pair of CTDSs. The CTDSs store every checkpoint ID that is provided by an application that issues a checkpoint call.

If a job ends normally, the CTDSs are deleted automatically. When a job is restarted, IMS Program Restart Facility searches the catalog for the CTDSs. If the CTDSs exist, it automatically provides the last committed checkpoint ID to IMS Extended Restart.

The CTDSs contain copies of the IMS log records that IMS Extended Restart requires for a checkpoint restart. The CTDSs are standard DSORG=PS, RECFM=VB data sets and can be accessed directly without any special utilities.

Automated IMS batch backout

When an IMS batch DLI application abend occurs, you must take the following actions:

- Close the current batch system log data set (SLDS)
- Perform a batch backout

Until these steps are completed, databases remain unavailable and, for data sharing environments, IRLM locks remain. These locks prevent other applications from accessing the data. Usually, closing the current batch SLDS and running a batch backout are manual processes. When these processes are performed manually, databases remain unavailable while you respond to the initial abend by preparing the JCL and submitting the log close and batch backout jobs.

IMS Program Restart Facility provides for the automation of the batch backout process after specific application abends, and dynamically handles log close and allocation. Specifically, IMS Program Restart Facility initiates the following functions whenever an IMS batch DLI application ends abnormally:

- Dynamically allocates an interim batch SLDS for the log close
- Closes the interim batch SLDS
- Dynamically allocates the new batch SLDS that is required for batch backout
- Performs the batch backout

IMS Program Restart Facility options

You configure global options that apply to all IMS jobs in your environment, and then supply overrides to the global options that apply to specific jobs. In addition, you can override global and job options by updating the JCL of a job to add a //IRT$CNTL DD statement that contains IMS Program Restart Facility input statements.

Global and job options are saved in the IRTOPT data set in an internal (load module) format. You specify global and job options by using the IMS Program Restart Facility ISPF dialog, which provides a menu-driven interface where you can review current specifications for all options before making changes, and access field-level help for each option parameter.

Service updates and support information

Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

To find service updates and support information, see the following website:

IBM Support: IMS Program Restart Facility for z/OS

Product documentation and updates

IMS Tools information is available at multiple places on the web. You can receive updates to IMS Tools information automatically by registering with the IBM My Notifications service.

Information on the web

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

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2. Enter your IBM ID and password, or create one by clicking **register now**.
3. When the My Notifications page is displayed, click **Subscribe** to select those products that you want to receive information updates about. The IMS Tools option is located under **Software** > **Information Management**.
4. Click **Continue** to specify the types of updates that you want to receive.
5. Click **Submit** to save your profile.

How to send your comments

Your feedback is important in helping us provide the most accurate and highest quality information. If you have any comments about this or any other IMS Tools information, you can take one of the following actions:

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To help us respond quickly and accurately, include as much information as you can about the content you are commenting on, where we can find it, and what your suggestions for improvement might be.

Accessibility features

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in this product enable users to perform the following activities:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. Refer to the following publications for information about accessing ISPF interfaces:
  - *z/OS ISPF User's Guide, Volume 1*
  - *z/OS TSO/E Primer*
  - *z/OS TSO/E User's Guide*

  These guides describe how to use the ISPF interface, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.

Chapter 2. Configuring IMS Program Restart Facility

After you install IMS Program Restart Facility by following the directions in the *Program Directory for IBM IMS Program Restart Facility for z/OS*, you must configure the product for your environment.

You can either configure IMS Program Restart Facility by completing the following steps or by using the IMS Tools Setup function provided by IBM IMS Tools Base for z/OS.

Topics:

1. Detecting conflicting BMP pausing features

Some IMS Tools products and components contain BMP pausing features that conflict with IMS Program Restart Facility, so you must remove them before you enable IMS Program Restart Facility. You can detect conflicting BMP pausing features that are installed in your environment before you follow the tasks to remove them.

About this task

In addition to IMS Program Restart Facility, IMS Online Reorganization Facility and IMS Recovery Solution Pack for z/OS provide features for pausing BMPs. The BMP pausing features that they provide conflict with IMS Program Restart Facility. If these features are installed in your environment, you must remove them before you enable IMS Program Restart Facility and use only IMS Program Restart Facility to pause your BMPs.

These steps provide multiple methods to detect conflicting BMP pausing features that might be installed in your environment. After you determine whether you have the IMS Online Reorganization Facility or IMS Recovery Solution Pack BMP pausing features installed, you can remove them.

Procedure

1. In your IMS RESLIB, browse the DFSRRC00 member for module names with the following product-specific references:

   HRF...
   If module names with this prefix are present, the IMS Online Reorganization Facility BMP pausing feature is installed.

IRO...
If module names with this prefix are present, the IMS Recovery Solution Pack BMP pausing feature is installed.

2. Browse your BMP JCL for the EXEC statement `PGM=IRORRC00`.

   If this statement is present, the IMS Recovery Solution Pack BMP pausing feature is installed.

3. Browse your BMP JCL to determine if you have any of the following load libraries in your STEPLIB concatenation above the IMS RESLIB:

   SHRFLOAD
   If this load library is present, the IMS Online Reorganization Facility BMP pausing feature is installed.

   SFRXLOAD
   If this load library is present, the IMS Recovery Solution Pack BMP pausing feature is installed.

2. Removing the pausing BMP feature for IMS Online Reorganization Facility

IMS Online Reorganization Facility contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

About this task

Remove the IMS Online Reorganization Facility BMP pausing feature by doing one of the following steps, depending on how the BMP pausing feature was installed. To learn about the methods for installing the BMP pausing feature in IMS Online Reorganization Facility, see the *IMS Online Reorganization Facility User's Guide*.

Procedure

- If the BMP pausing feature was installed by applying the SMP/E USERMOD SHRFSAMP(HRFSMP1), which applies the USERMOD for DFSRRC00 into IMS RESLIB, restore this usermod.

  After you successfully restore DFSRRC00 with the IMS version from your ADFSLOAD, all modules with HRF... references will be removed from the DFSRRC00 load module.
- If the BMP pausing feature was installed by using SHRFSAMP(HRFSMP9), which involves linking DFSRRC99 into your IMS RESLIB and then modifying the BMP JCL so that the EXEC statements point to the DFSRRC99 module and so that the STEPLIB concatenations include the IMS Online Reorganization Facility load library, do these steps:
  a) Remove the DFSRRC99 module from your IMS RESLIB.
  b) In the modified BMP JCL, change DFSRRC99 to DFSRRC00 on the EXEC statements.
  c) In the modified BMP JCL, remove the IMS Online Reorganization Facility load library from the STEPLIB concatenation.
- If the BMP pausing feature was installed by using SHRFSAMP(HRFBMP) to link DFSRRC99 into your IMS RESLIB, do these steps:
  a) Remove the DFSRRC99 and DFSRRC00 modules from your IMS RESLIB.
  b) Replace the DFSRRC00 module in your IMS RESLIB with the version from your ADFSLOAD.
- If the BMP pausing feature was installed by modifying the BMP JCL so that the EXEC statements point to the HRFRRC00 module and so that the STEPLIB concatenations include the IMS Online Reorganization Facility load library, do these steps:
  a) In the modified BMP JCL, change HRFRRC00 to DFSRRC00 on the EXEC statement.
  b) In the modified BMP JCL, remove the IMS Online Reorganization Facility load library from the STEPLIB concatenation.

3. Removing the pausing BMP feature for IMS Recovery Solution Pack

IMS Recovery Solution Pack for z/OS contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

About this task

IMS Recovery Solution Pack provides the BMP pauser interface. Remove the BMP pauser interface by doing one of the following steps, depending on how the BMP pauser interface was installed. You can learn about the methods for installing the BMP pauser interface in the *IMS Recovery Solution Pack* documentation.

Procedure

- If the BMP pauser interface was installed by using member SFRXSAMP(IROBMP1) to relink the IMS region controller module (DFSRRC00), do these steps:
  a) Delete the existing DFSRRC00 member.
  b) Rename DFSRRC99 to DFSRRC00.
- If the BMP pauser interface was installed by using member SFRXSAMP(IROBMP2) and by modifying the EXEC statements in the BMP JCL to point to module IRORRC00, do these steps:
  a) In the modified BMP JCL, change the `PGM=IRORRC00` EXEC statements to `PGM=DFSRRC00`.
  b) In the modified BMP JCL, remove the data set in your STEPLIB concatenation that points to the load library that was used as the SYSLMOD in the IROBMP2 install job.

4. Allocating the required IMS Program Restart Facility data sets

Allocate the options data set and the user library for IMS Program Restart Facility.

About this task

The sample job contains the required JCL that can be used to perform this task.

Tip: You can update the allocation information for these data sets. For example, you can specify a VOLSER or you can specify SMS storage or management classes.

Procedure

To allocate the required IMS Program Restart Facility data sets:

1. Edit member IRTALREQ in the SIRTSAMP data set.

   You must update the following two SET statements after the JOB statement with the appropriate data set names for your environment:

   ```
   SET  IRTOPT=IMS.IRT220.IRTOPT         <-- IRTOPT DSNAME
   SET IRTUSRL=IMS.IRT220.IRTUSRL        <-- LIBRARY UPDATED
   ```

   - The first statement defines the data set name to be used for the IRTOPT data set.
   - The second statement defines the data set name for the user library.
2. Run the job to create these two data sets.

5. Defining the options data set name to IMS Program Restart Facility

IMS Program Restart Facility must know the options data set name that you allocated in the prior step. This step creates a load library member that contains the options data set name.

Procedure

To define the options data set name to IMS Program Restart Facility:

1. Edit member IRT#OPT in the SIRTSAMP data set.

   You must update the two SET statements after the job statement with the appropriate data set names for your environment.

   The following statements in the JCL that must be updated:

   ```
   SET  IRTOPT=IMS.IRT220.IRTOPT         <-- IRTOPT DSNAME
   SET IRTUSRL=IMS.IRT220.IRTUSRL        <-- LIBRARY UPDATED
   ```

   - The first statement defines the data set name to be used for the IRTOPT data set.
   - The second statement defines the data set name for the user library.

   These data sets are the same data sets that were created in the prior procedure, “4. Allocating the required IMS Program Restart Facility data sets” on page 15.
2. Run the IRT#OPT job to create the IRT#OPT dynamic allocation module.

6. Activating the audit log feature (optional)

You can track when options are updated by activating the IMS Program Restart Facility audit log feature. The log tracks which option was changed, who changed the option, and when.

About this task

This feature is optional, and must be activated by entering the audit log data set name in the IMS Program Restart Facility global options.

Procedure

To activate the audit log feature:

1. Edit the job in member IRTALOG of the SIRTSAMP data set.

   Update the data set name that is specified just below the JOB statement.

   The following statement must be updated:

   ```
   SET IRTAUDIT=IMS.IRT220.IRTAUDIT
   ```
2. Submit the IRTALOG job, which allocates the IMS Program Restart Facility audit log data set.
3. Use the IMS Program Restart Facility ISPF dialog to update the global options.

   Enter the data set name that you specified on JCL statement in the audit log data set name field, and save the options.

   All updates after the options are saved are tracked in the audit log.

7. Guidelines for securing IMS Program Restart Facility data sets

You should secure all data sets created as part of the installation and customization of the product. The following guidelines can help you to define security profiles for the various IMS Program Restart Facility data sets.

Various users and tasks require access to some of the IMS Program Restart Facility data sets:

SMP/E data sets
The installer of these data sets must have ALTER access to these data sets. The SIRTLOAD data set should be copied to the IMS RESLIB (or some other data set that is included in the STEPLIB of every IMS batch job), so that no other jobs require access to this data set.

READ access to the SIRTSAMP data set might be useful for some other users, so that they can access some of the sample jobs.

IRTOPT
The IRTOPT data set is read by every IMS batch job that runs. This data set should have a universal READ access. The ability to update IMS Program Restart Facility global and job options is controlled by which users have UPDATE access to this data set.

You should provide update access to the IRTOPT data set to any users who will update the IMS Program Restart Facility options.

IRTUSRL
The IRTUSRL data set is used only during the installation verification procedure (IVP), and as a staging library that is copied into the same library where SIRTLOAD is copied.

Only the users who install IMS Program Restart Facility and run the IVP require access to this data set, unless you also want to have other users update some of the user exits and modules, such as the checkpoint ID table, that might exist in this data set.

IRTAUDIT
Update access to the IRTAUDIT data set must be given to all users with update access to the IRTOPT data set.

Related tasks

8. Securing checkpoint ID tracking and batch backout data sets
Within your security product, you must grant access to and create profiles for any data sets that are related to checkpoint tracking and batch backout data sets.

8. Securing checkpoint ID tracking and batch backout data sets

Within your security product, you must grant access to and create profiles for any data sets that are related to checkpoint tracking and batch backout data sets.

Before you begin

If you already have IMS Program Restart Facility installed, you already have security profiles that cover the checkpoint tracking data sets, so you should complete security profiles for batch backout data sets only.

If you already have IMS Batch Backout Manager for z/OS installed, you already have security profiles in place for the batch backout data sets, so you should complete security profiles for checkpoint tracking data sets only.

If you never installed IMS Program Restart Facility for OS/390® or IMS Batch Backout Manager for z/OS, you should create security profiles for checkpoint tracking and batch backout data sets. Securing the checkpoint ID and backout tracking data sets is easier if you use a dedicated, new high-level qualifier for all data sets.

For example, you could create a new high-level qualifier of IMSXRST, and specify `CTDSHLQ=IMSXRST` and `BBDSHLQ=IMSXRST`. Then, you could create a generic profile of 'IMSXRST.*', which would cover the CTA, CTB, CTX, LOG, and BKO data set types.

You could also give these data sets a universal access of ALTER, which would allow any user ID to create and delete the data sets.

Ensure that you followed the naming conventions for checkpoint ID tracking data sets before you create profiles for them. For more information, see "Checkpoint tracking data set naming conventions" on page 18.

Procedure

Create generic profiles for all CTDS and BBDS data sets.

For information about access requirements for these data sets, see "Authorization requirements for IMS Program Restart Facility data sets" on page 19.

Tip: A generic profile is useful when you are getting started with IMS Program Restart Facility. Later, you might be able to refine security to the job name level.

Checkpoint tracking data set naming conventions

Checkpoint tracking data sets (CTDSs), batch backout data sets (BBDSs) and a few related data sets are created and deleted by each IMS batch job that runs. The data set names that are allocated by IMS jobs depend on the parameters that you specify in the IMS Program Restart Facility options.

Checkpoint tracking data sets (and a few related data sets) have a naming convention that is based on the CTDSHLQ and CTDSNAM options in the IMS Program Restart Facility global options. In general, the CTDS data set names that are created use the following format:

- *CTDSHLQ.jobname.imsgroup.psbname.pgmname*.CTA
- *CTDSHLQ.jobname.imsgroup.psbname.pgmname*.CTB
- *CTDSHLQ.jobname.imsgroup.psbname.pgmname*.CTX
- *CTDSHLQ.jobname.imsgroup.psbname.pgmname*.LOG

The variables in these data set names have the following definitions:

CTDSHLQ
: The high-level qualifier value that is specified for the CTDSHLQ option in the IMS Program Restart Facility global options. The maximum length for the CTDSHLQ is 8 characters unless you specify CTDSNAM=NOPGM or NOPSB, which is not recommended.

jobname
: The name of the IMS batch job.

imsgroup
: The IMSID that is specified in the JCL of the IMS batch job. If no IMSID is specified, the default JCL that is specified by the default IMSID value in the IMS RESLIB is used. If there is an override by an IMS group specification, that value is used. If the IMSID is a member of an IMSGROUP, IMS Program Restart Facility uses the 4-character IMSGROUP name instead of the IMSID.

psbname
: The PSB name that is specified in the JCL of the IMS batch job.

pgmname
: The application program name that is specified in the JCL of the IMS batch job (typically in the MBR= JCL symbolic parameter). If this parameter is not specified in the JCL of the job, the PSB name is used as the program name.

The CTDSNAM global option can be specified as BOTH, NOPGM, or NOPSB. The previous example data set names assume that CTDSNAM=BOTH. If CTDSNAM=NOPGM or CTDSNAM=NOPSB is specified, the *psbname* or *pgmname* qualifier in the data set name is removed.

Recommendation: Specify CTDSNAM=BOTH when defining the global options. CTDSNAM=BOTH allows a more specific data set naming convention. IMS Program Restart Facility looks for these data set names during batch job initialization to determine whether a restart is required. The more specific the data set name, the less chance that an incorrect job step is restarted by IMS Program Restart Facility.

To assist in this goal, when you specify a CTDSHLQ value of less than 9 characters in length, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name. Refer to the global options references for CTDSNAM and CTDSHLQ in "Global options reference" on page 36.

The previous data set names are used by IMS Program Restart Facility during job execution:

- The CTA and CTB data sets are used alternately to hold the most recent checkpoint information and data.
- The LOG data set is used when a restart is required, and is used to hold the checkpoint data and restart information that is used by IMS during restart.
- The CTX data set is used when a user enters the IMS Program Restart Facility ISPF dialog and selects option 1 (Job Administration) to update restart checkpoint information (FORCE or LAST commands) or uses the EDIT line command to specify any other IMS Program Restart Facility option overrides.

One other data set, the batch backout data set, can be used by IMS Program Restart Facility. The batch backout data set (BBDS) is used to track backout status for an IMS DLI or DBB batch job. This data set name has a slightly different format, to maintain compatibility with IMS Batch Backout Manager for z/OS. The data set name that is used for the batch backout data set is formatted as follows:

```
BBDSHLQ.jobname.imsid.psbname.BKO
```

The variables in these data set names have the following definitions:

BBDSHLQ
The value that is specified for the BBDSHLQ option in the IMS Program Restart Facility global options.

jobname
The name of the IMS batch job.

imsid
The IMSID that is specified in the JCL of the IMS batch job or the default IMSID value in the IMS RESLIB.

psbname
The PSB name that is specified in the JCL of the IMS batch job.

Authorization requirements for IMS Program Restart Facility data sets

There are specific access requirements for the various data sets in IMS Program Restart Facility.

The access requirements for IMS Program Restart Facility data sets depend on the type of data set.

CTA and CTB data sets
These data sets are allocated, updated, and deleted by each IMS batch job.

All IMS batch jobs require ALTER access to these data sets.

CTX
The CTX data set is allocated by an IMS Program Restart Facility ISPF user when they update job restart options by using the Job Administration menu.

The data set is deleted by the associated IMS batch job after restart processing is successful, so all IMS batch jobs and TSO users with job administration responsibility require ALTER access to this data set.

LOG
The LOG data set is allocated and deleted by any IMS batch job that undergoes restart processing, so all IMS batch jobs require ALTER access to this data set.

BKO
The low-level qualifier for the BBDS data set is .BKO.

Every DLI and DBB batch job requires ALTER access to this data set unless Batch Backout functionality has been disabled for the job.

9. Making the ISPF application available to users

To use the IMS Program Restart Facility ISPF application, you can either have users type in a command to run the REXX EXEC provided in the SIRTEXEC library, or you can provide an option on some existing ISPF menu that allows users to initiate the ISPF application without having to type in the EXEC command.

Procedure

Issue the following command:

```
EXEC 'prf-hlq.SIRTEXEC(IRTXISPF)' 'prf-hlq'
```

where *prf-hlq* is the high-level qualifier that is used for the IMS Program Restart Facility SMP target libraries (specifically, the SIRTEXEC, SIRTMENU, SIRTPENU, and SIRTLOAD libraries).

You can also add the EXEC command to an existing ISPF menu to create an easier way for users to initiate an IMS Program Restart Facility ISPF session.

10. Guidelines for customizing IMS Program Restart Facility options

You must customize your IMS Program Restart Facility options before you run the installation verification procedures or use IMS Program Restart Facility.

If you are a new user of IMS Program Restart Facility, you can use the ISPF dialog to create and maintain your options. Default values are supplied for all the options when you create a new options module. You must review all the options and update them as necessary. At a minimum, you should review all the global options, as these must be valid for your environment before the IVP jobs can run properly.

Important: The CTDSHLQ, CTDSNAM, and BBDSHLQ parameters cannot be changed after you begin running jobs. Changing these values when jobs are running might cause data corruption and lengthy recovery outages.

Chapter 5, “Product options reference,” on page 35 describes the IMS Program Restart Facility options environment and how to specify default options and how to override options for specific jobs. You can review how options can be overridden when you set your default values for some of the options.

Determining appropriate values for all the global options makes customizing IMS Program Restart Facility easier, as there might be fewer job override entries required to customize options for specific jobs.

11. Verifying the installation

Run the installation verification program (IVP) to verify that IMS Program Restart Facility functions properly with your configuration.

About this task

Sample JCL to set up the IVP is in the SIRTSAMP data set. The IVP uses the DI21PART database that is distributed with IMS as part of the sample application. To learn how to allocate and initialize this database, see *IMS Installation*.

Procedure

1. Add a PSB to your IMS SYSGEN by completing the following steps.
   The sample BMP job requires that an IMS BMP PSB be added to your IMS SYSGEN.
   a) Follow your local procedures to add the following statement to your IMS SYSGEN source:

      ```
      APPLCTN PSB=IRTIVPS1,PGMTYPE=BATCH
      ```

   b) Run an IMS SYSGEN.

2. Do a PSBGEN by completing these steps with SIRTSAMP library member IRTIVPSB:
   a) Customize the sample job by updating the data set names for the IMS MACLIB and PSBLIB.

      Update these data set names to a valid IMS MACLIB data set name, and to the PSBLIB data set you want to use to hold the PSB for the IVP jobs. These data set names are specified in the following JCL statements in the beginning of the job:

      ```
      SET DFSMAC=IMS.SDFSMAC
      SET PSBLIB=IMS.PSBLIB
      ```

   b) Submit job IRTIVPSB to generate the PSB.
3. Do a DBDGEN by completing these steps with SIRTSAMP library member IRTIVDBD:
   a) Customize the sample job by updating the data set names for the IMS MACLIB and DBDLIB.

      Update these data set names to a valid IMS MACLIB data set name, and to the DBDLIB data set you want to use to hold the DBD for the IVP jobs. These data set names are specified in the following JCL statements in the beginning of the job:

      ```
      SET DFSMAC=IMS.SDFSMAC
      SET DBDLIB=IMS.DBDLIB
      ```

   b) Submit job IRTIVDBD to generate the DBD.
4. Do an ACBGEN by completing these steps with SIRTSAMP library member IRTIVACB:
   a) Customize the sample job by updating the data set names for the IMS RESLIB, PSBLIB, DBDLIB, and ACBLIB. Update these data set names to reflect your environment. These data set names are specified in the following JCL statements in the beginning of the job:

      ```
      SET DFSRESL=IMS.SDFSRESL
      SET  PSBLIB=IMS.PSBLIB
      SET  DBDLIB=IMS.DBDLIB
      SET  ACBLIB=IMS.ACBLIB
      ```

   b) Run the IRTIVACB job to generate the ACBLIB members.
5. Implement the new ACBLIB in the online system.

   Use your local procedures to implement the updated ACBLIB members in your IMS control region. You can use IMS online change to do this while IMS is up and running.
6. Allocate the data sets that are required for the IVP.
   a) Customize the IRTIVINI sample job in the SIRTSAMP library member.

      The only update should be the JOB statement.
   b) Run the job to allocate the required data sets.

      The JCL in the job assumes that the TSO high-level qualifier matches the user ID of the person who submits the IVP jobs. This job must be run for each TSO user that submits IVP jobs.
7. Run the IVP DL/I batch job.

   Sample JCL to run an IMS DL/I batch job is included in member IRTIVDLI of the SIRTSAMP library.

   Because IRTIVDLI is a DL/I batch job that uses the sample PART database (DI21PART), this database cannot be online unless you run IRLM for data sharing. You can issue the **/DBR** command on the DI21PART database to make the database available to this IVP job.
   a) Customize the IRTIVDLI sample job by specifying several data set names.

      These data set names are in the beginning of the job in the following JCL SET statements:

      ```
      SET IRTUSRL=IMS.IRTUSRL
      SET IRTLOAD=IMS.SIRTLOAD
      SET MDALIB=IMS.MDALIB
      SET PSBLIB=IMS.PSBLIB
      SET DBDLIB=IMS.DBDLIB
      SET DFSRESL=IMS.SDFSRESL
      ```

      The data set name variables have the following definitions:

IRTUSRL
The data set name of the IRTUSRL library that is allocated in the IMS Program Restart Facility installation process.

IRTLOAD
The data set name of the SIRTLOAD data set.

MDALIB
The data set name that contains the dynamic allocation modules for the DI21PART database.

PSBLIB
The PSBLIB where the PSB that was generated during the IVP installation process was created.

DBDLIB
The DBDLIB where the DBD that was generated during the IVP installation process was created.

DFSRESL
The IMS RESLIB data set name.

Optionally, you can also use the following keyword parameters in the `//IVPSYSIN DD` statement to update the behavior of the sample job:

SETRC=
Sets the return code issued by the application. Specify the value as a 1- to 4-digit number between 0 and 4095.

GBCNT=
Sets the number of times that the sample program should read through the DI21PART database. Specify the value as a 1- to 4-digit number between 1 and 9999.

ABENDCNT=
Sets the number of checkpoints taken before the application program ends abnormally with a U3619 abend code. Specify this value as a 1- to 4-digit number. Specifying a value of 0 means that no abend will occur.

Important: Changing the value that is specified for the ABENDCNT parameter after an abend does not affect the job restart. The job completes its processing of the DI21PART database without any further U3619 abends, unless you specify FABXRST=YES as an IMS Program Restart Facility option.

b) Submit the `IRTIVDLI` sample job twice.

On the first execution of the job, the job completes three checkpoints and abend with a U3619 abend code.

On the second execution of the job, the job successfully restarts from the third checkpoint (look for the DFS0540I XRST IN PROGRESS message) and completes processing the DI21PART database. The job completes with a 0 condition code.

8. Run the IVP BMP batch job.

The sample JCL to run an IMS BMP batch job is included in the SIRTSAMP data set in member `IRTIVBMP`.

The `IRTIVBMP` job uses the sample PART database. Because this is a BMP batch job, the DI21PART database must be available to the online IMS system that this BMP uses. Ensure that the database is started before you run this job.

a) Customize the `IRTIVBMP` sample job.

You must specify several variables in the beginning of the job in the following JCL SET statements:

```
SET HLQ=&SYSUID
SET IRTUSRL=IMS.IRTUSRL
SET IRTLOAD=IMS.SIRTLOAD
SET PSBLIB=IMS.PSBLIB
SET DBDLIB=IMS.DBDLIB
SET DFSRESL=IMS.SDFSRESL
SET AGN=IVP
```

The data set name variables have the following definitions:

HLQ
The HLQ used for the GSAM database, which you can leave as &SYSUID if you ran job `IRTIVINI`.

IRTUSRL
The data set name of the IRTUSRL library that is allocated in the IMS Program Restart Facility installation process.

IRTLOAD
The data set name of the SIRTLOAD data set.

PSBLIB
The PSBLIB where the PSB generated in the IVP installation process was created.

DBDLIB
The DBDLIB where the DBD generated in the IVP installation process was created.

DFSRESL
The IMS RESLIB data set name.

AGN
A security AGN name, if one is required for your installation. If a security AGN name is not required, give it no value (`SET AGN=`).

Optionally, you can also use the following keyword parameters in the `//IVPSYSIN DD` statement to update the behavior of the sample job:

SETRC=
Sets the return code issued by the application. Specify the value as a 1- to 4-digit number between 0 and 4095.

GBCNT=
Sets the number of times that the sample program should read through the DI21PART database. Specify the value as a 1- to 4-digit number between 1 and 9999.

ABENDCNT=
Sets the number of checkpoints taken before the application program ends abnormally with a U3619 abend code. Specify this value as a 1- to 4-digit number. Specifying a value of 0 means that no abend will occur.

Important: Changing the value that is specified for the ABENDCNT parameter after an abend does not affect the job restart. The job completes its processing of the DI21PART database without any further U3619 abends, unless you specify FABXRST=YES as an IMS Program Restart Facility option.

b) Submit the `IRTIVBMP` sample job twice.

On the first execution of the job, the job completes three checkpoints and abend with a U3619 abend code.

On the second execution of the job, the job successfully restarts from the third checkpoint (look for the DFS0540I XRST IN PROGRESS message) and completes processing the DI21PART database. The job completes with a 0 condition code.

9. Run the IVP DL/I batch backout job.

The sample JCL to run an IVP DL/I batch backout job is included in the SIRTSAMP data set in member `IRTIVBB0`.

If you expect to use the automated batch backout feature of IMS Program Restart Facility, you can run this job to validate that feature.

Because the IVP DL/I batch backout job is a DL/I batch job that uses the sample PART database (DI21PART), this database cannot be online unless you run IRLM for data sharing. You can issue the **/DBR** command on the DI21PART database to make the database available to this IVP job.

a) Customize the IVP DL/I batch backout job.

Several data set names must be customized to run the IVP DLI sample job. These data set names are in the beginning of the job in the following JCL SET statements:

```
//  SET IRTUSRL=IMS.IRTUSRL
//  SET IRTLOAD=IMS.SIRTLOAD
//  SET MDALIB=IMS.MDALIB
//  SET PSBLIB=IMS.PSBLIB
//  SET DBDLIB=IMS.DBDLIB
//  SET DFSRESL=IMS.SDFSRESL
```

The descriptions of these parameters are the same as those parameters that are documented in the previous steps.

b) Run the IVP DL/I batch backout job.

When you run this job, it ends abnormally with a U3619 abend. Following the abend, IMS Program Restart Facility closes the log and runs a batch backout. IMS Program Restart Facility issues the following message in the SYSLOG of the job at the end of the first IMS task:

```
DFS036A BATCH BACKOUT IS REQUIRED FOR jobname
```

Next, IMS Program Restart Facility reviews the status of the task, and determines that a backout is required. It closes the log and issues a batch backout by attaching another IMS task to run the IMS batch backout utility (DFSBBO00). When the backout completes, the following message appears in the SYSLOG for the job:

```
DFS395I BACKOUT COMPLETE FOR PSB IRTIVPS1
```

12. Guidelines for customizing modules and exits (optional)

There are a few modules and user exits that you can use to customize how IMS Program Restart Facility works. This topic provides guidelines for customizing IMS Program Restart Facility modules and exits. All of these features are optional.

Checkpoint ID table

You can use the checkpoint ID table to define IDs that can be specified in the CHKPTID value of the batch job, and have IMS Program Restart Facility options overridden based on values you specify in the checkpoint ID table.

For more details on the checkpoint ID table and how to use it, see “Overriding IMS Extended Restart processing” on page 69.

Initialization user exit

You can use the IMS Program Restart Facility initialization user exit, IRTUXIN0, to determine whether IMS Program Restart Facility should stay active when a job is running. This exit can determine from the execution environment whether IMS Program Restart Facility should be active.

For more details on the IMS Program Restart Facility initialization exit and how to use it, see “Using the IMS Program Restart Facility initialization user exit IRTUXIN0” on page 33.

Checkpoint ID verification exit

You can use the IMS Program Restart Facility checkpoint ID verification exit, IRTUX001, to verify that a valid checkpoint ID is supplied for the restart procedure.

For more details on the IMS Program Restart Facility checkpoint ID verification exit and how to use it, see “Verifying that a valid checkpoint ID is supplied for restart” on page 69.

13. Enabling IMS Program Restart Facility

Before IMS Program Restart Facility can operate, you must install a usermod into your IMS target zone. The IVP jobs bypass this requirement by using EXEC PGM=IRTRRC00 instead of PGM=DFSRRC00.

Before you begin

If you have IMS Online Reorganization Facility or IMS Recovery Solution Pack for z/OS installed, remove the features for pausing BMPs that are provided by those products.

About this task

To enable IMS Program Restart Facility, you must receive and apply an SMP/E usermod to your IMS target zone.

The name of the usermod varies, depending on which release of IMS you are applying the usermod to. The usermod that must be applied is IRT*xxx*A. The *xxx* in the usermod name is an IMS release identifier. You can use the following table to determine the identifier for your release of IMS:

Table 1. IMS release identifiers

IMS release	Identifier
IMS 14	141
IMS 15	151

There are sample jobs to receive and apply the usermod.

Important:

- Apply the sample usermod only to the appropriate IMS version-specific target zones, not the target zone for IMS Program Restart Facility.
- If you apply any maintenance to DFSRRC00, you must reapply the usermod after the maintenance is applied.
- Do not accept any of the usermods into your IMS distribution zone. You will not be able to restore these usermods if IMS or IMS Program Restart Facility maintenance is required for module DFSRRC00.

Procedure

To enable IMS Program Restart Facility:

1. Determine the usermod name that you must apply to IMS.

   See the previous table to determine the appropriate *xxx* value in usermod name IRT*xxx*A.
2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.

   The following DD statements must be updated:

   ```
   SMPCSI   DD  DISP=SHR,DSN=IMS.SMPE.GLOBAL.CSI
   SMPPTFIN DD  DISP=SHR,DSN=IRT220.SIRTDATA(IRT###A)
   ```

   The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name. The SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name that you determined in step “1” on page 25 (for example, IRT151A for IMS 15.*x*, where *x* is 1, 2, and so on).
3. Run sample job IRTSMPER and receive the usermod.
4. Edit the sample APPLY JCL in the SIRTSAMP library member IRTSMPEA.

   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.

In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined and received in the previous steps of this procedure.

5. Run sample job IRTSMPEA to apply the usermod.

Related tasks

2. Removing the pausing BMP feature for IMS Online Reorganization Facility
IMS Online Reorganization Facility contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

3. Removing the pausing BMP feature for IMS Recovery Solution Pack
IMS Recovery Solution Pack for z/OS contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

14. Copying load modules (optional)

Once IMS Program Restart Facility is enabled, any job that runs PGM=DFSRRC00 must have the IMS Program Restart Facility load modules available in the STEPLIB of the job. If IMS Program Restart Facility modules are not in the STEPLIB of the job, IMS Program Restart Facility ends abnormally with a S806-04 code because module IRTUPX00 is not found.

About this task

This task is optional. If you prefer to modify the JCL for your batch jobs, you do not need to do this task to configure IMS Program Restart Facility.

If you have a common program library that is used in every IMS job, you can copy the SIRTLOAD and IRTUSRL libraries to that library.

If you do not have such a common program library, you can copy the SIRTLOAD and IRTUSRL libraries to the IMS RESLIB.

If you prefer to use SMP/E to copy the load modules from SIRTLOAD to SDFSRESL, you can use a sample usermod to install the modules in SIRTLOAD to the SDFSRESL library. You must copy modules from the IRTUSRL library into the RESLIB. The contents of the IRTUSRL library can vary depending on whether you use a checkpoint ID table or user exits, so no sample usermod is supplied to populate these modules in SDFSRESL.

Important:

- Only apply the sample usermods to the appropriate IMS version-specific target zones, not the target zone for IMS Program Restart Facility.
- If any maintenance is applied to the IMS Program Restart Facility target zone, you must reapply the usermod into your IMS target zone.
- Do not accept any of the usermods into your IMS DLIB zone.

  You will not be able to restore these usermods after maintenance is applied to IMS or IMS Program Restart Facility.

Restriction: If IMS Program Restart Facility was installed into the same SMP/E target zone as your IMS software, you cannot use the usermod to copy IMS Program Restart Facility load modules into your IMS RESLIB.

Procedure

To use SMP/E to install IMS Program Restart Facility modules into SDFSRESL:

1. Determine the usermod name that you must apply to IMS.

   Refer to the following table to determine the *xxx* value in usermod IRT*xxx*B. Note that IRT*xxx*B is the *B* usermod, not the *A* usermod that was applied in a previous procedure.

You can use the following table to determine the identifier for your release of IMS:

Table 2. IMS release identifiers

IMS release	Identifier
IMS 14	141
IMS 15	151

2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.

   The following DD statements must be updated:

   ```
   SMPCSI   DD  DISP=SHR,DSN=IMS.SMPE.GLOBAL.CSI
   SMPPTFIN DD  DISP=SHR,DSN=IRT220.SIRTDATA(IRT###B)
   ```

   The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name, the SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name that you determined in the first step of this procedure (for example, IRT151B for IMS 15.*x*, where *x* is 1, 2, and so on).
3. Run sample job IRTSMPER and receive the usermod.
4. Edit the sample APPLY JCL in the SIRTSAMP library member IRTSMPEA.

   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.

   In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined in the previous steps of the procedure.
5. Run sample job IRTSMPEA to apply the usermod.
6. Copy the IRT#OPT member and any other customized modules from IRTUSRL to SDFSRESL.

15. Installing the bypass logging usermod (optional)

If you intend to use bypass logging for any IMS batch jobs of type DLI or DBB, you must install the bypass logging usermod to the IMS target zone.

Before you begin

This task is optional. You should install this usermod only if you intend to use bypass logging.

About this task

Bypass logging is a feature that requires planning and verification before being used. By using bypass logging, you can run a DLI or DBB batch job (that does not use IRLM) to update databases without creating an IMS log. IMS logging can be a significant portion of the processing time that is required by such a job, but if there is no log created by a batch job, the databases that are updated by the job cannot be recovered by using the log.

To use bypass logging, you must image copy any databases that are updated by a bypass logging job, both before the job runs and after the job completes successfully. If the job ends abnormally, you must restore the database to the image copy taken before the job execution, as batch backout is not possible without a log.

The additional work of creating two image copies of each database that is updated by a batch job will, in many cases, exceed any benefit to be gained by bypassing logging during the execution of the batch job.

Important:

- Only apply the usermod to the appropriate IMS target zone, not the target zone for IMS Program Restart Facility.
- When you apply any IMS maintenance, you must restore the bypass logging usermod before you apply IMS maintenance, and then reapply the usermod after IMS maintenance is applied.

- Do not accept any of the usermods into your IMS DLIB zone.

Procedure

To apply the bypass logging usermod:

1. Determine the usermod name that you must apply to IMS.

   Use the following table to determine the *xxx* value in usermod name IRT*xxx*C. Note that this is the *C* usermod, not the *A* or *B* usermods that were applied in previous procedures.

   You can use the following table to determine the identifier for your release of IMS:

   Table 3. IMS release identifiers

IMS release	Identifier
IMS 14	141
IMS 15	151

2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.

   The following DD statements must be updated.

   ```
   SMPCSI   DD  DISP=SHR,DSN=IMS.SMPE.GLOBAL.CSI
   SMPPTFIN DD  DISP=SHR,DSN=IRT220.SIRTDATA(IRT###C)
   ```

   The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name, the SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name you determined in the first step of this procedure (for example, IRT151C for IMS 15.*x*, where *x* is 1, 2, and so on). Remember to change the suffix of the usermod member to *C*.
3. Run sample job IRTSMPER and receive the usermod.
4. Edit the sample APPLY JCL that can be found in the SIRTSAMP library member IRTSMPEA.

   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.

   In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined in the first step of the procedure.
5. Run sample job IRTSMPEA and receive the usermod.

Chapter 3. Initial product customization using IMS Tools Setup

IMS Tools Setup is a function that helps you quickly and efficiently perform the required post-SMP/E-installation customization process for IMS Tools solution pack products. IMS Tools Setup is provided by IBM IMS Tools Base for z/OS.

Note: If you have already configured IMS Program Restart Facility by completing the steps in Chapter 2, "Configuring IMS Program Restart Facility," on page 13, you can skip this topic.

What does IMS Tools Setup do?

After the selected IMS Tools solution pack products have been installed into SMP/E data sets, IMS Tools Setup provides a process to simplify the initial configuration that is required to begin using the products. IMS Tools Setup generates JCL members that you then submit as jobs, or perform as tasks, to complete the customization process.

IBM IMS Tools Base for z/OS components are also configured and customized during the IMS Tools Setup process. IBM IMS Tools Base for z/OS provides important supporting components and infrastructure that are required for the operation of many IMS Tools functions, such as storage repositories, autonomics, and interaction with IMS.

The goal of IMS Tools Setup is to greatly ease the time and effort it takes to have IMS Tools products up and running in your environment.

IMS Tools Setup is intended only for initial product installations, first-time users, and product evaluations. IMS Tools Setup is not intended for maintenance purposes.

IMS Tools products that can use IMS Tools Setup

The following IMS Tools products and solution packs can use IMS Tools Setup for initial configuration:

- IBM IMS Tools Base for z/OS
- IBM IMS Database Solution Pack for z/OS
- IBM IMS Fast Path Solution Pack for z/OS
- IBM IMS Recovery Solution Pack for z/OS
- IBM IMS Database Utility Solution for z/OS
- IBM IMS Administration Tool for z/OS
- IBM IMS Cloning Tool for z/OS
- IBM IMS Program Restart Facility for z/OS

Starting IMS Tools Setup

The IMS Tools Setup function (HKTQSETU) can be found in IBM IMS Tools Base for z/OS. You can start the function by running the following REXX EXEC:

```
EXEC 'smpehlq.SHKTCEXE(HKTQSETU)' 'HLQ(smpehlq)'
```

Note: *smpehlq* is the high-level qualifier for the IBM IMS Tools Base for z/OS SMP/E data sets.

The IMS Tools Setup ISPF panels provide an organized and logical approach to the customization tasks. The panels explain the operation and sequence of each member that is generated in the CUSTJCL data set. The correct JCL job and task operation order is very important.

Each panel contains embedded panel-context and individual field-context Help information. All information about using IMS Tools Setup is contained in the embedded Help. There is no separate user guide.

While using the IMS Tools Setup function to install IMS Tools products or to migrate your products from an earlier release to a later release, you need to specify the names of the libraries, or data sets, that are required for each IMS Tools product. Use the worksheets in the topic "Data set names for IMS Tools Setup" in the *IMS Tools Base Configuration Guide* to make a summary of the data set names that will be used in your environment.

Completing IMS Tools Setup

After you run the HKTQSETU REXX EXEC, you can refer to the $$READ member in the generated *hlq*.CUSTJCL data set to view summary information about the JCL members that were generated. Additionally, all individual *hlq*.CUSTJCL members contain detailed descriptions of the functions for each job.

Each of the generated JCL members begins with the number sign (#) and is named in the logical sequence of operation. Any members ending with the at sign (@) require manual steps. You must begin with the first *#xxxxx* member and submit the JCL job or perform the task. After that job or task completes, you continue on to the next member and submit that JCL job or perform that task, and so forth.

The first few members are all system-related (APF, LPA, SSN, MVSPPT), followed by security related members, TCP/IP administration, DBA related members, and others.

You must process all members in the correct order to complete the full customization task properly.

Each JCL member has its own descriptive comment section that explains what the member does and which group it might belong to.

Chapter 4. Advanced configuration tasks

After you have configured the IMS Program Restart Facility, you can optionally do additional configuration tasks to fine-tune the performance of this product.

Topics:

Guidelines for creating environments in IMS Program Restart Facility

This topic discusses creating system environments, using the options data set, and data set naming conventions.

IMS Program Restart Facility environments

The IMS Program Restart Facility options data set determines the number of independent IMS Program Restart Facility environments that you create. You might want to create separate IMS Program Restart Facility environments for your system programmer test environment, development environment, and production environment.

Depending on your configuration, you might want multiple IMS Program Restart Facility environments for development or production. The number of environments you create depends on your environment and how you administer changes to IMS Program Restart Facility options.

The IMS Program Restart Facility options data set contains global options, which apply to every IMS job that runs, and job-specific overrides to the global options. For example, you can have bypass checkpoint processing turned off in the global options, but have a job-specific override to enable that option for specific jobs only. In this case, you would specify BYPCHKP=NO in the global options, and create one or more JOB option entries that specify BYPCHKP=YES for specific job names or PSB names.

Given the number of application-specific options, many customers have a database administrator or the development staff maintain the IMS Program Restart Facility options.

There are some limitations for creating multiple IMS Program Restart Facility environments. Each IMS Program Restart Facility environment is driven by the IMS Program Restart Facility options data set. The options data set name is specified in load module IRT#OPT, which you will copy to the IMS RESLIB or to some common program libraries. A common program library is included in every IMS batch job that has `EXEC PGM=DFSRRC00` in its JCL.

If you choose to copy load module IRT#OPT to your IMS RESLIB, you can only create one IMS Program Restart Facility environment per IMS RESLIB. You can easily share IMS Program Restart Facility environments between multiple IMS RESLIBs with no performance impact.

Updating IMS Program Restart Facility environments

For ease of use, you can maintain the IMS Program Restart Facility options library in a staging library, and copy the options library from the staging library to the production library as scheduled through your change management process. The options data set contains standard load modules, so you can use standard utilities such as TSO XMIT and IEBCOPY to copy the modules from one library to another.

IMS Program Restart Facility data sets

The IMS Program Restart Facility options library contains several load modules that contain the options modules that are used by each IMS job. This library is also referred to as the IRTOPT data set, which is the recommended low-level qualifier. For example, you might name the following IRTOPT data sets:

- IMS.IRT220.IRTOPT (for the system programmer environment)
- IMS.DEV1.IRTOPT (for the development environment)
- IMS.PROD.IRTOPT (for the production environment)

You can optionally create an IMS Program Restart Facility audit log data set that tracks which options were updated, when they were updated, and who made the update. The name of the audit log data set is specified in the IMS Program Restart Facility global options.

If the data set name is left blank in the global options, audit tracking is not enabled. If used, the audit log data set must be unique for each IRTOPT data set. Following the previous data set name example, you might choose to name audit logs

- IMS.IRT220.IRTAUDIT
- IMS.DEV1.IRTAUDIT
- IMS.PROD.IRTAUDIT

Another data set that is created during the customization process is the user library (IRTUSRL). The IRTUSRL data set is created to help you create modules and user exits during the customization process.

For example, the IRT#OPT module that specifies the data set name of the options data set is placed in this library during the customization process. When IMS Program Restart Facility is migrated to a live environment, the members of this library are copied to the same place as the IMS Program Restart Facility software (SIRTLOAD) (probably either the IMS RESLIB or a common program library that is used by every IMS job). You can create a version of this library for each environment so that you can create multiple versions of the IRT#OPT module and other exit routines.

You can create additional IMS Program Restart Facility data sets during IMS job execution. The data set names of these data sets, the CTDS and BBDS data sets, are specified in the IMS Program Restart Facility global options. For more information about these data set names, see Chapter 5, “Product options reference,” on page 35.

Restricting the jobs for which IMS Program Restart Facility is activated

By using the following methods, you can exclude specific jobs from IMS Program Restart Facility management during job runs. If a job is excluded, IMS Program Restart Facility will be deactivated during the initialization process of that job.

Topics:

Specifying EXCLUDE as a job override option

By using the EXCLUDE option of IMS Program Restart Facility as a job override option, you can activate or deactivate IMS Program Restart Facility for specific jobs during their job runs.

For example, if you want to activate IMS Program Restart Facility for all jobs except for jobs A, B, and C, specify the EXCLUDE option in global and job override options, as follows:

- Global option: EXCLUDE=NO (default)
- Job override options for jobs A, B, and C: EXCLUDE=YES

If you want to activate IMS Program Restart Facility only for jobs A, B, and C, specify the EXCLUDE option in global and job override options, as follows:

- Global option: EXCLUDE=YES
- Job override options for jobs A, B, and C: EXCLUDE=NO

For details about job override options, see “Specifying job override options” on page 75.

If you want to activate or deactivate IMS Program Restart Facility for a specific job, you can also specify the EXCLUDE option in the IRT$CNTL DD statement or the CTX data set.

Note: If you use job override options to control which jobs IMS Program Restart Facility is activated for, you might need to add job override option entries each time you add new jobs. Create job override option entries in a planned manner to avoid frequent changes in job override options.

Related concepts

IRT$CNTL DD statement
In addition to the global and job option values that are used for a specific job, each job can have a IRT$CNTL DD statement that overrides the global and job option entries. The IRT$CNTL DD statement can use a DD * type of SYSIN stream, or it can refer to a data set that contains option specifications.

Editing the CTX data set with the ISPF dialog
You can also use the IMS Program Restart Facility ISPF dialog to enter option overrides for a job that is pending restart. By using the Job Administration option of the dialog, you can specify options such as LAST, FORCE, and NOXRST, or use the ISPF Edit panel to enter any other option values you want to specify for the job.

Related tasks

Specifying job override options
Job override options provide a way to permanently set changes to default options for a specific job or set of jobs. The default options are specified in option 5 **Update Global Options** of the IMS Program Restart Facility ISPF interface.

Related reference

General options reference
This section contains a reference for the IMS Program Restart Facility general options.

Using the exclusion DD name table

IMS Program Restart Facility provides a table called the *exclusion DD name table*. By specifying DD names in this table, you can deactivate IMS Program Restart Facility for jobs whose JCL includes any of the DD names in the table.

Related tasks

Updating the exclusion DD name table
By using the exclusion DD name table, you can exclude a job from IMS Program Restart Facility processing by placing a designated DD name in any IMS job. The exclusion DD name table defines the DD names that can be used in a job to exclude the job from IMS Program Restart Facility processing.

Related reference

Exclusion DD name table
The exclusion DD name table provides a list of DD names that, if present in the JCL of a job, disables IMS Program Restart Facility features for that job.

Using the IMS Program Restart Facility initialization user exit IRTUXIN0

The IMS Program Restart Facility initialization user exit can be used to determine whether it is necessary for IMS Program Restart Facility to be active for the running of a job. This exit, IRTUXIN0, can determine from the run environment whether IMS Program Restart Facility should be active.

About this task

This exit is optional. If you choose to write this exit, you must link it as load module IRTUXIN0, and it must be available in the STEPLIB of any IMS jobs that use the exit.

The exit must be coded to run in the following environment:

- The module must be linked as load module IRTUXIN0 and be present in the STEPLIB of the IMS job.
- IRTUXIN0 must run in AMODE 31.

- This exit uses the following input registers:

  R1
  The address of a pointer to the PARM= string of the job, as specified in the JCL.

  R13
  The address of a save area that is used by the exit routine.

  R14
  The return address that is used by the exit routine.

  R15
  The entry point address of the exit routine.
- After the exit routine completes, registers should have the following values:

  R13
  The address of the save area that was passed to the exit.

  R14
  The return address that is used to return to IMS Program Restart Facility.

  R15
  The return code that indicates whether IMS Program Restart Facility should be excluded from the running of this job. A value of R15=0 indicates that IMS Program Restart Facility should be active. Any other return code indicates that IMS Program Restart Facility should be excluded.

Set the return code to indicate whether the job should be excluded from IMS Program Restart Facility processing. A return code of 0 indicates that the job should not be excluded, while any other return code indicates that IMS Program Restart Facility should exclude the job step.

If the exit returns with a nonzero return code, IMS Program Restart Facility backs out all IMS Program Restart Facility activation processing, and will pass control to IMS without any future interaction with IMS Program Restart Facility. IMS Program Restart Facility also backs out of any restart or batch backout processing, and will not create any checkpoint tracking data sets. Because there are no CTDS or BBDS data sets created, IMS Program Restart Facility will not be able to properly restart the job should an abend occur. If the job must be restarted, you must supply the appropriate checkpoint ID in the JCL of the job (or on the XRST call), and you must provide the IMSLOGR DD that refers to the IMS log created by the abending job.

There are no messages that indicate the success or failure of running this exit routine. The only indication of exit routine processing is when the exit returns with a nonzero return code. Message IRT316I is issued when the job is excluded on request for the IRTUXIN0 exit routine. The message appears as:

```
IRT316I PRF INACTIVATED FOR THIS JOB - USER EXIT IRTUXIN0 REQUEST
```

Chapter 5. Product options reference

IMS Program Restart Facility has many product options to help you control the behavior of your IMS batch jobs. There are also several methods you can use to specify options for a specific job.

Topics:

Introduction to specifying product options

IMS Program Restart Facility options are normally specified through the IMS Program Restart Facility ISPF dialog in the global options or job override options. However, they can also be entered in either the IRT$CNTL DD or the CTX data set using the format of *option=value*

Global options are the default options that are used for all IMS jobs. You must enter a value for all options, although some options allow you to specify a blank value.

Job override options provide the capability to specify overrides for an IMS job step. When defining a job options entry, you must define the selection criteria for the options you will specify. Selection criteria consists of the following job characteristics:

- IMSID
- JOBNAME
- PROCSTEP
- STEPNAME
- PROGRAM
- PSBNAME

You can specify all or some of these values to define which IMS job steps use the overrides that are defined in the job entry. For example, you could define a job options entry by only specifying a value for the PSBNAME characteristic: `PSBNAME=DFSSAM01`. With this job options entry, the options that are specified in the entry would apply to any job that runs an IMS job step that uses `PSB=DFSSAM01`.

You can define many job options entries for your environment. The job option entries are in order of which job options have priority. When IMS Program Restart Facility reads the job options entries at each IMS batch job initialization, it reviews them in the order they are saved to check whether the specifications match the characteristics of the IMS batch job. When a match to the current job is found, IMS Program Restart Facility only uses the job options entry that was a match. All job option entries after the first match are ignored.

IRT$CNTL DD statement

In addition to the global and job option values that are used for a specific job, each job can have a IRT$CNTL DD statement that overrides the global and job option entries. The IRT$CNTL DD statement can use a DD * type of SYSIN stream, or it can refer to a data set that contains option specifications.

In addition to the IRT$CNTL, IMS Program Restart Facility allows for the use of a BCM$CNTL DD statement for downward compatibility with IMS Batch Backout Manager for z/OS. The BCM$CNTL DD statement is read before the IRT$CNTL DD, so that options specified in IRT$CNTL override any duplicate options that are specified in the BCM$CNTL DD.

For example, to test a job by forcing an abend after 12 checkpoints, add the following statements to the job stream:

```
//IRT$CNTL DD *
CHKPCNT=12
CHKPCMP=4000
```

These options, which you specify in a DD statement instead of a job options entry, cause the job to abend after 12 checkpoints with a U4000 abend code. You can specify any of the available product options using this syntax, except those that are designated as global only type options.

Editing the CTX data set with the ISPF dialog

You can also use the IMS Program Restart Facility ISPF dialog to enter option overrides for a job that is pending restart. By using the Job Administration option of the dialog, you can specify options such as LAST, FORCE, and NOXRST, or use the ISPF Edit panel to enter any other option values you want to specify for the job.

To specify options in the CTX data set, you use the same syntax as used for the options in the IRT$CNTL DD statement that is documented in "IRT$CNTL DD statement" on page 36. You can specify any of the available product options by using the ISPF Edit panel, except those options that are designated as "global only" type options.

The option overrides for a job that is pending restart are stored in the CTX data set. After the successful restart of the job, the CTX data set is deleted, so the options are only used for a single execution of the job.

Global options reference

This section contains a reference for the IMS Program Restart Facility global options.

Important: Global only options cannot be overridden by entering them in job override options, an IRT$CNTL DD statement, or in the CTX data set. They can be specified only in the global options in the IMS Program Restart Facility ISPF dialog.

AUDITLOG

The fully qualified data set name of the optional IMS Program Restart Facility audit log data set. Do not enclose the name in quotation marks. If you do not use the IMS Program Restart Facility audit log feature, you can leave this value blank.

For instructions on how to create an audit log data set, refer to "6. Activating the audit log feature (optional)" on page 16.

No default value.

AUDTOPMD

Information about updates in each IMS Program Restart Facility options module is stored in the last record of each options module in the following format:

Descriptor	Byte length
Type of options module	8

Descriptor	Byte length
Reserved area	4
Julian date (hexadecimal)	4
Time (hexadecimal)	4
User ID	8
Reserved area	variable length

The AUDTOPMD option determines whether to log the user ID information of the user who last updated each options module. If you update the AUDTOPMD option, the user ID field of every options module will be updated.

AUDTOPMD=YES | NO

YES
If you specify YES, IMS Program Restart Facility logs the date and time when each options module was last updated and the user ID of the user who last updated it.

NO
If you specify NO, IMS Program Restart Facility does not log the user ID information.

The default value is YES.

BBDSDACL

The SMS data class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

BBDSHLQ

A 1- to 22-character data set prefix that is used when allocating the BBDS data set. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

The BBDSHLQ value is used to generate a data set name for the BBDS in the following format:

```
BBDSHLQ.jobname.imsid.psbname.BKO
```

If you are enabling automatic batch backout processing for the first time, use the same value for BBDSHLQ that you use for CTDSHLQ so that all IMS Program Restart Facility data sets have the same high-level qualifier and are easier to identify.

Default value is IMS.BACKOUT.

BBDSMGCL

The SMS management class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

BBDSSTCL

The SMS storage class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

BBDSUNIT

The UNIT name that is used when allocating the BBDS data set. This option is optional. The BBDS data set must reside on DASD.

Default value is SYSDA.

BBDSVOL

The volume serial of the DASD unit that is used when allocating the BBDS data set. This option is optional. The BBDS data set must reside on DASD.

No default value.

CTDSDACL

The SMS data class that is used when allocating the CTDS data sets. This option is optional.

No default value.

CTDSHLQ

Specify a 1- to 8-character high-level qualifier (HLQ) for the CTDS data sets. The CTDSHLQ option, along with the CTDSNAM option, determine the data set names for CTDS data sets.

When the CTDSNAM option is set to NOPSB or NOPGM, the CTDSHLQ qualifier can be 1 to 17 characters in length. However, specifying a CTDSHLQ value greater than 8 characters is not recommended because it increases the chances that different jobs might attempt to share the same CTDS files. If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery.

To help avoid this situation, when you specify a CTDSHLQ value of less than 9 characters, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.

For the data set names that are generated for the CTDS data sets, refer to the CTDSNAM option reference.

Default value is IMS.XRA.

CTDSMGCL

The SMS management class that is used when allocating the CTDS data sets. This option is optional.

No default value.

CTDSNAM=NOPGM | NOPSB | BOTH

The CTDSNAM option can have the following values:

NOPGM

Excludes the program name from the CTDS data set name. When this value is specified, the CTDS HLQ that is specified with the CTDSHLQ option can be 1 - 17 characters in length.

When you specify CTDSNAM=NOPGM, the data set names that are generated for the CTDS data sets use the following format:

```
ctdshlq.jobname.imsid.psbname.CTA
ctdshlq.jobname.imsid.psbname.CTB
ctdshlq.jobname.imsid.psbname.CTX
ctdshlq.jobname.imsid.psbname.LOG
```

NOPSB

Excludes the PSB name from the CTDS data set name. When this value is specified, the CTDS HLQ that is specified with the CTDSHLQ option can be 1 - 17 characters in length.

When you specify CTDSNAM=NOPSB, the data set names that are generated for the CTDS data sets use the following format:

```
ctdshlq.jobname.imsid.pgmname.CTA
ctdshlq.jobname.imsid.pgmname.CTB
ctdshlq.jobname.imsid.pgmname.CTX
ctdshlq.jobname.imsid.pgmname.LOG
```

BOTH

Includes both the PSB and program name in the CTDS data set name.

When you specify CTDSNAM=BOTH, the data set names that are generated for the CTDS data sets use the following format:

```
ctdshlq.jobname.imsid.psbname.pgmname.CTA
ctdshlq.jobname.imsid.psbname.pgmname.CTB
ctdshlq.jobname.imsid.psbname.pgmname.CTX
ctdshlq.jobname.imsid.psbname.pgmname.LOG
```

Default value is BOTH.

Recommendation: Set the CTDSNAM value to CTDSNAM=BOTH. If you exclude the program name from the CTDS name, the data sets are not uniquely identified if the same PSB name is used by other programs in a job. If you exclude the PSB name from the CTDS name, the data sets are not uniquely identified if the same program can use different PSB names.

If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery. To help avoid this situation, when you specify a CTDSHLQ value of less than 9 characters, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.

CTDSSTCL

The SMS storage class that is used when allocating the CTDS data sets. This option is optional.

No default value.

CTDSTRKS=*nnnn*

The number of tracks that are required for the primary allocation for each CTDS. The secondary allocation is equal to the primary allocation. Specify the *nnnn* value as a 1-to-4-digit integer.

The CTDS data sets hold a single set of IMS checkpoint records and a few additional IMS Program Restart Facility control records. The size that is required is dependent on the amount of data that is checkpointed by each application program. For programs that checkpoint a small amount of data, a value of 1 is sufficient.

Default value is 1.

CTDSUNIT

The UNIT name that is used when allocating the CTDS data sets. This option is optional. The CTDS data set must reside on DASD.

Default value is SYSDA.

CTDSVOL=*volser*

The volume serial number of the DASD unit that is used when allocating the CTDS data sets. This option is optional. The CTDS data sets must reside on DASD.

No default value.

TEMPUNIT

The TEMUNIT option is used to specify the unit name of any device to which IMS Program Restart Facility allocates temporary data sets during the course of a job. The value of this option is valid only for the duration of the job.

The value specified for the device can be up to 8 characters in length.

Default value is SYSDA.

General options reference

This section contains a reference for the IMS Program Restart Facility general options.

ABRETRY=NO | YES

This option identifies whether abend retry is active for a job.

Abend retry processing is invoked when an abend occurs during IMS application program processing. If an abend occurs, and an abend retry table entry requests that IMS Program Restart Facility attempt to retry the abend, IMS Program Restart Facility automatically invokes IMS again and has IMS restart the application program from the last checkpoint. This is done without any intervention, so it is not necessary to resubmit the job.

Abends that are considered for retry must be coded in an abend retry table. The name of the table must be specified in the ABTABLE option. If the table named in the ABTABLE option does not exist, ABRETRY=NO is used as the default setting.

ABTABLE

The name of a valid IMS Program Restart Facility abend retry table as defined in the IMS Program Restart Facility options data set. The table name is used when ABRETRY=YES is in specified, and when an abend occurs in IMS application program processing. The entries in the abend retry table determine whether IMS Program Restart Facility tries to automatically restart the application program without having to resubmit the job.

No default value.

AUTOWTOR=NO | YES

Specify one of the following values for this option:

NO
IMS Program Restart Facility does not produce a WTOR if the job is an extended restart job.

YES
IMS Program Restart Facility issues a WTOR for message IRT014A if an automatic extended restart can be performed and no extended restart checkpoint ID is specified in the JCL for the restarted job. Message IRT014A prompts the operator to reply with either YES, NO, or ABEND with the following outcomes for each response:

YES
Extended restart is performed.

NO
No extended restart is performed.

ABEND
The job terminates with a U3627 abend.

Default value is NO.

AUTOXRST=YES | NO | FORCE | LAST

Specify one of the following values to indicate the type of restart that is done:

YES
IMS Program Restart Facility automatically supplies the IMS Extended Restart checkpoint ID if the job ended abnormally during its last run.

NO
IMS Program Restart Facility does not provide automatic IMS Extended Restart processing. No Extended Restart checkpoint ID is automatically supplied for the job even if the job ended abnormally during its last run.

FORCE
The current indoubt checkpoint ID is committed for the next restart of the abended job. Do not make this specification in the global or job override options. You can use this specification to temporarily override the restart JCL as part of the IRT$CNTL DD * JCL statement or in the CTX data set.

LAST
The last verified checkpoint ID is used for the next restart of the abended job. Do not specify this value in the global or job override options. You can use this value to temporarily override the restart JCL as part of the IRT$CNTL DD * JCL statement or in the CTX data set.

Default value is YES.

CHKPINT=*hh*:*mm*:*ss*

The CHKPINT specification is optional. When specified, IMS Program Restart Facility monitors checkpoint activity and sends message IRT090I to the JESLOG of the job when the length of time since the prior checkpoint exceeds the interval that is specified in the option.

Programs that do extensive internal processing have messages sent to the JESLOG of the job that are not relevant. For example, if a program reads a large amount of data, sorts the data, and does additional processing, checkpoint interval warning messages are probably produced while the internal sort processing is occurring.

No default value.

DEBUG

The DEBUG option provides additional debug information when you have a re-creatable problem that requires additional documentation. This product option is provided for backward compatibility with IMS Program Restart Facility 2.1.

The option is ignored if specified in IMS Program Restart Facility 2.2.

Default value is 00000000.

EXCLUDE=YES | NO

Specify one of the following values for this option:

YES
No IMS Program Restart Facility processing occurs during the execution of the job, other than the process of reading option specifications.

NO
IMS Program Restart Facility processing occurs during the execution of the job.

Default value is NO.

FORCEID=YES | NO

Specify one of the following values for this option:

YES
IMS Program Restart Facility substitutes checkpoint IDs that are generated by IMS Program Restart Facility automatically for those created by the application program.

NO
IMS Program Restart Facility retains the checkpoint IDs that are created by the application program.

Checkpoint IDs generated by IMS Program Restart Facility take the form *aaaannnn*, where *aaaa* is the address space ID (ASID) of the job, represented by 4 hexadecimal characters, and *nnnn* is a 4-digit sequence number between 0001 - 9999, which wraps back to 0000 after 9999.

Default value is NO.

FSTOP=YES | NO

Specify one of the following values for this option:

YES
IMS Program Restart Facility processes operator initiated MVS MODIFY commands. The command is processed by IMS Program Restart Facility only if the application already issued an XRST call.

NO
IMS Program Restart Facility ignores any operator-issued MODIFY commands for the job that is running.

Default value is NO.

IGNXIOA=YES | NO

Specify one of the following values for this option:

YES
IMS Program Restart Facility ignores data that is provided by the application program in the IOAREA of an XRST call.

NO
If there are no CTA and CTB data sets for the job, IMS Program Restart Facility obtains the restart checkpoint ID from the information that is specified in the IOAREA of an XRST call, if the area is non-blank. In this scenario, you must include a log file in the job, using the //IMSLOGR DD statement, that contains the checkpoint ID.

Note: IGNXIOA is ignored if there are CTA and CTB data sets for the job, or if USEJCLID=YES and a checkpoint ID are specified through the PARM field.

Default value is NO.

IMSLOGR=YES | NO

Specify one of the following values for this option:

YES
IMS Program Restart Facility ignores any existing IMSLOGR DD in the JCL of a job, and overrides the IMSLOGR data set with its own LOG data set.

NO
IMS Program Restart Facility uses any existing IMSLOGR DD in the JCL of the job.

The IMSLOGR=YES specification helps to ensure that IMS reads the correct checkpoint data.

Default value is NO.

IRT#CPID

The IRT#CPID specification defines the load module name of the checkpoint ID table to be used. The default name is IRT#CPID. This is the load module name that is created by the process that is described in “Overriding IMS Extended Restart processing” on page 69.

Default value is IRT#CPID.

RDORETRY=YES | NO

The RDORETRY option enables IMS Program Restart Facility to restart an abended read-only DLI- or DBB- type batch job that does not perform logging. IMS Program Restart Facility uses the CTDS data sets to restart the job even though there is no IMS log.

YES
IMS Program Restart Facility restarts a read-only DLI- or DBB- type batch job that does not perform logging. If the job ends abnormally with one of the abend codes that are specified in the active abend retry table, IMS Program Restart Facility attempts to automatically retry the job by restarting IMS batch processing even though the job step has not ended.

If you specify RDORETRY=YES, you must also specify ABRETRY=YES.

NO
IMS Program Restart Facility does not restart a read-only DLI- or DBB- type batch job that does not perform logging.

If you specify this option, IMS Program Restart Facility also changes the DBRC option to DBRC=N.

The read-only job that is being restarted does not perform logging, so IMS Program Restart Facility does not allocate any log data sets for the IEFRDER and IEFRDER2 DD statements.

Restriction: The DFSIDEF0 module, if present, cannot have DBRC=FORCE specified.

The IMS DD statement must be present with the named PSB that is present in the specified library, or with one of the libraries that are listed in the concatenation.

Default value is NO.

REGJBP=YES | NO

This option determines whether IMS Program Restart Facility support for Java™ applications should be enabled.

YES
Use this option to enable IMS Program Restart Facility support for Java applications that run in the JBP regions and issue extended restart and checkpoint calls. When REGJBP=YES is specified, all features that are available in BMP regions, except for the checkpoint insertion feature, are available in JBP regions.

NO
IMS Program Restart Facility support is not be enabled for Java applications that run in the JBP regions.

Default value is NO.

SHOWOPTS=YES | NO | ONLY | PRINT

The SHOWOPTS option determines which IMS Program Restart Facility messages are written for IMS batch jobs, and where they are written.

Specify one of the following values for this option:

YES
Summary option information is written to the JESLOG of IMS batch jobs. Some informational messages are suppressed, and remaining informational and status messages are written to the JESLOG of the job.

NO
No option information is written for IMS batch jobs, and limited informational messages providing job status are written to the JESLOG of the job.

ONLY
Option information is written to the JESLOG of the IMS batch job only if the job is not excluded from IMS Program Restart Facility processing. Limited informational and status messages are written to the JESLOG of the batch job.

PRINT
IMS Program Restart Facility dynamically allocates DD name IRTPRINT if it is not present in the job, and writes all option information and status messages to the IRTPRINT output file. This option provides additional information not only about the options in use for a job, but additional status messages during the execution of a job. See the SYSOUT option, which defines the SYSOUT class that should be dynamically allocated for the IRTPRINT file.

Default value is NO.

Recommendation: Specify SHOWOPTS=PRINT, as this option provides additional informational messages during the execution of the job, a full listing of all options in use for the job, and the source of each option. You can use SHOWOPTS=PRINT with no JCL changes by using the SYSOUT option to specify the SYSOUT class that will be used when IRTPRINT is dynamically allocated.

SYSOUT=*x*

Specify a one-character SYSOUT class that is used for the IRTPRINT DD (see the SHOWOPTS option).

No default value.

TRACK=YES | NO

The TRACK option specifies whether IMS Program Restart Facility should track checkpoints and provide automatic restart support.

Specify one of the following values for this option:

YES
IMS Program Restart Facility provides checkpoint ID tracking services, which are used to provide automatic restart support.

NO
IMS Program Restart Facility does not provide any checkpoint ID tracking services (no CTDS is allocated). In addition, IMS Program Restart Facility does not provide automatic restart support for the job.

Default value is YES.

USEJCLID=NO | YES

Specify whether you want IMS Program Restart Facility to use the restart checkpoint ID specified by the CKPTID parameter value in the JCL EXEC statement. Select one of the following values for this option:

NO
IMS Program Restart Facility ignores the CKPTID parameter in the JCL EXEC statement. The restart checkpoint ID that is supplied by the IMS Program Restart Facility, if any, will be used.

YES
IMS Program Restart Facility overrides the restart checkpoint ID with the value specified by the CKPTID parameter in the JCL EXEC statement. To restart a job from a user-specified checkpoint, you must make available the log data set that contains the corresponding checkpoint log by specifying the IMSLOGR DD statement.

If IMS cannot find the corresponding checkpoint log, the restart job will end abnormally with an IMS U0102 completion code.

If no CKPTID parameter is found in the JCL EXEC statement, this option is ignored.

Default value is NO.

Bypass checkpoint options reference

This section contains a reference for the IMS Program Restart Facility bypass checkpoint options.

Bypass checkpoint processing reduces the number of checkpoints that are taken by IMS on request of the application program. The other options that are documented in this section control IMS Program Restart Facility processing associated with bypass checkpoint processing.

BCDINTVL=*hhmmssth*

Use to bypass extended checkpoint calls made by the application according to the time interval specified, where:

hh
Hours

mm
Minutes

ss
Seconds

t
Tenths of a second

h
Hundredths of a second

You can specify this option to reduce the number of checkpoints that are taken by an application that might be taking checkpoints too frequently.

Default value is 00010000.

Attention: Use this option carefully. Some applications might need to take frequent checkpoints.

BCERRXT=*nnnn*

Use this option to pass the value *nnnn* to the IMS application program when any checkpoint call is bypassed. The *nnnn* value will be returned in the AIBERRXT field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify *nnnn* as a 1- 4-digit integer.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

BCREASN=*nnnn*

Use this option to pass the value *nnnn* to the IMS application program when any checkpoint call is bypassed. The *nnnn* value will be returned in the AIBREASN field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify *nnnn* as a 1- 4-digit integer.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

BCRETRN=*nnnn*

Use this option to pass the value *nnnn* to the IMS application program when any checkpoint call is bypassed. The *nnnn* value will be returned in the AIBRETRN field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify *nnnn* as a 1- 4-digit integer.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

BCSTATUS=*xx*

Use to return the specified status code to the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

BCSTCLST=*status_codes*

Use to make IMS Program Restart Facility honor a checkpoint call that is issued by the application if any of the special DL/I status codes that are listed for this option are present in any database PCBs after the previous checkpoint call.

The following example shows the minimum specifications that are recommended for installations that use the bypass checkpoint processing feature:

```
BCSTCLST=GBFGFW
```

This example specifies that the next checkpoint call that is attempted after receiving a database GB status code will be allowed.

A maximum of ten 2-character status codes can be specified for this option.

No default value.

BYPCHKP=YES | NO

Specify one of the following values for this option:

NO
Bypass checkpoint processing is not used for the job. The default value is NO.

YES
Bypass checkpoint processing is enabled for the job.

If an application program uses IMS Fast Path databases, bypass checkpoint processing is automatically disabled because Fast Path applications are required to take checkpoints under certain processing circumstances.

Application return code and testing options reference

This section contains a reference for the IMS Program Restart Facility application program return code and testing options.

CHKPCMP=*nnnn*

Use to facilitate the testing of the restart logic for an application. Add an IRT$CNTL DD statement to the run JCL, and specify this option and the CHKPCNT option to force an abend after the specified number of checkpoint calls have completed.

Specify the value *nnnn* as a number from 1 - 4095. This integer represents the abend completion code that is used by IMS Program Restart Facility when an abend is forced after the number of checkpoint calls that are specified by the CHKPCNT option are completed.

No default value.

CHKPCNT=*nnn*

Use to facilitate the testing of the restart logic for an application. Add an IRT$CNTL DD statement to the run JCL, and specify this option and the CHKPCMP option to force an abend after the specified number of checkpoint calls have completed.

Specify the value *nnn* as a 1- to 3-digit integer, where *nnn* represents the number of checkpoint calls that must complete before IMS Program Restart Facility forces an abend.

No default value.

FABXRST=YES | NO

This option applies when using the CHKPCNT or CHKPCMP option. The FABXRST option controls whether a restarted job ends abnormally after the specified number of checkpoint calls.

Specify one of the following values for this option:

YES
When a job is restarted, it ends abnormally after the number of checkpoint calls specified for the CHKPCNT option are issued by the application program.

NO
When a job is restarted, the CHKPCNT option is ignored, and the job runs to completion without regard to the number of checkpoint calls issued by the application program.

Default value is NO.

RCABEND=*nnnnn*

Specify this option to force an application that issues a return code that is equal to or higher than the integer that you specify for *nnnnn* to abend. IMS Program Restart Facility will cause the job step to abend with a U3624 (or with the abend code that you specify in UABEND=*nnnn*).

Specifying RCABEND=0 disables RCABEND feature processing. In the global or job options, specify blanks for the value to disable processing.

Cleanup of the checkpoint-tracking data sets still occurs unless you made a corresponding RCERROR specification, so if you want the application to perform a restart, you must make an identical specification for the RCERROR option.

No default value.

Attention: If this option is used for BMPs, the PSB does not need to be started by an operator after an abend.

RCERROR=*nnnn*

Specify this option to bypass checkpoint-tracking data set cleanup processing for an application that terminates with a return code that is equal to or higher than the integer that you specify for *nnnn*. The subsequent job restart is considered an IMS Extended Restart, and IMS Program Restart Facility determines which checkpoint should be used for restart.

No default value.

UABEND=*nnnn*

Use this option to change the user abend code that is issued by IMS Program Restart Facility when an application issues a return code that is greater than the one specified for the RCABEND option. If the UABEND option is coded, the user abend code that is issued changes from a U3624 to the abend code that you specify by using the UABEND option.

The value for *nnnn* must be a number from 1 - 4095.

Default value is 3624.

IMS PROC override options reference

This section contains a reference for the IMS Program Restart Facility IMS BMP/DBB/DLI PROC override options.

AGN

Use the AGN option to change the specification of the AGN IMS parameter that is specified in the JCL of the job.

No default value.

APARM

Use the APARM option to override the specification of the APARM IMS parameter that is specified in the JCL of the job.

To specify the APARM option, enclose a PARM string of 32 or less characters in single quotation marks. For example, if you wanted to code the APARM option in an IRT$CNTL DD, you would use the following syntax:

```
APARM='data to be passed to pgm'
```

No default value.

CKPTID=NOMSGS | NOMSG540 | NOMSG681 | NOMSG542 | NO681542

Use the CKPTID option to override the specification of message suppression that is specified by the CKPTID IMS parameter in the JCL of the job.

In the global or job override options, you can specify one of the following values for the CKPTID option:

NOMSGS
This value has the same effect as coding CKPTID=NOMSGS in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS540 and DFS681 messages that are generated after the application completes a successful checkpoint call.

NOMSG540
This value has the same effect as coding CKPTID=NOMSG540 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS540 message that is generated after the application completes a successful checkpoint call.

NOMSG542
This value has the same effect as specifying CKPTID=NOMSG542 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS542 message that is generated after the application completes a successful checkpoint call.

NOMSG681
This value has the same effect as coding CKPTID=NOMSG681 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the message that is generated after the application completes a successful checkpoint call.

NO681542
This value has the same effect as coding CKPTID=NO681542 in the IMSBATCH or DLIBATCH procedures. IMS suppresses DFS681 and DFS542 messages that are generated after the application completes a successful checkpoint call.

Default value is NOMSGS.

CPUTIME

Use the CPUTIME option to override the specification of the CPUTIME IMS parameter that is specified in the JCL of the job.

No default value.

DBRC

Use the DBRC option to override the specification of the DBRC IMS parameter that is specified in the JCL of the job.

No default value.

GSGNAME

Use the GSGNAME option to override the specification of the GSGNAME IMS parameter that is specified in the JCL of the job.

No default value.

IRLM

Use the IRLM option to override the specification of the IRLM IMS parameter that is specified in the JCL of the job.

No default value.

IRLMNM

Use the IRLMNM option to override the specification of the IRLMNM IMS parameter that is specified in the JCL of the job.

No default value.

LOCKMAX=*nnnnn*

Use the LOCKMAX option to override the specification of the LOCKMAX IMS parameter that is specified in the JCL of the job.

No default value.

OPT

Use the OPT option to override the specification of the OPT IMS parameter that is specified in the JCL of the job.

No default value.

PARDLI

Use the PARDLI option to override the specification of the PARDLI IMS parameter that is specified in the JCL of the job.

No default value.

PREINIT

Use the PREINIT option to override the specification of the PREINIT IMS parameter that is specified in the JCL of the job.

No default value.

PRLD

Use the PRLD option to override the specification of the PRLD IMS parameter that is specified in the JCL of the job.

No default value.

SSM

Use the SSM option to override the specification of the SSM IMS parameter that is specified in the JCL of the job.

No default value.

STIMER

Use the STIMER option to override the specification of the STIMER IMS parameter that is specified in the JCL of the job.

No default value.

TMINAME

Use the TMINAME option to override the specification of the TMINAME IMS parameter that is specified in the JCL of the job.

No default value.

For more information about these parameters, refer to *IMS System Definition*.

IMS batch backout options reference

This section contains a reference for the IMS Program Restart Facility batch backout options.

AUTOBKO=YES | NO

Specify one of the following values for this option:

YES
If a job step ends abnormally, IMS Program Restart Facility attempts automatic batch backout processing for the selected job at the time of the abend.

If the job ends abnormally due to an error where ESTAE processing is not possible, such as a memory allocation error or a problem that causes your z/OS system to come down, batch backout processing occurs at job restart.

NO
If a job step ends abnormally, IMS Program Restart Facility attempts automated batch backout processing for the selected job at the time you restart the job.

At that time, IMS Program Restart Facility drives batch backout processing and causes the job to abend, based on the values of the CMPCBKOK/CMPCBKER options for the job, before calling the application.

A subsequent restart of the job causes the job to restart as it normally would, based on your IMS Program Restart Facility job restart options.

Note: If you specify AUTOBKO=NO, and your job contains a DD statement that exists in the exclusion DD name table, and the entry in the table for that DD statement specifies YES for the "Disable BBO" value, batch backout processing is completely bypassed for your job.

Default value is NO.

BYPLOGR=YES | NO

Specify BYPLOGR=YES when running in a DBRC=FORCE environment to prevent logging from being performed. Specifying BYPLOGR=YES prevents batch backout processing from occurring.

When using this option, verify that all databases updated by the job step are offline IMS databases. Databases should not be online to any IMS online systems and IRLM should not be in use. See “15. Installing the bypass logging usermod (optional)” on page 27 for more information.

Default value is NO.

CATDS=YES | NO

Specify one of the following values for this option:

YES
IMS Program Restart Facility relies on the catalog for all unit and volume serial number information for log data sets that are referenced during automatic batch backout processing.

NO
IMS Program Restart Facility saves unit and volume serial number information in the batch backout data set that is used when allocating log data sets during batch backout processing.

Default value is YES.

CMPCBKOK=*nnnn*

The *nnnn* value is a 4-digit user abend completion code that is issued under the following circumstances:

- When an application ends abnormally and batch backout processing completes successfully, *nnnn* is used as a common job step abend completion code.
- When no batch backout processing is required.

If *nnnn* is blank or zero, the actual abend completion code of the failed application is used instead of the *nnnn* value.

No default value.

CMPCBKER=*nnnn*

The *nnnn* value is a 4-digit user abend completion code that is issued when an application ends abnormally and batch backout processing does not complete successfully.

If *nnnn* is blank or zero, the actual abend completion code of the failed application is used instead of the *nnnn* value.

Default value is 3630.

COPY1

IMS Program Restart Facility substitutes whatever value is specified for this option when generating a data set name with &COPY1 coded as a symbolic parameter in the data set name mask.

Default value is 1.

COPY2

IMS Program Restart Facility substitutes whatever value is specified for this option when generating a data set name with &COPY2 coded as a symbolic parameter in the data set name mask.

Default value is 2.

FORCELTR=YES | NO

YES
IMS Program Restart Facility always performs IMS log termination processing, except in the case where backout processing occurs immediately after an abend and IMS has successfully closed the log.

NO
IMS Program Restart Facility only closes the log when required.

Default value is NO.

IEFRDER=DUMMY | DYNALLOC | FORCE | JCL

Specify one of the following values for the dynamic allocation options of the IEFRDER DDNAME:

DUMMY
Any existing IEFRDER DD is deallocated, and IMS Program Restart Facility allocates the IEFRDER as a DD DUMMY.

DYNALLOC
Dynamic allocation of a log data set occurs for DDNAME IEFRDER whenever a valid data set is not coded for this DDNAME. A valid data set is any data set that is not DD DUMMY, DSN=NULLFILE, or is not a temporary data set name.

FORCE
Dynamic allocation of a log data set is required for DDNAME IEFRDER regardless of any value that is specified in the JCL for this DDNAME.

JCL
The JCL specified for the DDNAME should not be altered.

Default value is JCL.

IEFRDER2=DUMMY | DYNALLOC | FORCE | JCL

Specify one of the following values for the dynamic allocation options of the IEFRDER2 DDNAME:

DUMMY
Any existing IEFRDER2 DD is deallocated, and IMS Program Restart Facility allocates the IEFRDER2 as a DD DUMMY.

DYNALLOC
Dynamic allocation of a log data set occurs for DDNAME IEFRDER2 whenever a valid data set is not coded for this DDNAME. A valid data set is any data set that is not DD DUMMY, DSN=NULLFILE, or is not a temporary data set name.

FORCE
Dynamic allocation of a log data set is required for DDNAME IEFRDER2 regardless of any value that is specified in the JCL for this DDNAME.

JCL
The JCL specified for the DDNAME should not be altered.

Default value is JCL.

NOLOGRO=YES | NO

Specify one of the following values for this option:

YES
If the PSB is present in the library concatenation for the //IMS DD statement, IMS Program Restart Facility analyzes the PSB to determine whether it has any update intent for a non-GSAM database. If no databases have an update intent coded in the PSB, IMS Program Restart Facility does not dynamically allocate log data sets and deallocates the log data sets specified in the JCL.

NO
IMS Program Restart Facility uses whatever logging is requested through the JCL, or the IEEFRDER or IEFRDER2 options, without regard to whether the PSB is read-only or not.

Default value is NO.

Attention: Do not select this option if the job must rely on log data sets in order to use IMS Extended Restart. This warning can be ignored if IMS Program Restart Facility AUTOXRST support is available to the job.

IMS DLI and DBB batch log options reference

This section contains a reference for the IMS Program Restart Facility IMS DLI and DBB batch log options.

These DLI and DBB batch log options apply only to DLI and DBB type IMS jobs. These options do not apply to BMP or JBP region types. Also, these options are used only if IEFRDER=/IEFRDER2= are specified as something other than JCL.

There are many IMS logs that can be created for DLI and DBB IMS batch jobs. In addition to the normally created logs, IEFRDER and optionally IEFRDER2, there are additional log close DUP logs (NEWRDER and NEWRDER2) and batch backout logs (BBO Logs 1 and 2) in the event that a batch backout is required. In addition, if bypass logging is requested for a batch job, IMS Program Restart Facility creates a “dummy” log that can be registered in DBRC and marked in error so that DBRC knows that an image copy is required after a database is updated by a job that does not create a log.

In order to make it easier to specify various log allocation characteristics, IMS Program Restart Facility provides options for specifying default allocation values that apply to all log types. Then, you can provide overrides for values for each particular log type. For example, you could specify the BLKSIZE, RETPD, and UNIT names in the default values for all logs because they would most likely not change by the type of log. Then, you could specify the DSN and space parameters for each specific log type, because you might want different data set names and space allocation parameters, depending on the type of log.

In the IMS Program Restart Facility ISPF dialogs, all these log types can be specified, including the default log type. If you want to override one of these options, there are separate option keywords for each log type.

The various option keywords are shown in “Options” on page 53, although they are prefixed by *xxxx*. The value of *xxxx* refers to the log type. The following log types are valid values for *xxxx*:

Log types

LOG
Use options with this prefix to specify default values for all other log types. For example, if you wanted to use BLKSIZE=22528 for all logs, you can use LOGBLKSIZE=22528 to have all IMS batch logs use this block size.

LOG1
Use options with this prefix to specify values for the primary log that is used when an application program is run. Options with this prefix affects the IEFRDER DD name.

LOG2
Use options with this prefix to specify values in the primary log that is used when an application program is run. Options with this prefix affect the IEFRDER2 DD name.

LTR1
Use options with this prefix to specify values for the primary log that is created during the log close process. Options with this prefix affect the NEWRDER DD name.

LTR2
Use options with this prefix to specify values for the secondary log, which is created during the log close process. Options with this prefix affect the NEWRDER DD name.

BBO1
Use options with this prefix to specify values for the primary log, which is created during the batch backout process. Options with this prefix affect the IEFRDER DD name that is used during batch backout processing.

BBO2
Use options with this prefix to specify values for the secondary log, which is created during the batch backout process. Options with this prefix affect the IEFRDER DD name that is used during batch backout processing.

BYP
Use options with this prefix to specify values for the primary log that is used when bypass logging is in effect for a job. Bypass logging requires a "dummy" log data set to be registered in DBRC.

Options

xxxx*BLKSZ=*nnnnn
The block size of the log data set that is allocated during execution of the DLI or DBB application. If specified, *nnnnn* must be a number between 8 - 32760.

Note: If you specify different block sizes for data set pairs (for example, LOG/LOG1/LOG2, LTR1/LTR2, BBO1/BBO2), IMS chooses the larger of the two block sizes and uses that block size for both logs.

No default value.

xxxx*BUFNO=*nnn
The number of buffers for the log data set that is allocated during execution of the DLI or DBB application. If specified, *nnn* must be a number between 0 - 255.

No default value.

***xxxx*DCBDS**
The name of a cataloged data set that is used as a model DSCB for the log data set that is allocated during execution of the DLI or DBB application.

No default value.

***xxxx*DSNAM**
The data set name mask that is used for the log data set that is dynamically allocated during execution of the DLI or DBB application. For more information about specifying this mask, see "Symbolic parameters for log data set names" on page 55.

No default value.

xxxx*EXPDL=*yyyyddd
The 7-digit expiration date for the log data set that is allocated during execution of the DLI or DBB application, where *yyyy* is the year and *ddd* is the day of the year.

No default value.

xxxx*EXPDT=*yyddd
The 5-digit expiration date for the log data set that is allocated during execution of the DLI or DBB application, where *yy* is the last 2 digits of the year and *ddd* is the day of the year.

For any specific log, specify only one of the following options: *xxxx*EXPDL, *xxxx*EXPDT, or *xxxx*RETPD. Each of these options define how long a log data set should be retained.

No default value.

xxxx*LRECL=*nnnnn
The logical record size of the log data set that is allocated during execution of the DLI or DBB application. If specified, the value for this option must be a number between 4 - 32760.

No default value.

xxxx*PRIME=*nnnnn
The number of primary space units (the *xxxx*SPACE option) that are used for the log data set that is allocated during execution of the DLI or DBB application. This value must be a number between 1 - 9999.

Default value is 15.

xxxx*RETPD=*nnnn
The retention period, *nnnn*, is a value from 0 - 9999 days for the log data set that is allocated during execution of the DLI or DBB application.

For any specific log, specify only one of the following options: *xxxx*EXPDL, *xxxx*EXPDT, or *xxxx*RETPD. Each of these options define how long a log data set should be retained.

No default value.

xxxx*SECND=*nnnnn
The number of secondary space units (the *xxxx*SPACE= option) that are used for the log data set that is allocated during execution of the DLI or DBB application. This value must be a number between 1 - 9999.

Default value is 15.

***xxxx*SPACE=TRK | CYL**
The space units that are used for the log data set that is allocated during execution of the DLI or DBB application.

Specify one of the following values for this option:

TRK
The number of tracks that should be used during log data set allocation.

CYL
The number of cylinders that should be used during log data set allocation.

If you use the *xxxx*SPACE option, you must also specify the *xxxx*PRIME and *xxxx*SECND option to define how many tracks or cylinders should be used in the log data set allocation.

Default value is TRK.

xxxx*UNCNT=*nn
The number of units (tape drives) used for the log data set that is allocated during execution of the DLI or DBB application. If this option is specified, *nn* must be a number between 0 - 59.

No default value.

***xxxx*UNIT**
The UNIT name (for the UNIT option that is specified in JCL) that is used for the log data set that is allocated during execution of the DLI or DBB application.

Default value is SYSDA.

xxxx*VLCNT=*nnn
The number of volumes (typically tape volumes) used for the log data set that is allocated during execution of the DLI or DBB application. If this option is specified, *nnn* must be a number between 1 - 255.

No default value.

Symbolic parameters for log data set names

When you specify any of the log data set names that will be allocated dynamically by IMS Program Restart Facility, it might be necessary to specify symbolic parameters to ensure a unique data set name that IMS Program Restart Facility will replace when generating a data set name.

The following symbolic parameters can be specified as part of the data set name mask that IMS Program Restart Facility will replace to generate a valid data set name. Characters that are not part of a symbolic parameter are included in the generated data set name.

Symbolic parameters that are available for log data set name masks

&COPY
IMS Program Restart Facility replaces this special symbolic parameter with the current value for either the &COPY1 or &COPY2 symbolic parameters, depending on the DDNAME of the output log data set that is created.

If &COPY is specified as part of the data set name mask, and the DDNAME of the output log data set will be either IEFRDER or NEWRDER, the current setting for symbolic &COPY1 is substituted for the &COPY symbolic parameter. If the DDNAME of the output log data set will be either IEFRDER2 or NEWRDER2, the current setting for symbolic &COPY2 is substituted for the &COPY specification.

&COPY1
IMS Program Restart Facility replaces this special symbolic parameter with the user-specified value for the COPY1 option. The default value for this symbolic parameter is 1.

&COPY2
IMS Program Restart Facility replaces this special symbolic parameter with the user-specified value for the COPY2 option. The default value for this symbolic parameter is 2.

&DATC
IMS Program Restart Facility replaces this special symbolic parameter with the 7-character representation of the GMT current date (the 4-digit year followed by the 3-digit Julian day (YYYYDDD)).

&DATE
IMS Program Restart Facility replaces this special symbolic parameter with the 5-character representation of the GMT current date (the 2-digit year followed by the 3-digit Julian day (YYDDD)).

&JOBNAME
IMS Program Restart Facility replaces this special symbolic parameter with the up to 8-character representation of the job name of the current job.

&PSBNAME
IMS Program Restart Facility replaces this special symbolic parameter with up to an 8-character representation of the PSB name of the current job.

&SYSUID
IMS Program Restart Facility replaces this special symbolic parameter with up to an 8-character representation of the user id that is assigned to the current job.

&TIME
IMS Program Restart Facility this replaces special symbolic parameter with the 7-character representation of the current time in *hhmmsst* format, where:

hh
Hours

mm
Minutes

ss
Seconds

t
Tenths of a second

Examples of using log data set names

Example 1

Assume that the job name is XYZDLI00, and the following options have been declared:

```
COPY1=1
COPY2=2
LOGDSNAM=IMS.DLILOG.&JOBNAME.D&DATE.T&TIME.LOG&COPY
```

- If the DDNAME to be dynamically allocated is IEFRDER, the data set name will be `IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG1`.
- If the DDNAME to be dynamically allocated is IEFRDER2, the data set name will be `IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG2`.

Example 2

Assume that the job name is XYZDLI00, and the following options have been declared:

```
COPY1=IMS.DLILOG
COPY2=OFFSITE.DLILOG
LOGDSNAM=&COPY.&JOBNAME.D&DATE.T&TIME.LOG
```

- If the DDNAME to be dynamically allocated is IEFRDER, the data set name will be `IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG`.
- If the DDNAME to be dynamically allocated is IEFRDER2, the data set name will be `OFFSITE.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG`.

Checkpoint insertion feature options reference

By using the checkpoint insertion feature of IMS Program Restart Facility, you can add checkpoint calls dynamically without having to change the programs.

You can control how you want to use this feature by specifying the options that are documented in this section.

The following options are available for this feature:

- **ISRTCHKP**: Specifies whether you want to enable the checkpoint insertion feature.
- **PCB**: Specifies which PCBs are to be used when determining the trigger for checkpoint call insertion.
- **ICPINTVL**: Specifies the minimum time interval between checkpoint call insertions.
- **POS**, **CALLTYPE**, and **ICSTLST**: Specifies what will be the trigger for checkpoint call insertion. If more than one of these options is specified, a checkpoint call is inserted if any of those conditions is satisfied.

ISRTCHKP=YES | NO

The ISRTCHKP option specifies whether to enable the checkpoint insertion feature. By using this feature, you can insert checkpoint calls dynamically into an application that does not have any or enough checkpoints.

Important: Enable this feature through job override options or the IRT$CNTL DD statement. It is not recommended that you enable this feature in global options unless you have in-depth understanding of all the applications that are run under IMS Program Restart Facility.

Specify one of the following values for this option:

YES
The checkpoint insertion feature is enabled. By specifying other options described in this section, you can control how IMS Program Restart Facility behaves when running this feature.

NO
The checkpoint insertion feature is disabled.

The default value is NO.

CALLTYPE=GU | NO

The CALLTYPE option specifies whether to use GU and GHU calls as the trigger for checkpoint call insertion.

Specify one of the following values for this option:

GU

GU and GHU calls are used as the trigger to insert checkpoint calls.

A checkpoint call is inserted if both of the following conditions are satisfied:

- The time interval specified by the ICPINTVL option has passed
- A GU call against the PCB specified by the PCB parameter ends successfully

After a checkpoint call is inserted, each database will be repositioned to its original position (before checkpoint call insertion).

NO

GU and GHU calls are not used as the trigger to insert checkpoint calls.

The default value is NO.

POS=ROOT | NO

The POS option specifies whether to use GN and GHN calls as the trigger for checkpoint call insertion.

Specify one of the following values for this option:

ROOT

GN and GHN calls are used as the trigger to insert checkpoint calls.

A checkpoint call is inserted if both of the following conditions are satisfied:

- The time interval specified by the ICPINTVL option has passed
- A GN or GHN call against the PCB specified by the PCB parameter reaches the root segment

After a checkpoint is inserted, each database will be repositioned to its original position (before checkpoint insertion).

NO

GN and GHN calls are not used as the trigger to insert checkpoint calls.

The default value is NO.

ICPINTVL=*hhmmssth*

The ICPINTVL option specifies the minimal time interval between checkpoint call insertions. IMS Program Restart Facility takes the following types of checkpoint calls into account to calculate the checkpoint interval:

- Checkpoint calls that were issued from within the application
- Checkpoint calls that were issued from IMS Program Restart Facility

Important: Set an appropriate checkpoint interval to avoid too many checkpoints, which might affect the job elapsed time and system performance.

Specify the minimal time interval as an 8-digit number in the form *hhmmssth*, where:

hh

Hours

mm

Minutes

ss

Seconds

t

Tenths of a second

h
Hundredths of a second

For example, if you specify ICPINTVL=00050000, IMS Program Restart Facility will wait for 5 minutes after the last checkpoint call. After 5 minutes have passed, a checkpoint call will be inserted when the specified triggers occur on the specified PCB.

If you do not specify this option, the setting in the global options takes effect.

PCB= ***nnnn*** **|** ***name*** **| ***
The PCB option specifies which PCB or PCBs will be used when determining the trigger for checkpoint call insertion. For example, if you specify PCB=PCB01, a checkpoint call is inserted if both of the following conditions are satisfied:

- The time interval specified by the ICPINTVL option has passed
- PCB01 satisfies any of the conditions specified by the CALLTYPE, POS, or ICSTCLST option

Specify one or more PCBs in the following three ways:

nnnn
Specifies the PCB number in a range of 2-2500. 1 indicates the IOPCB. If you specify a PCB number, AIB calls are not used as the trigger for checkpoint call insertion.

Important: The PCB number is the sequence number of the PCB in the generated PCB list, which does not include the PCBs for which LIST=NO was specified. For example, if the PSB definition contains an IOPCB followed by four PCBs, specify PCB=4 for the fifth PCB if the third PCB is specified with LIST=NO.

name
Specifies the PCB name.

***
Specifies that IMS Program Restart Facility uses all database PCBs to determine whether a checkpoint call should be inserted.

You cannot specify either IOPCB or GSAM PCB as the PCB parameter.

If you do not specify this option, the setting in the global options takes effect.

ICSTCLST=*status_codes*
The ICSTCLST option specifies one to five DL/I status codes. IMS Program Restart Facility inserts a checkpoint call if both of the following conditions are satisfied:

- The time interval specified by the ICPINTVL option has passed
- One of the specified DL/I status codes is returned from a DL/I call against the PCB specified by the PCB parameter

If you want to insert checkpoint calls only when the end of the database is reached, specify as follows:

```
ICSTCLST=GB
```

If you want to insert checkpoint calls if DL/I status code GB, FG, or FW is returned, specify as follows:

```
ICSTCLST=GBFGFW
```

You can specify up to five DL/I status codes. If you do not want to insert checkpoint calls for any specific DL/I status codes, leave this field blank.

IMS groups

IMS groups define groups of IMS control regions where a BMP can be restarted. If you have an environment, similar to an IMSplex, where databases are shared between some number of IMS systems, you can define these IMS systems as an IMS group.

IMS groups allow a BMP to start on an IMS system that might be different from the IMS system ID (IMSID) that is specified in the JCL of a job. This flexibility is available when a BMP job is initially started, or for a BMP that is being restarted.

IMS groups can only be defined using the IMS Program Restart Facility ISPF dialog. They cannot be specified in job override options, an IRT$CNTL DD, or a CTX data set.

There are two types of option values that are associated with an IMS group definition:

IMS group name

The IMS group name defines the name of an IMS group. The first 4 characters of the IMS group name are used in place of the IMSID in CTDS data set names, so the first 4 characters of IMS group names must be unique.

Recommendation: Specify an IMS group name as the main IMSID of an IMS group, or the IMSID followed by PLEX. This ensures uniqueness among the first 4 characters of IMS group names.

IMSIDs

You can define between 1 - 64 IMSIDs as members of an IMS group. A single IMSID can be defined in only one IMS group. Do not define the same IMSID as a member of more than one group.

Important: Use extreme care when changing IMS group definitions. The first 4 characters of the IMS group name are used in place of the IMSID in CTDS data set names. Because the CTDS data set names are used by IMS Program Restart Facility to determine if a job should be restarted, making a change to an IMS group definition could result in a job that should be restarted being started from the beginning.

Related tasks

Updating IMS groups

IMS groups are used to define groups of IMS systems that are used by IMS Program Restart Facility to determine which IMS systems can be used to process an IMS BMP job.

Abend retry tables

Abend retry tables provide the capability to automatically recover from transitory abends that occur in a BMP.

Each IMS BMP job determines if abend retry occurs based on the ABRETRY general option. The abend retry feature can be activated by specifying ABRETRY=YES.

The ABTABLE=*table name* general option specifies the name of the abend retry table that the job should use. If an abend occurs, IMS Program Restart Facility searches the abend retry table for the abend code and reason code for the abend that occurred and invokes abend retry if it finds those codes in the table.

The ABTABLE general option is defined using a job override option, an IRT$CNTL DD, or a CTX data set. However, the *table name* value (used by ABTABLE) and other parameters that affect abend retry tables can only be defined by using the IMS Program Restart Facility ISPF dialog.

When you create a new abend retry table or edit an existing abend retry table, you use the IMS Program Restart Facility ISPF dialog to set the values of the parameters that define the *table name* and other characteristics of the abend retry table.

Abend retry table parameters defined using the IMS Program Restart Facility ISPF dialog (option 8 from the main menu) include:

table name

The name of the table of abend codes to be retried for any BMPs that use this abend table name. The table name has a maximum length of 8 characters. After it is defined, the table name must be specified as the value for the ABTABLE option.

ABCDE
The abend code. The abend code can be any valid system abend code (an "S" followed by three hexadecimal digits) or user abend code (a "U" followed by 4 decimal digits between U0001 and U4095).

ABRSN
The reason code that is associated with the abend. The reason code can either be specified as ANY (which matches any reason code) or a specific 8-digit hexadecimal reason code (for example, 000A0201).

DELAY
The delay time. The delay time determines how long IMS Program Restart Facility waits before restarting the BMP. The delay time is specified in the form *hh:mm:ss*, where *hh* is the number of hours, *mm* is the number of minutes, and *ss* is the number of seconds. You should use this parameter to reduce the likelihood that a transitory abend, such as a PI Pool filling or a deadlock condition, reoccurs.

MAXRETRY
The maximum number of times that IMS Program Restart Facility should retry this specific abend code. This option is specified as a number between 0 - 32767.

A value of 0 means that IMS Program Restart Facility performs unlimited retries for the specified abend/reason code.

Related tasks

Updating abend retry tables
The abend retry feature allows IMS Program Restart Facility to automatically restart a job after an abend without having to resubmit the job. This feature can be useful in the case of a transitory abend such as a U0775 (PI Pool out of space) or U0777 (PI deadlock) abend.

Exclusion DD name table

The exclusion DD name table provides a list of DD names that, if present in the JCL of a job, disables IMS Program Restart Facility features for that job.

The exclusion DD name table can be defined only in the IMS Program Restart Facility ISPF dialog. The options that are specified in the exclusion DD name table cannot be specified in job override options, an IRT$CNTL DD, or a CTX data set.

The following options must be specified for each entry in the exclusion DD name table:

DDNAME
The DD name that is checked in the JCL of each IMS batch job.

Disable PRF

Specify one of the following values for this option:

YES
All IMS Program Restart Facility features are disabled when the associated DD name is present in the JCL of a job.

NO
No IMS Program Restart Facility features are disabled when the associated DD name is present in the JCL of a job.

Disable BBO

Specify one of the following values for this option:

YES
The AUTOBKO option is disabled for jobs that specify AUTOBKO=NO.

This option has no effect for jobs that specify AUTOBKO=YES.

NO
The AUTOBKO option remains enabled, unless DISABLE PRF=YES is specified.

AUTOBKO is automatically disabled when IMS Program Restart Facility features are disabled.

The exclusion DD name table is automatically populated with default `Disable PRF` and `Disable BBO` values that are consistent with prior releases of IMS Program Restart Facility and IMS Batch Backout Manager. The default specifications are in the following table:

Table 4. Default DDNAME table

DDNAME	Disable PRF values	Disable BBO values
BCM$IGNR	NO	YES
IRT$IGNR	YES	YES
UPX$EXCL	YES	YES

Related tasks

Updating the exclusion DD name table

By using the exclusion DD name table, you can exclude a job from IMS Program Restart Facility processing by placing a designated DD name in any IMS job. The exclusion DD name table defines the DD names that can be used in a job to exclude the job from IMS Program Restart Facility processing.

Chapter 6. Restarting abended IMS batch jobs

You can specify extended restart options to make an abended job restart from the last verified checkpoint or from the beginning of the job. If your restart ends abnormally because of an indoubt checkpoint, you can determine the correct checkpoint for restart and then specify the appropriate extended restart option.

These topics provide instructions for restarting abended IMS batch jobs and for resolving restart abends that result from indoubt checkpoints.

Topics:

Prerequisites for restarting jobs

Before restarting IMS batch jobs that ended abnormally, ensure that checkpoint ID tracking is active and that a batch backout, if needed, is performed.

Checkpoint ID tracking

Before restarting any job step that ended abnormally, ensure that message IRT001I is displayed on the job log of the abended job. If this message is not displayed, manually determine the correct checkpoint ID and specify it in the CKPTID parameter in the JCL.

DL/I batch backout

If you require a DL/I batch backout, ensure that the backout is done before any restart is attempted. Only the last uncommitted database changes can be backed out. A backout to a previous checkpoint (before the last successful checkpoint) requires manual intervention.

BMP batch backout

Normally batch backout is automatic after a BMP abend and, therefore, not required before a job step restart.

Restarting a job from the last verified checkpoint ID

When you restart an IMS batch job that ended abnormally, IMS Program Restart Facility can automatically provide the last verified checkpoint ID. This functionality reduces the risk of data corruption that would result from invalid checkpoint IDs that were entered manually.

About this task

The AUTOXRST=YES specification should be the typical value used for automatic restart. With this specification, IMS Program Restart Facility automatically provides the last verified checkpoint ID when the job is resubmitted.

Procedure

If AUTOXRST=YES is specified for the application that is being restarted, no action is required with IMS Program Restart Facility. Resubmit the abended job from the abended job step.

Restarting a job from the beginning

You can restart a job from the beginning as opposed to from the last checkpoint.

Procedure

1. Access the IMS Program Restart Facility ISPF main menu.
2. To access a list of abended jobs, Select option 1, **Administer abended jobs**.
3. In the ACTION column, enter NOXRST next to the name of the job that you want to restart.
4. Restart the job. The NOXRST option affects only this one restart.

Restarting a job on a different version of IMS

After you change your IMS version, you can use IMS Program Restart Facility to restart a batch job that ended abnormally under an earlier version of IMS.

If an IMS batch job that is specified for restart processing ends abnormally, you can use IMS Program Restart Facility to restart that batch job on a later version of IMS.

For example, you can abend a BMP before an IMS migration and use IMS Program Restart Facility to restart the job on the new version of IMS without backing out the job and starting it over from the beginning.

The following restrictions apply:

- The backout of updates to the last checkpoint must have completed successfully before you attempt to restart the job.
- If the abended job uses a feature of IMS that is not available on an earlier version of IMS, you might not be able to restart the job on the earlier IMS version.

  For example, if a job that uses 2049 or more DEDB areas ends abnormally under IMS 15, the job cannot be restarted under IMS 14 or another IMS 15 to which PTF for APAR PH12671 has not been applied.

  However, if an earlier version of IMS has a compatibility APAR for the function that is provided in the newer version, IMS Program Restart Facility provides support to restart the job under the earlier version of IMS.
- Restrictions for changes to DBDs apply. You cannot change DBDs between the time of the abend and the time the job is restarted.

After changing your IMS version, restart your abended job as described in “Restarting a job from the last verified checkpoint ID” on page 64 or “Restarting a job from the beginning” on page 64.

Preventing indoubt checkpoints

Prevent indoubt checkpoints by using a specific MVS command to interrupt jobs.

Before you begin

To ensure that IMS Program Restart Facility recognizes the correct command for interrupting jobs, specify the following global parameter in the inclusion options data set:

FSTOP=YES

About this task

If a checkpoint call is interrupted before IMS Program Restart Facility can confirm its completion, the checkpoint that is being processed becomes indoubt.

These interruptions can be caused by users that issue STOP REGION commands for IMS BMPs or cancel commands for DL/I batch jobs. Because these commands can cause indoubt checkpoints, interrupt jobs by using the following procedure instead.

Procedure

To prevent indoubt checkpoints, interrupt BMPs and DL/I batch jobs that are supported by IMS Program Restart Facility by issuing this command from an MVS console or EMCS console:

```
MODIFY jobname,STOP
```

Resolving restart abends caused by indoubt checkpoints

A restart of an abended IMS batch job ends abnormally if the last checkpoint ID that was supplied by IMS Program Restart Facility is indoubt. If such an abend occurs, determine the correct checkpoint ID and restart option for the job.

About this task

Indoubt checkpoints most often occur for BMPs that are active at the time of an IMS control region abend or for canceled DL/I batch jobs. The condition is caused when the next checkpoint ID that is requested by the application is not confirmed to IMS Program Restart Facility, presumably because the logging request did not complete.

If a restart abend from an indoubt checkpoint occurs, determine if you must restart the original abended job by using the last indoubt checkpoint or the last verified checkpoint. You can also restart the job from the beginning.

Indoubt checkpoints are flagged by messages IRT010W and IRT017I.

Procedure

If a restart of an abended job ends abnormally with a PRF U3625 or an IMS U0102 completion code, review the IMS logs and message DFS682I. With this information, select one of these actions:

- If the restart checkpoint ID that is displayed in message DFS682I matches the checkpoint ID that is displayed in message IRT010W, restart the job by using the last indoubt checkpoint ID:
  a) Access the IMS Program Restart Facility ISPF main menu.
  b) To access a list of abended jobs, Select option 1, **Administer abended jobs**.
  c) In the ACTION column, enter F0RCE next to the name of the job that you want to restart.
  d) Restart the job.
     The FORCE option affects only this one restart.

Tip: You can also specify the FORCE option with a temporary JCL override by adding a IRT$CNTL DD * statement followed by the AUTOXRST=FORCE control statement.

- If the restart checkpoint ID that is displayed in message DFS682I matches the checkpoint ID that is displayed in message IRT017I, restart the job by using the last verified checkpoint ID:
  a) Access the IMS Program Restart Facility ISPF main menu.
  b) To access a list of abended jobs, Select option 1, **Administer abended jobs**.
  c) In the ACTION column, enter LAST next to the name of the job that you want to restart.
  d) Restart the job.

  The LAST option affects only this one restart.

  Tip: You can also specify the LAST option with a temporary JCL override by adding a IRT$CNTL DD * statement followed by the AUTOXRST=LAST control statement.
- If the job must be restarted from the beginning, restart the job by doing these steps:
  a) To start the IMS Program Restart Facility ISPF interface, run **REXX EXEC IRTXISPF**.
  b) To access a list of abended jobs, Select option 2, **Administer abended jobs**.
  c) In the ACTION column, enter NOXRST next to the name of the job that you want to restart.
  d) Restart the job.

  The NOXRST option affects only this one restart.

  Tip: You can also specify the NOXRST option with a temporary JCL override by adding a IRT$CNTL DD * statement followed by the AUTOXRST=NO control statement.
- Alternatively, you can specify USEJCLID=YES and a checkpoint ID that is optimal for the job restart by using the CKPTID parameter in the JCL EXEC statement.

  To restart a job by using the USEJCLID option, you must make available the log data set that contains the corresponding checkpoint log by specifying an IMSLOGR DD statement.

Flow chart of resolving a restart abend

Refer to this diagram to see the process flow of resolving a restart abend.

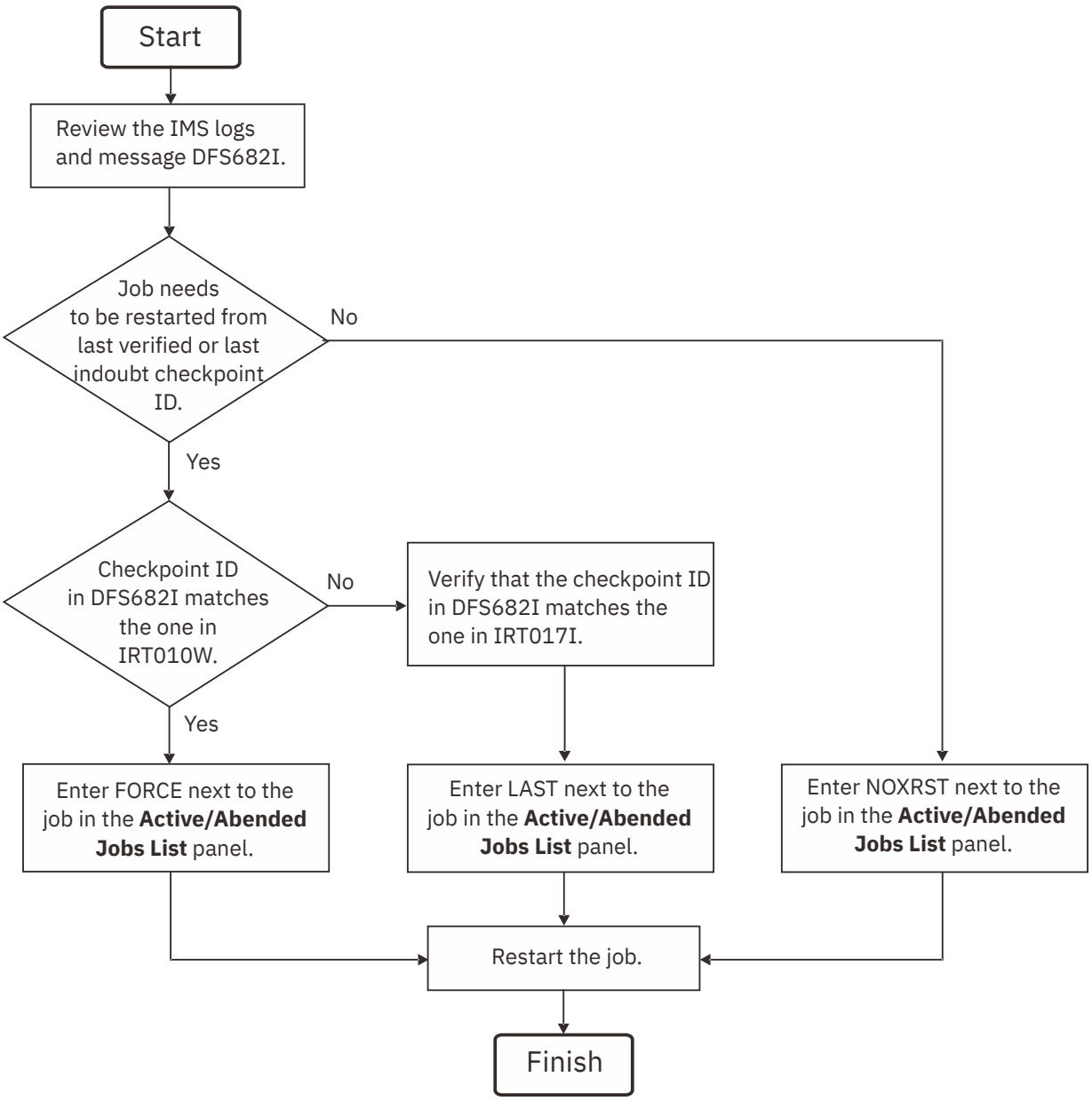

Figure 1. Flowchart of resolving a restart abend

IMS Extended Restart options for abended jobs

You can specify special IMS Extended Restart options for abended jobs in the Active / Abended Jobs List panel.

Use the Primary Option Menu panel to access the Active / Abended Jobs List panel. From here, specify IMS Extended Restart options by entering any one of the following options next to the abended job name:

DELETE

Use the DELETE option to delete all data sets for this job that are related to IMS Program Restart Facility. The job starts over and no checkpoint ID is supplied by IMS Program Restart Facility.

If you want to restart the job from the beginning, specify this option. Ensure that any required database recoveries are performed before you enter this option.

You can abbreviate DELETE as D.

NOXRST

Use the NOXRST option to prevent automatic IMS Extended Restart processing for the job the next time that it is submitted. The job starts over completely because no checkpoint ID is automatically supplied by IMS Program Restart Facility.

If you want to restart the job from the beginning, specify this option. Ensure that any required database recoveries are performed before you enter this option.

You can abbreviate NOXRST as N.

XRST

Use the XRST option to cause automatic IMS Extended Restart processing to occur for the job the next time that it is submitted. IMS Program Restart Facility will automatically supply the latest required checkpoint ID for the extended restart.

If you want to resume the job from where it left off, specify this option.

You can abbreviate XRST as X.

FORCE

Use the FORCE option to make IMS Program Restart Facility force IMS to accept the indoubt checkpoint ID for extended restart. This processing occurs for the job the next time it is submitted. Use caution when you use this option because it assumes that the indoubt checkpoint has completed. For example, all DASD updates associated with the commit were made.

Do not use this option unless you have manually verified the indoubt checkpoint ID. If you have not committed the indoubt checkpoint ID, you can enter the LAST option instead.

Attention: Verify that the checkpoint ID you intend to use is correct before entering the FORCE option. If message DFS682I containing the actual restart checkpoint ID cannot be found, check IMS online logs or IMS batch logs. With this information, determine the correct checkpoint ID to use.

You can abbreviate FORCE as F.

LAST

Use the LAST option to make IMS Program Restart Facility provide the LAST verified checkpoint ID for extended restart. This processing will occur for the job the next time it is submitted. Use this option only if you have verified that the indoubt checkpoint did not complete.

If you are certain that the indoubt checkpoint ID was committed, enter the FORCE option instead.

Attention: Verify that the checkpoint ID you intend to use is correct before entering the LAST option. If message DFS682I, which contains the actual restart checkpoint ID, cannot be found, check IMS online logs or IMS batch logs. Use this information to determine the correct checkpoint ID to use.

You can abbreviate LAST as L.

EDIT

Use the EDIT option to directly edit the special extended restart options data set that is created from this panel. From this panel, you can specify any of the documented IMS Program Restart Facility options.

You can abbreviate EDIT as E.

SHOWID

Use the SHOWID option to display the extended restart checkpoint ID that is used by IMS Program Restart Facility when the job is restarted.

If (I) is displayed next to the checkpoint ID, the ID is indoubt. If no action is taken, the job ends abnormally with U3625 when it is restarted. If (F) is displayed next to the ID, AUTOXRST=FORCE has

been specified for this job. If (L) is displayed next to the ID, AUTOXRST=LAST has been specified for this job.

You can abbreviate SHOWID as S.

Overriding IMS Extended Restart processing

Optionally, you can have IMS Program Restart Facility check the CKPTID= value specified in the JCL of a job for certain values.

Procedure

If the CKPTID= value is present in a table, the IMS Program Restart Facility option will be overridden based on the specification in the table. You can create this override by customizing the checkpoint ID table module (IRT#CPID).

To override IMS Extended Restart processing:

1. Add checkpoint IDs to member IRT#CPID of the SIRTSAMP library.

   In the following example, the checkpoint IDs are symbolic and enable IMS Program Restart Facility to ignore any automatic IMS Extended Restart processing (CHKPTIDs beginning with NOXR), or to override the SHOWOPTS and EXCLUDE general options (using CHKPTID SHOWEXCL).

   For each symbolic checkpoint ID in the table, the associated parameters in the 80-byte options area take effect if that checkpoint ID is specified.

   The following example shows source code for member IRT#CPID::

```
IRT#CPID CSECT
IRT#CPID RMODE ANY
*
NOXR             DC CL08'NOXR'
            DC CL80'AUTOXRST=NO CKPTID='
NOXRMSGS         DC CL08'NOXRMSGS'
            DC CL80'AUTOXRST=NO CKPTID=NOMSGS'
NOXR540          DC CL08'NOXR540'
            DC CL80'AUTOXRST=NO CKPTID=NOMSG540'
NOXR681          DC CL08'NOXR681'
            DC CL80'AUTOXRST=NO CKPTID=NOMSG681'
SHOWEXCL         DC CL08'SHOWEXCL'
            DC CL80'SHOWOPTS=PRINT EXCLUDE=NO'
*
            DC X'FF' (this last entry is required)
```

   If a batch job has a CKPTID value of NOXR681, as shown in the previous example, no IMS Extended Restart processing occurs. Instead, the CKPTID value of NOMSG681 replaces the NOXR681 value that is specified in the JCL and averts a U0102 abend.

2. Assemble module IRT#CPID by using the JCL in the SIRTSAMP library member IRT#CPID.

Verifying that a valid checkpoint ID is supplied for restart

The IMS Program Restart Facility checkpoint ID verification exit, IRTUX001, can be used to verify that a valid checkpoint ID has been supplied for a restart.

About this task

Using this exit is optional. If you choose to create it, it must be linked as load module IRTUX001, and it must be available in the STEPLIB of any IMS jobs that should use the exit.

IRTUX001 is only called when IMS Program Restart Facility determines that a job should be restarted, and when AUTOXRST=NO is not specified for the job step. At the point when the exit is called, IMS Program Restart Facility has already determined the checkpoint ID that will be used for restart.

Procedure

Create and run exit IRTUX001.

This exit uses the following input registers:

- The module must be linked as member IRTUX001 and be present in the STEPLIB of the IMS job.
- IRTUX001 must be coded to be entered and run in AMODE 31.
- Registers at entry to the exit are:

  R1
  The address of a standard format parameter list with one parameter. The first parameter is the address of the checkpoint ID that IMS Program Restart Facility plans to use for restart.

  R13
  The address of a save area that should be used by the exit routine.

  R14
  The return address that should be used by the exit routine.

  R15
  The entry point address of the exit routine.
- Registers at completion of the exit routine must be:

  R13
  The address of the save area that was passed to the exit.

  R14
  The return address that is used to return to IMS Program Restart Facility.

Chapter 7. Viewing and updating product and restart options

You can view and update IMS Program Restart Facility options through the ISPF interface.

Topics:

IMS Program Restart Facility ISPF interface overview

You can select options from the IMS Program Restart Facility ISPF main menu to review jobs pending restart and make changes to how jobs are restarted, review, and update your IMS Program Restart Facility options, and review the audit log.

If you are responsible for running IMS jobs (you might be a developer in a development environment or a production job scheduler in a production environment), you can review jobs that are pending restart and make changes to how jobs are restarted. From the IMS Program Restart Facility ISPF main menu, you can select option 1 **Administer Abended/Active Jobs** to complete such tasks.

Any users who need to review options or investigate problems that are associated with running IMS batch jobs in development or production environments might find the following three options that are on the IMS Program Restart Facility main menu useful:

- Option 2 - **Show Options for a Specific Job/Step**
- Option 3 - **Show PRF Options**
- Option 4 - **Show PRF Options Audit Log**

By using these options, you can review IMS Program Restart Facility options and the IMS Program Restart Facility audit log.

The following options on the IMS Program Restart Facility ISPF main menu are associated with updating IMS Program Restart Facility options, and would typically be used by IMS Program Restart Facility administrators and system programmers who are responsible for product installation:

- Option 5 - **Update Global Options**
- Option 6 - **Update Job Override Options**
- Option 7 - **Update IMS Groups**
- Option 8 - **Update Abend Retry Tables**
- Option 9 - **Update Exclusion DD Name Table**

Starting the ISPF interface

After you complete the required configuration procedures, start the IMS Program Restart Facility ISPF interface.

Procedure

To start the IMS Program Restart Facility ISPF interface:

1. Log on to TSO.
2. If there is an ISPF option that provides access to the IMS Program Restart Facility ISPF main menu, choose that option.

   If a menu option is not in place, you must issue a TSO command from ISPF option 6. Enter the following command, where *hlq* is the high-level qualifier for your installation:

   ```
   EXEC 'hlq.SIRTEXEC(IRTXISPF)' 'hlq'
   ```

   The IMS Program Restart Facility ISPF main menu is displayed.
3. Type the fully qualified data set name of the IMS Program Restart Facility options data set that you want to use in the **Data Set Name** field at the bottom of the main menu. Do not type quotations around the data set name. Press Enter.

What to do next

You can begin using the IMS Program Restart Facility ISPF interface by typing an option number, for example 1 or 3, in the option field and pressing Enter.

Viewing product options

You can view a report that displays all the IMS Program Restart Facility options for the options data set that you specified on the IMS Program Restart Facility main menu.

Procedure

To view the IMS Program Restart Facility options for the options data set that is specified in the main menu, select option 3 **Show PRF Options** from the IMS Program Restart Facility ISPF interface, and press Enter.

A report is displayed. The report includes the following information for the specified options data set:

- Global options
- Job override entries
- A list of the options that are specified in each job override options entry
- Abend retry table entries
- Exclusion DD names and the options they affect
- IMS groups and the IMSIDs associated with each group

Related tasks

Listing the contents of the options data set

The IRTOPTL utility lists the contents of the IMS Program Restart Facility options data set.

Displaying options for a specific job or job step

You can view the options for an IMS job or job step.

Procedure

To display the options that are used:

1. From the IMS Program Restart Facility ISPF main menu, select option 2 **Show Options for a Specific Job/Step**.

   Job options are controlled by several job execution time options, including the IMSID, job name, step names, PSB name, and program name. To determine the job override options for a specific job, you must provide this information about the job.
2. In the Show Options for a Specific Job/Step panel specify information about the job in the following required fields and press Enter:

   IMSID
   This is the IMSID specified in the JCL, typically for the IMSID JCL symbolic parameter. If no value is specified in the JCL, you must enter the default IMSID that is coded in the STEPLIB of the job step that is in the IMS RESLIB data set. The IMS RESLIB data set is located in module DFSVC000.

   JOBNAME
   The full job name.

   PROCSTEP
   The step name that is coded within the PROC that is issued.

   STEPNAME
   The step name that is coded in the JCL of the job that runs the PROC.

   PROGRAM
   The IMS application program name that IMS invokes. This parameter is typically coded as the MBR= JCL symbolic parameter in the execution of the IMS PROC.

   PSB
   The PSB name that is used by IMS when the job is run. This parameter is typically coded in the JCL as the PSB symbolic parameter. If the PSB name is not specified in the JCL of the job, IMS uses the application program name.

   You must enter the information exactly as it appears in the job. No wildcard characters are permitted.

   After you press Enter, you will view an options report, which displays the options data set name in the report title. Options will differ depending on the options data set that is specified on the IMS Program Restart Facility main menu. The report also shows the job override options entry that was selected for job criteria that you entered in the previous screen.

Updating global options

Global options enable your installation to set default option values for all the IMS Program Restart Facility options.

About this task

As you update the global options, there are some things you should understand about using the options specification screens:

- Option names are the first word on each line.
- There is field-level help available for every global option.

If you want additional information about the use or syntax of the value for a keyword, you can place the cursor on the field for which you want additional information, and press the Help key to view a help screen for that option.

- Required options have an asterisk (*) before the option name.
- If you need to specify an option in an IRT$CNTL or CTX data set, use the option name as the keyword when entering data in those environments.
- The CANCEL command can be used on any screen.

  If you are on a panel where you enter option values, the CANCEL command simply throws away any changes you made on that panel only.

  If you are on the Update Global Options menu screen and enter the CANCEL command, all updates you have entered since the last SAVE command are thrown away.

Procedure

To update the IMS Program Restart Facility global options:

1. From the IMS Program Restart Facility ISPF main menu, select option 5 **Update Global Options** and press Enter.

   The Update Global Options panel appears. The options on this panel are divided into the following categories according to the option type:

   Option 0 Global
   These options are used by every job that uses the options data set that you identified in the IMS Program Restart Facility main menu. These options cannot be overridden by job override options, and they cannot they be specified in an IRT$CNTL DD or CTX data set.

   Option 1 General
   These options are the values for IMS Program Restart Facility general options.

   Option 2 Bypass
   These options are the default values for bypass checkpoint processing options.

   Option 3 Return Code

   These options are used in application return code processing and for application program testing.

   The return code options might be helpful in PL/I environments that issue return codes instead of actually abending. You might be able to use the RCABEND and RCERROR fields to capture errors that did not result in an actual abend, and have IMS Program Restart Facility restart the application from the last successful checkpoint.

   The testing options should not be specified in global options. These testing options (CHKPCMP, CHKPCNT, and FABXRST) would typically be used only in a development environment to test program restart logic. In these circumstances, it is far more sensible for the application programmer to add a `//IRT$CNTL DD *` statement and specify these options for use in that job execution only.

   Option 4 IMS PROC
   These options provide the capability to override IMS BMP, DLI, and DBB PROC JCL symbolic specification overrides. IMS Program Restart Facility can be used to automatically change parameters in all jobs without the need to update the JCL in all of your jobs.

   Option 5 Batch Backout

   These options are for IMS DLI and DBB type batch jobs and include the batch backout options.

   These options are ignored when a job is excluded from Batch Backout processing.

   

   Attention: Never specify BYPLOGR=YES in the global options. This option disables the creation of a DLI batch log (SLDS) during the execution of the job, which stops IMS Program Restart Facility from performing batch backout, so that any failure in the job requires a database recovery. In addition, the lack of a log means that forward recovery using the log

in the job is not possible, so an image copy would be required after the execution of any job with BYPLOGR=YES.

Option 6 DLI Logs

These options are for DLI and DBB type IMS batch jobs. These options are used only for DLI and DBB jobs, and not for BMP jobs, because BMPs use the logs of the IMS control region.

If the following options are in effect for a job, none of the log options are used. When you review global options, if the following option values are in effect for all jobs, you can ignore all the DLI and DBB log options:

```
AUTOBKO=NO (if you include a DD statement in your jobs
from the exclusion DD name table that disables BBO processing)
IEFRDER=JCL
IEFRDER2=JCL
BYPLOGR=NO
```

If you use any of these options, you should review options for IMS log allocations.

By using IMS Program Restart Facility, you can specify allocation information for seven different types of batch logs. Instead of having to specify some of the same options seven different times, you can use option 1 **Defaults** of the IMS DLI / DBB Log Options menu to specify default values for all seven types of logs.

For example, you could set default values for options that set allocation parameters, such as UNIT, SPACE, and RETPD. You can then use the other options of the menu to enter the appropriate DSNAME and override the amount of space allocated to some of the logs.

2. Navigate from the Update Global Options panel through the various screens and enter values for the options in the indicated categories.

   Press the End key on the Update Global Options panel to save any updated global options to the IMS Program Restart Facility options data set.

   Options are not saved to the IMS Program Restart Facility options data set until you press the End key on the Update Global Options menu screen or you enter the SAVE command on any of the options screens.

Specifying job override options

Job override options provide a way to permanently set changes to default options for a specific job or set of jobs. The default options are specified in option 5 **Update Global Options** of the IMS Program Restart Facility ISPF interface.

About this task

IMS Program Restart Facility searches the table of job override entries to match the job name, step names, IMSID, program name, and PSB name of the current job. Generics are permitted when you specify a job options entry, so a given job could match more than one job override options entry. IMS Program Restart Facility only uses the first matching job override entry in the list. All other job entries are ignored.

The relationships that are associated with the different ways to specify options include:

- Specifying them as global/general options and job override options via the ISPF interface
- Using the IRT$CNTL DD in the JCL of the job
- Using the CTX data set
- Using a Checkpoint ID Table module (for example, IRT#CPID)

Changes to IMS Program Restart Facility option values can be introduced in any of these ways. The latter methods in the list override any values from methods earlier in the same list. For example, the Checkpoint ID Table module takes precedence over both the general options values specified via the ISPF interface and values specified in the IRT$CNTL DD in the JCL of the job.

As you update the global options, there are some things that you should understand about using the options specification screens:

- Option names are the first word on each line.
- There is field-level help available for every global option. If you want additional information about the use or syntax of the value for a keyword, you can place the cursor on the field for which you want additional information, and press the Help key to view a help screen for that option.
- If you need to specify an option in an IRT$CNTL or CTX data set, use the option name as the keyword when entering data in those environments.
- The CANCEL command can be used on any screen. If you are on a panel where you enter option values, the CANCEL command simply throws away any changes you made on that panel only. If you are on the Update Global Options menu screen and enter the CANCEL command, all updates you have entered since the last SAVE command are thrown away.

Procedure

To specify job override options:

1. From the IMS Program Restart Facility ISPF main menu, select option 6 **Update Job Override Options** and press Enter.

   The Update Job Override Options tables panel is displayed. The table in this panel shows all the existing job override entries that are defined in the current IMS Program Restart Facility options data set. The order of entries in the table is important because IMS Program Restart Facility uses only the first matching job override entry in the list. For example, in the following panel, if a job has job name of P390MBMP and IMSID=IMS1, only the first job override entry in the list will be used, even though the third entry would also match the selection criteria because IMSID **** also matches IMSID=IMS1.

```
IMS PRF                  Update Job Override Options          Row 1 to 3 of 3
Command ===>                                                 Scroll ===> CSR

Commands: Insert
Line commands: S - EDIT   D - DELETE   I - INSERT   M - MOVE   B _ BEFORE
               A - AFTER

Action  IMSID  JOBNAME   PROCSTEP  STEPNAME  PROGRAM   PSBNAME
        IMS1   P390MBMP  ********  ********  ********  ********
        IMS2   P390MBMP  ********  ********  ********  ********
        ****   P390MBMP  ********  ********  ********  ********
****************************** Bottom of data ******************************
```

   If entries in the table are not in the correct order, use the M line command to move a job override entry either before (B) or after (A) another job override entry in the list. Maintaining the correct order of job override entries is critical to ensuring that the correct job override entry is selected for a job. For example, if the last entry on the previous panel was the first entry instead, none of the other job override entries would ever be used because the entry with IMSID **** would match the job, and the entries with IMSID IMS1 and IMS2 would never be looked at by IMS Program Restart Facility during job initialization.
2. Select an existing job override entry to set the options for that entry, or create a new entry.
   - To update an existing entry, issue the S line command.
   - To create a new entry, issue the I line command or the `Insert` primary command.
     a. Enter the specifications for the jobs that use this entry and press Enter.

        In the following example, any job with JOBNAME=P390MBMP uses this job override options entry because all the other fields are populated with wildcard characters.

```
EDIT Job             IMS Program Restart Facility for z/OS
Command ===>

Set Job Options


Select the job selection criteria that will apply to the options specified

Note that you can use generic names below. The asterisk (*) can be used as a
wildcard that substitutes for any single character.  If you do not wish to
select based on program name, for example, specify PROGRAM as ********

* IMSID    ****     IMSID (IMSID in BMP/DLI/DBB PROC or default IMSID)
* JOBNAME  P390MBMP Job name
* PROCSTEP ******** Proc step name
* STEPNAME ******** Step name
* PROGRAM  ******** Program name (MBR= in BMP/DLI/DBB PROC)
* PSB      ******** PSB name (PSB= in BMP/DLI/DBB PROC)
```

Note: You can use an asterisk (*) as a wildcard that substitutes for any single character. Note that it substitutes only one character; if you specify ******* (seven asterisks) for STEPNAME, for example, a step that has an 8-character step name will not meet the selection criteria.

After you press Enter, you will be presented with the Update Job Override Options panel.

b. Enter values for the relevant options in the Update Job Override Options panels. When you press the End key on this menu screen, IMS Program Restart Facility saves any updated Job Override options to the IMS Program Restart Facility options data set.

   In general, minimize the number of values entered in the Update Job Override Options panel. If the default value (from the global options) is what you want for a specific job, there is no need to enter the value in the Update Job Override Options panels.

Related tasks

Updating global options
Global options enable your installation to set default option values for all the IMS Program Restart Facility options.

Viewing the options audit log

The IMS Program Restart Facility audit log, if enabled, records changes to IMS Program Restart Facility options that have been saved in the options data set.

Procedure

To view the IMS Program Restart Facility options for the options data set that is specified in the main menu, select option 4 **Show PRF Options Audit Log** from the IMS Program Restart Facility ISPF main menu, and press Enter.

An audit log report is displayed. The report includes the following information about each update that was saved in the specified options data set:

- The time and date of the update.
- A list of the options that were changed and the new values of those options.
- If an option that was changed is associated with a job override entry, the job override options selection criteria is displayed.

Related tasks

Creating an audit log report

The IRTAUDT utility produces an audit log report. The report shows the entries in the IMS Program Restart Facility audit log. It shows IMS Program Restart Facility option data set updates, the timestamp, and the user ID that made each change.

Administering active and abended jobs

You can specify how IMS Program Restart Facility should handle the jobs that have terminated abnormally.

Procedure

To administer active and abended jobs:

1. From the IMS Program Restart Facility ISPF main menu, select option 1 **Administer Abended/Active Jobs**.

   A list of all jobs that are active or abended are displayed in the Administer Active/Abended Jobs panel. If you have multiple IMS Program Restart Facility options data sets, only those jobs associated with the options data set that you entered on the IMS Program Restart Facility ISPF main menu are displayed.

   Job information is displayed for each job, including the job name, the IMS group name (or IMSID if no IMS group was found), the PSB name, and the program name. Some status information is displayed on the screen. Status information that is shown on initial entry to the dialog includes whether a job is active, and, if there is a CTX data set present for a job, the first option specified in the CTX data set is shown.
2. Type a line command for an active and abended job and press Enter.

   You can enter any of the following line commands:

   D - Delete
   This command deletes the CTDS data sets associated with the job. When the CTDS data sets are deleted, IMS Program Restart Facility bypasses restart processing, and IMS Program Restart Facility starts the job without any restart checkpoint ID.

   N -NOXRST
   The NOXRST line command changes the AUTOXRST option to a value of NO. IMS Program Restart Facility bypasses restart processing, and the job starts without IMS Program Restart Facility altering the CHKPTID option that might or might not be specified in the JCL of the job. The AUTOXRST=NO option is stored in the CTX data set and processed when the job is submitted.

   F - FORCE
   The FORCE line command changes the AUTOXRST option to a value of FORCE. As a result of this change, an indoubt checkpoint ID is used instead of the last verified checkpoint ID. The AUTOXRST=FORCE option is stored in the CTX data set and processed when the job is submitted.

   L - LAST
   The LAST line command changes the AUTOXRST option to a value of LAST. This change causes an indoubt checkpoint ID to be ignored, and the last verified checkpoint ID to be used for restart. The AUTOXRST=LAST option is stored in the CTX data set and processed when the job is submitted.

   E - EDIT
   By using the EDIT line command, you can manually update or enter IMS Program Restart Facility option specifications in the CTX data set. After you select the **Edit** option, the CTX data set will be created if it does not already exist, and you will see the ISPF EDIT panel, at which point you can use edit commands to make changes. When you press PF3, the updated CTX data set is saved.

   S - ShowID
   The ShowID line command shows the checkpoint ID that is used for a job restart, as well as the timestamp associated with that checkpoint ID. The timestamp value can be displayed in either coordinated universal time (UTC) or local time depending on the DispTime option specification. If the DispTime option is U (default), the timestamp is shown in UTC; if DispTime is L (local), the timestamp is shown in your local time zone.

Attention: All the line commands except for ShowID change how IMS Program Restart Facility restarts a job. Incorrect use of these line commands can result in a restart error, which can cause invalid job output and potential corruption of IMS database contents. Use these commands with caution.

When any of the line commands other than ShowID is issued, message IRT355I, which contains the name of the job that was updated and the TSO user ID of the user that made the change, is written to the MVS SYSLOG. You can use this message to identify when job restart data was updated.

What to do next

If you accidentally issue one of the following line commands, you can undo the change by attempting certain actions before the job is resubmitted:

Table 5. Corrective actions for undoing line commands

Line command	Corrective action
D - Delete	Restore the CTDS data sets, including the CTA, CTB, and CTX data sets.
N -NOXRST, **F - FORCE**, or **L - LAST**	Select the **E - EDIT** line command to remove the AUTOXRST option and the value that is specified for that option.
E - EDIT	Select the **E - EDIT** line command again to undo the changes, and restore the data that is stored in the CTX data set to what was present before the first **E - EDIT** action was undertaken. Normally, the CTX data set has no content.

Updating the exclusion DD name table

By using the exclusion DD name table, you can exclude a job from IMS Program Restart Facility processing by placing a designated DD name in any IMS job. The exclusion DD name table defines the DD names that can be used in a job to exclude the job from IMS Program Restart Facility processing.

Procedure

To update the exclusion DD name table:

1. From the IMS Program Restart Facility ISPF main menu, select option 9 **Update Exclusion DD Name Table** and press Enter.

   A list of the existing exclusion DD name table entries appears.
2. Delete a DD name entry, insert a new DD name entry, or update an existing DD name entry:
   - To delete a DD name entry, issue the D line command and press Enter.
   - To add a DD name entry, issue the INSERT command or the I line command and press Enter. Then, specify options for the new exclusion DD name entry.
   - To edit a DD name entry, issue the E line command and press Enter. Then, specify options for the existing exclusion DD name entry.

Related reference

Exclusion DD name table

The exclusion DD name table provides a list of DD names that, if present in the JCL of a job, disables IMS Program Restart Facility features for that job.

Chapter 8. Generating reports in batch

By running batch jobs, you can generate an audit log report, which shows the entries in the IMS Program Restart Facility audit log, and an options report, which lists the contents of the IMS Program Restart Facility options data set.

Topics:

Creating an audit log report

The IRTAUDT utility produces an audit log report. The report shows the entries in the IMS Program Restart Facility audit log. It shows IMS Program Restart Facility option data set updates, the timestamp, and the user ID that made each change.

About this task

In order to produce an audit log report that contains valid data, you must have the audit log data set name that is specified in the IMS Program Restart Facility Global Only options. The report lists only those options that were updated while audit logging was in effect.

Procedure

To create an audit log report, edit and run sample job IRTAUDT of the SIRTSAMP data set.

To run the JCL in the IRTAUDT job, you must update the following lines of code to provide the data set names of the SIRTLOAD and the IRTAUDIT data sets:

```
SET  SIRTLOAD=IMS.IRT220.SIRTLOAD
SET  IRTAUDIT=IMS.IRT.IRTAUDIT
```

The job produces a listing of updates to the audit log. Updates are grouped according to when changes were saved to the IMS Program Restart Facility options data set. Groups of updates begin with a header line showing the date and time that the updates were updated. On the header line, the report shows the type of options that were updated (for example, global options or job override options).

Related tasks

Viewing the options audit log
The IMS Program Restart Facility audit log, if enabled, records changes to IMS Program Restart Facility options that have been saved in the options data set.

Listing the contents of the options data set

The IRTOPTL utility lists the contents of the IMS Program Restart Facility options data set.

About this task

Recommendation: Schedule a periodic backup of the options data set. You might want to include a listing of the options data set, and if the IMS Program Restart Facility audit log is enabled, a listing of the changes to the options using the IRTAUDT utility.

Procedure

To a create a list of the contents of the IMS Program Restart Facility options data set, edit and run sample job IRTOPTL of the SIRTSAMP data set.

To run the JCL in the IRTOPTL job, you must update the job according to your installation requirements and update the following lines of code:

```
SET SIRTLOAD=IMS.IRT220.SIRTLOAD
 SET IRTOPT=IMS.IRT220.IRTOPT
```

The SIRTLOAD symbolic parameter is used to define the IMS Program Restart Facility load library (the SIRTLOAD data set). The IRTOPT symbolic parameter defines the data set name of the options data set that is to be listed.

The utility produces an options report. The option report displays all the options that are saved in the options data set. There are multiple sections in the report:

DDNAME exclusion table
The DDNAME exclusion table shows the DD names that are defined in the IMS Program Restart Facility options. These DD names, and the impact on a job that includes any of these DD names, are shown in the report.

The impact of DD names on a job can be to disable IMS Program Restart Facility (which disables all IMS Program Restart Facility functionality) or to disable BBO (which disables IMS Program Restart Facility automatic batch backout processing when AUTOBKO=NO is specified for a job).

IMSGROUP table
The IMSGROUP table displays a list of the IMS groups that are defined in IMS Program Restart Facility and the IMSIDs that are defined as members of each group.

Abend retry tables
The abend retry table displays the name of each abend retry table, along with each abend code defined in the tables and the processing options for each abend code.

Global options
The global options section of the report shows every option and the value that is defined for each option. It is broken down into the 14 sections of the global options, beginning with the global only options through all the IMS DLI and DBB batch job overrides.

Job override table entries
This section lists the job override entries that are defined in the options data set. This section of the report shows only the job selection criteria – the job name, step names, IMSID, program name, and PSB name. This section does not show the actual overrides that are defined for that job override entry.

Job options
The job options section of the report shows each job override table entry, along with all the option overrides specified for that job override entry.

Related tasks

Viewing product options
You can view a report that displays all the IMS Program Restart Facility options for the options data set that you specified on the IMS Program Restart Facility main menu.

Chapter 9. Using advanced functions

These topics explain some of the advanced functions of IMS Program Restart Facility.

Topics:

Updating abend retry tables

The abend retry feature allows IMS Program Restart Facility to automatically restart a job after an abend without having to resubmit the job. This feature can be useful in the case of a transitory abend such as a U0775 (PI Pool out of space) or U0777 (PI deadlock) abend.

Procedure

To update an abend retry table:

1. From the IMS Program Restart Facility ISPF main menu, select option 8 **Update Abend Retry Tables** and press Enter.

   A list of abend retry tables is displayed.
2. Delete an abend retry table, add a new abend retry table, or edit an existing abend retry table:
   - To delete an abend retry table, issue the D line command and press Enter.
   - To add a new abend retry table, issue the INSERT command or the I line command and press Enter. Then, specify the new abend retry table name, and optionally, enter the name of an abend retry table to copy an existing abend retry entry. Finally, specify options for the new abend retry entry.
   - To edit an existing abend retry table, issue the E line command and press Enter.

Related reference

Abend retry tables

Abend retry tables provide the capability to automatically recover from transitory abends that occur in a BMP.

Updating IMS groups

IMS groups are used to define groups of IMS systems that are used by IMS Program Restart Facility to determine which IMS systems can be used to process an IMS BMP job.

About this task

Restriction: The same IMSID cannot be defined in multiple groups. For example, IMSID PROD cannot belong to the IMS1PLEX and IMS2PLEX IMS groups.

Important: Use extreme caution when making any changes to the IMS group tables. The first 4 characters of an IMS group name are used as the IMSID portion of the CTDS data set names. Changing an IMS group can prevent IMS Program Restart Facility from finding the CTDS data sets for a job that requires restart, which results in an incorrect restart of a job. Incorrect restarts can cause lengthy outages while data is recovered from the invalid job restart.

Procedure

1. From the IMS Program Restart Facility ISPF main menu, select option 7 **Update IMS Groups** and press Enter.

   A list of IMS groups is displayed in the Update IMS Groups panel.
2. Edit an existing group definition, add a new IMS group, or delete an IMS group:
   - To edit an existing group definition, issue the E line command and press Enter. Then, edit the IMS group.

     You cannot update the IMS group name. You can, however, make changes to the IMSIDs defined as members of the IMS group.
   - To add a new IMS group, issue the INSERT command or the I line command and press Enter. Then, set the IMS group name and a maximum of 64 IMSIDs that will be considered part of the IMS group.

     You must enter a 1- through 8-character IMS group name. The first four characters of the IMS group name must be unique among IMS group names. For example, you cannot define an IMS group named IMS1GRP and another IMS group named IMS1PLEX.

     Each IMSID can belong to one group only.
   - To delete an IMS group, issue the D line command and press Enter.

Related reference

IMS groups
IMS groups define groups of IMS control regions where a BMP can be restarted. If you have an environment, similar to an IMSplex, where databases are shared between some number of IMS systems, you can define these IMS systems as an IMS group.

Stopping, holding, or restarting BMPs

You can stop, hold, or restart a BMP by issuing z/OS MVS commands.

Before you begin

To stop, interrupt, and restart a BMP that is running with IMS Program Restart Facility support, you must have FSTOP=YES specified for that job in the options data set.

Procedure

- To stop a BMP, issue this command:

  ```
  MODIFY jobname,STOP
  ```

  The BMP terminates with an abend U0474.
- To hold a BMP, issue this command:

  ```
  MODIFY jobname,HOLD
  ```

  The BMP terminates with an abend U3303 but is then placed in a wait state until an operator issues a subsequent command to restart the BMP.
- To restart a BMP that was put on hold, issue this command:

  ```
  MODIFY jobname,XRST
  ```

  The BMP is reattached and is later supported by the standard IMS extended restart facility as if the BMP had terminated abnormally and been restarted with CKPTID=LAST specified in the JCL.

Bypassing checkpoint processing

You can reduce the processing load that is incurred by applications that take checkpoints too frequently by using the bypass checkpoint processing feature.

Before you begin

Before using bypass checkpoint processing, consider the following guidelines:

- To properly use this feature, you might need to change your application design. Therefore, if you later want to uninstall this feature, you might need to change the application code.
- Global installation of this feature is not recommended unless the design of each application in your installation is understood.
- In general, do not implement this feature for the following types of applications:
  - Transaction-oriented BMPs that use IMS message queues
  - BMPs that are defined by PSBs in which one or more PCBs for IMS Fast Path databases are included
  - BMP or DL/I batch jobs that will use the ROLB call to back out individual logical units of work and that do not intend to abend immediately afterward.

  If bypass checkpoint processing is used on transaction-oriented BMPs or BMPs whose associated PSBs contain IMS Fast Path database PCBs, message IRT041W is issued and the bypass checkpoint processing is automatically disabled.

Batch applications that use the ROLB call only once, before program termination, can use bypass checkpoint processing.

About this task

Bypass checkpoint processing prevents a job step from taking checkpoints more frequently than the delay interval that you specify for the job. This reduction in the frequency of checkpoint calls can result in faster run times and can reduce the batch window.

Procedure

1. Access the IMS Program Restart Facility primary options menu.
2. In the appropriate JOB options entry, activate bypass checkpoint processing by specifying BYPCHKP=YES in the bypass checkpoint options.
3. Specify the BCDINTVL=*hhmmssth* parameter for the application.

   The application bypasses checkpoint processing according to the time interval, where:

   hh
   Hours

   mm
   Minutes

   ss
   Seconds

   t
   Tenths of a second

   h
   Hundredths of a second
4. Optional: To specify a list of status codes that allow the next checkpoint to be processed, specify BCSTCLST=*aabbccdd* for the application.

   You can specify a maximum of ten 2-character status codes for this parameter.
5. Optional: Specify the following parameters for the application.

Attention: To use these parameters, you might need to change application code. These changes can result in a dependency on IMS Program Restart Facility that could prevent you from uninstalling it.

a) To create the status code that is returned to the application when a checkpoint call is bypassed, specify BCSTATUS=*xx*, where *xx* is the status code.

b) To return the *nnnn* value to the n AIBERRXT field in the application interface block (AIB) for the application after any checkpoint call is bypassed, specify BCERRXT=*nnnn*, where *nnnn* is an integer with 1 – 4 digits.

c) To return the *nnnn* value to the n AIBREASN field in the AIB for the application after any checkpoint call is bypassed, specify BCREASN=*nnnn*, where *nnnn* is an integer with 1 – 4 digits.

d) To return the *nnnn* value to the n AIBRETRN field in the AIB for the application after any checkpoint call is bypassed, specify BCRETRN=*nnnn*, where *nnnn* is an integer with 1 – 4 digits.

6. Save the updated job options.

Inserting checkpoint calls dynamically

By using the checkpoint insertion feature of IMS Program Restart Facility, you can insert checkpoint calls dynamically into application programs that do not have any or enough checkpoint calls.

Before you begin

Before using the checkpoint insertion feature, consider the following guidelines:

- It is not recommended that you enable this feature in global options unless you have in-depth understanding of all the applications that are run under IMS Program Restart Facility.
- After a checkpoint call is inserted, the checkpoint insertion feature will reposition each PCB's database position, which was lost when the checkpoint call was inserted, to its original position by using the key feedback area. If the last DL/I call was unsuccessful, however, the database position might be repositioned incorrectly. For details, see the topic "Current position after unsuccessful calls" in *IMS Application Programming*.
- If a PSB has databases with non-unique keys, duplication of keys occurs in the key feedback area. This might cause incorrect database repositioning after a checkpoint call is inserted dynamically.
- IMS Program Restart Facility inserts checkpoint calls when triggered by certain conditions, but it does not ensure successful program restarts. It is your responsibility to prepare an application logic for program restarts.

  For example, suppose you are working on an application whose checkpoints are closely associated with the restart logic of that application, such as restart logic A corresponding with checkpoint A and restart logic B corresponding with checkpoint B. If you enable this checkpoint insertion feature with such an application, IMS Program Restart Facility might insert checkpoints at locations that are unexpected to the application, such as between checkpoints A and B. This might cause problems with your application's restart logic.
- If an application has a ROLB call, the last commit point used in the back out processing might be a checkpoint inserted by IMS Program Restart Facility. In this circumstance, the segment returned from IMS after executing a ROLB call might be different from the one that the application has assumed to use in subsequent processing. Therefore, it is recommended that you review the application processing after the ROLB call returns control to the application program.
- Insertion of IMS checkpoints can be resource-intensive operations; it might increase processor usage and affect the job elapsed time.
- This feature cannot be used for the following jobs and applications:
  - Jobs that has BYPCHKP=YES specified
  - DLIBATCH jobs that use a PSB without IO PCB (CMPAT=NO)
  - Transaction-oriented BMP programs

– Fast Path applications that use high speed sequential processing (HSSP)
– JBP applications

About this task

To restart the application programs correctly, checkpoint calls must be issued at unit of work (UOW) boundaries. When you use the checkpoint insertion feature, you must specify each option so that checkpoint calls will be issued at unit of work boundaries.

Specify appropriate parameters by referring to the following information:

Parameters and conditions for dynamic insertion of checkpoint calls

By specifying each parameter, you can insert a checkpoint call if the time interval specified by the ICPINTVL option has passed and both conditions 1 and 2 in the following table are satisfied. You can specify multiple parameters. The database positions of all the database PCBs will then be repositioned.

Parameter	Condition 1: trigger DL/I call	Condition 2: DL/I call results
CALLTYPE=GU	A GU or GHU call against the PCB specified by the PCB parameter	Status code = ' '
POS=ROOT	A GN or GHN call against the PCB specified by the PCB parameter	Status code = 'GB' or Segment level number = 01 and status code = ' ', 'GA', or 'GC'
ICSTCLST	A DL/I call against the PCB specified by the PCB parameter	Status code matches the value specified by the ICSTCLST parameter

For example:

- If you want to issue a checkpoint call when a GN or GHN call against PCB01 reaches the root segment, specify as follows:

```
PCB=PCB01
POS=ROOT
```

- If you want to issue a checkpoint call when a DL/I call against PCB01 returns a DL/I status code of GB, specify as follows:

```
PCB=PCB01
ICSTCLST=GB
```

Format of checkpoint calls to be inserted

After the application program is started, if no XRST calls are issued before the first checkpoint insertion, IMS Program Restart Facility issues a basic checkpoint call.

After the application program is started, if an XRST call is issued before the first checkpoint insertion, IMS Program Restart Facility does not issue checkpoint calls dynamically until the application program issues an extended checkpoint call. After the application program issues an extended checkpoint call, IMS Program Restart Facility issues a similar extended checkpoint call with a different checkpoint ID.

Attention: If the checkpoint insertion conditions are satisfied before the application program issues the first XRST call, IMS Program Restart Facility inserts a basic checkpoint call. When an XRST call is issued, message IRT378E is issued and a U3631 abend occurs. In this case, review and change option settings as necessary.

Checkpoint ID

Checkpoint IDs for checkpoint calls inserted dynamically are generated by the following rule:

PRF*nnnnn*

Here, *nnnnn* represents a sequential decimal number between 00000 - 99999. When the number reaches 99999, it starts from 00000 again.

Checkpoint IDs for checkpoint calls issued by the application program do not change.

Procedure

1. Access the IMS Program Restart Facility primary options menu.
2. In the appropriate JOB options entry, activate the checkpoint insertion feature by specifying ISRTCHKP=YES in the checkpoint insertion feature options.

   Attention: It is not recommended that you enable this feature in global options unless you have in-depth understanding of all the applications that are run under IMS Program Restart Facility.
3. Use the ICPINTVL option to specify the minimal time interval between checkpoint call insertions in the form *hhmmssth*, where:

   hh
   Hours

   mm
   Minutes

   ss
   Seconds

   t
   Tenths of a second

   h
   Hundredths of a second
4. Use the PCB option to specify the PCBs that you want to use as the trigger for checkpoint call insertion.
5. Enable at least one of the following options as required by the application program.
   - To use GU and GHU calls as the trigger, specify GU/GHU for the CALLTYPE option.
   - To use GN and GHN calls as the trigger, specify GN/GHN for the POS option.
   - To use specific DL/I status codes as the trigger, specify DL/I status code for the ICSTCLST option. You can specify up to five DL/I status codes.
6. Save the updated job options.

Forcing dynamic allocation for application logs

Use the options IEFRDER and IEFRDER2 to use existing JCL allocations for creating log data sets or to dynamically allocate different data sets.

About this task

- At least for the initial use of this product, it is best to use your existing JCL allocations without applying the changes made through dynamic allocation (the default is IEFRDER=JCL and IEFRDER2=JCL).
- Eventually, you might want to enforce naming standards.

  To enforce naming standards, specify IEFRDER=FORCE and IEFRDER2=FORCE.

Bypass logging option

By using the bypass logging option, you can avoid extra work that pertains to logging even when the DLI batch job is running in a DBRC=FORCE environment. Bypass logging uses the batch backout functionality of IMS Program Restart Facility.

When using this option, a small log data set is opened and recorded by DBRC. However, in the event that the job terminates abnormally, no significant logging occurs and no automatic batch backout processing is performed.

Bypass logging restrictions

The bypass logging option should be selected only when updating offline IMS databases that cannot be shared by any other batch or online subsystem. No IRLM should be in use, and no other concurrent updating of Db2® (or any other DB manager) databases should be performed. Unpredictable results can occur during syncpoint processing or during an abnormal termination of the DLI batch job.

Installing the bypass logging option

To use the bypass logging option, you must receive an IMS version-specific usermod into the SMP/E global zone that is used to maintain your IMS software and applied to the appropriate target IMS zone.

The usermod updates DFSXLGI0 so that Batch Backout Manager loads its own logger exit routine only for DLI batch jobs which use the bypass logging option. Your version of DFSFLGX0 (if present) is still loaded for all other applicable region types. All sample usermods can be found in your SIRTDATA library.

- For IMS 11, receive and apply sample usermod IRT111C
- For IMS 12, receive and apply sample usermod IRT121C
- For IMS 13, receive and apply sample usermod IRT131C
- For IMS 14, receive and apply sample usermod IRT141C
- For IMS 15, receive and apply sample usermod IRT151C

Bypass logging inclusion options

For jobs requiring the bypass logging option, include the BYPLOGR option as part of the inclusion entry for the job. You can accomplish this in one of two ways:

- Update your batch job to include the //IRT$CNTL DD statement, or update an already existing allocation, including the following line:

  ```
  BYPLOGR=YES
  ```

  You can also add lines for the other bypass logging options, as described in “IMS DLI and DBB batch log options reference” on page 52.
- Use the ISPF interface:
  1. Select Option 6 (Job Options).

     Select the entry that matches the job you want to change.

     If there are no entries, you should create one as described in “Specifying job override options” on page 75.
  2. After you select or create a job override option, select Option 5 (Batch Backout).

     Set the BYPLOGR to “YES”.

     Press End (PF3).
  3. Select Option 6 (DLI Logs).
  4. Select Option 8 (Bypass Log).

     Enter the required values for the fields on this panel, as described in “IMS DLI and DBB batch log options reference” on page 52.

Bypass logging data set specification

Because a log data set is created, you should specify bypass log data set allocation options through the ISPF panels to ensure that the required log data set is allocated. This is done in one of two ways:

- To specify global default options for all jobs for which you want to use bypass logging, follow these steps:
  1. Select Option 5 (Global Opts) in the IMS Program Restart Facility main ISPF panel.
  2. Select Option 6 (DLI Logs).
  3. Select Option 8 (Bypass LOG).
  4. Enter the necessary details.
- To specify job-specific options, follow these steps:
  1. Select Option 6 (Job Options) in the IMS Program Restart Facility main ISPF panel.
  2. Select (or create) the Job Override entry that includes the job for which you want to use bypass logging.
  3. Select Option 6 (DLI Logs).
  4. Select Option 8 (Bypass LOG).
  5. Enter the necessary details.

It is recommended that the options specified allocate a very small DASD data set.

RECON cleanup

The logs created for jobs that use the bypass logging option are marked in error by IMS Program Restart Facility. This prevents DBRC from using the log data sets in any GENJCL.RECOVER situation.

These entries can be removed by using the **DBRC DELETE.LOG INACTIVE** command. Refer to *IMS Commands Volume 3: IMS Component and z/OS Commands* for details.

Chapter 10. Troubleshooting

IMS Program Restart Facility issues messages that help you diagnose and solve processing errors.

Topics:

Runtime messages (IRT)

This topic describes the runtime messages that are issued by IMS Program Restart Facility.

There are two types of messages that are issued by IMS Program Restart Facility:

- Runtime messages that are written to the output of a job (IRT)
- ISPF messages that are presented to the user by ISPF (IRTA, IRTB, IRTC)

Use the information in these messages to help you diagnose and solve IMS Program Restart Facility problems.

Runtime message format

IMS Program Restart Facility runtime messages adhere to the following format:

```
IRTnnnx
```

where:

IRT
Indicates that the message was issued by IMS Program Restart Facility

nnn
Indicates the message identification number

x
Indicates the severity of the message:

A
Indicates that operator intervention is required before processing can continue.

E
Indicates that an error occurred, which might or might not require operator intervention.

I
Indicates that the message is informational only.

S
Indicates that a severe error occurred, which might require operator intervention.

W
Indicates that the message is a warning to alert you to a possible error condition.

Each message also includes the following information:

Explanation:
The Explanation section explains what the message text means, why it occurred, and what its variables represent.

System action:
The System action section explains what the system will do in response to the event that triggered this message.

User response:

The User response section describes whether a response is necessary, what the appropriate response is, and how the response will affect the system or program.

IRT000I ***trace information***

Explanation

IRT000I messages are produced as a result of the IMS Program Restart Facility debug trace feature. These messages should only be produced when the trace is enabled. If the trace was requested by the IBM Software Support, provide the job output to them for analysis.

System action

The job continues processing normally.

User response

None. This message is informational.

IRT001I **CHECKPOINT ID TRACKING {IS ACTIVE | NOT ENABLED}**

Explanation

This message identifies whether IMS Program Restart Facility is tracking application program checkpoints so it can assist in restart processing. If tracking is active, IMS Program Restart Facility allocates checkpoint tracking data sets and assists with program restart. If tracking is not enabled, IMS Program Restart Facility will not be able to assist with any restart processing.

System action

The job continues normal processing.

User response

No action is required. However, if this message does not appear in the message log for the job or tracking is not enabled, and the job later ends abnormally, you might have to manually supply the restart checkpoint ID if you determine that the job step needs to be restarted.

IRT002I **CHECKPOINT ID TRACKING CLEANUP IS COMPLETE**

Explanation

The job completed normally, and the CTDS was successfully deleted.

System action

The job terminates normally.

User response

None. This message is informational.

IRT003W **CHECKPOINT ID TRACKING CLEANUP BYPASSED**

Explanation

The application terminated without abending. However, the RCERROR=*nnnn* return code threshold signified that no cleanup or delete of the CTDSs should take place.

System action

The job terminates normally.

User response

The next run of the job proceeds as if an abend had occurred, and an extended restart was to be done. No action is required unless this result was not your intention in specifying the RCERROR=*nnnn* parameter. In this case, you might want to delete the CTDSs before the next run of the job.

IRT004W **AUTOXRST=NO PARAMETER IN EFFECT - NO AUTOMATIC XRST WILL BE ATTEMPTED**

Explanation

AUTOXRST=NO was specified in one of the following places:

- the options in the IRTOPT data set entry for this job
- as a specification in the IRT$CNTL DD statement
- in the IRT#CPID JCL CKPTID module

No automatic IMS Extended Restart processing occurs; even if the CTDS exists from a previous abend of the job.

System action

The job continues normal processing.

User response

No action is required if you did not intend automatic IMS Extended Restart processing for this job. In this case this message is for information only.

IRT005E **CTDSHLQ MUST BE 1-8 CHARACTERS - ABEND U3626 WILL FOLLOW**

Explanation

You cannot specify the CTDSHLQ parameter with more than eight characters, or more than 17 characters if the CTDSNAM option is not set to BOTH. Be very careful when changing the CTDSHLQ parameter in the global options, as making a change to this parameter will prevent IMS Program Restart Facility from restarting any jobs that were pending restart at the time CTDSHLQ is updated.

System action

The job ends abnormally with a U3626 completion code.

User response

Correct the value that is specified in the CTDSHLQ parameter in the global options.

IRT006E **SVC99 FAILED DD *ddname* R15=*rc* RSN=*reason* [SMSRSN=*code*] [DSN=*dsn*]**

Explanation

The attempt to dynamically allocate or deallocate a required data set was unsuccessful. When an SMS error code is returned, the SMSRSN code is included in the message. The SMSRSN field shows an IGD* message that describes the reason for the error. The DSN field is presented when a data set name was present in the dynamic allocation or deallocation request.

System action

The job ends abnormally with a U3620 completion code, unless the dynamic allocation request was for a deallocated data set.

User response

Other IKJ* or IGD* series messages preceding this message might give you enough information about what caused the abend. You might have to review and possibly change the global parameters specified to dynamically allocate the data set. If these actions do not resolve the problem, contact IBM Software Support.

IRT007I **CURRENT JOB: JOB=*jobname* PGM=*pgmname* PSB=*psbname* PSTP=*proc-step* JSTP=*stepname* *IMSversion***

Explanation

Messages IRT007I, IRT008E, and IRT009E are displayed if a job requiring restart is being restarted in the wrong job step.

System action

The job ends abnormally with a U3621 completion code after messages IRT007E, IRT008E, and IRT009E are displayed.

User response

Restart the job from the correct step.

IRT008E **ABENDED JOB: PGM=*xxxxxxxx* PSB=*xxxxxxxx* PSTP=*xxxxxxxx* JSTP=*xxxxxxxx***

Explanation

Messages IRT007E, IRT008E, and IRT009E are displayed if a job requiring restart is being restarted in the wrong job step.

System action

The job ends abnormally with a U3621 completion code after messages IRT007E, IRT008E, and IRT009E are displayed.

User response

Restart the job from the correct step.

IRT009E **ABENDED PGM/PSB NOT MATCHING CURRENT JOB - ABEND U3621 WILL FOLLOW**

Explanation

Messages IRT007E, IRT008E, and IRT009E are displayed if a job requiring restart is being restarted in the wrong job step.

System action

The job ends abnormally with a U3621 completion code after messages IRT007E, IRT008E, and IRT009E are displayed.

User response

Restart the job from the correct step.

IRT010W **INDOUBT XRST CKPTID=*xxxxxxxx***

Explanation

The last time the job ran, an abend occurred. This message indicates that the checkpoint ID might be committed, but IMS Program Restart Facility was unable to confirm its completion.

System action

The job displays message IRT011E and then possibly ends abnormally with a U3625 completion code.

User response

See message IRT011E. No action is required unless this restart attempt abnormally terminates with a U3625 or a U0102 abend completion code, see "Resolving restart abends caused by indoubt checkpoints" on page 65 to determine the corrective action.

IRT011E **AUTOXRST=LAST/FORCE MUST BE SPECIFIED - ABEND U3625 FOLLOWS**

Explanation

IMS Program Restart Facility was unable to confirm whether the indoubt checkpoint ID that is displayed in message IRT010W was committed before the IMS control region ended abnormally. Therefore, you must manually verify the last committed checkpoint ID.

System action

The job ends abnormally with a U3625 completion code.

User response

You must perform one of the following tasks:

- Review the appropriate IMS logs to determine the checkpoint ID from which the job can be restarted.
- If the control region ended abnormally, wait for the DFS682I message to be displayed before issuing a control region emergency restart.

If the checkpoint ID displayed in message IRT017I is correct, make sure AUTOXRST=LAST is also specified for the restart. If the checkpoint ID displayed in message IRT010W is correct, make sure AUTOXRST=FORCE is specified instead. If you do not make corrections, the job ends abnormally with a U3625 completion code.

IRT012E **IRTOPT NOT FOUND - ABEND U3622 FOLLOWS - DSN=*xxxxxxxx***

Explanation

The data set name specified for the inclusion options data set in the IRT#OPT module could not be located in the catalog.

System action

The job ends abnormally with a U3622 completion code.

User response

Other IKJ* or IGD* messages preceding this message might give you enough information about what caused this abend. If the messages do not provide you with enough information to resolve the problem, contact IBM Software Support.

IRT014A **REPLY WITH AUTOXRST VALUE: "*YES*", "*NO*" OR "*ABEND*"**

Explanation

IMS Program Restart Facility determined that the running job might require an extended restart. However, no extended restart checkpoint ID was specified in the JCL for the restarted job. This WTOR is displayed because you specified AUTOWTOR=YES in the options.

System action

The job waits until the operator replies YES, NO, or ABEND, and one of the following actions take place:

YES
The job continues with an automatic extended restart.

NO
The job continues, but no extended restart takes place.

ABEND
The job ends abnormally with a U3627 abend.

User response

None.

IRT017I **LAST VERIFIED TRACKING XRST CKPTID=*xxxxxxxx***

Explanation

The last time the job ran, an abend occurred. This message indicates the last committed checkpoint ID that IMS Program Restart Facility was able to verify.

System action

If there is no indoubt checkpoint ID, IMS Program Restart Facility provides the last verified checkpoint ID to IMS Extended Restart.

User response

No action is required unless message IRT010W is also displayed and this restart attempt abnormally terminates with a U3625 or U0102 abend completion code; see "Resolving restart abends caused by indoubt checkpoints" on page 65 to determine the corrective action.

IRT019W **BCDINTVL MUST BE IN *HHMMSSTH* FORMAT**

Explanation

The BCDINTVL parameter was specified incorrectly.

System action

The job continues processing as if the BCDINTVL parameter was not specified.

User response

Specify an eight character length *HHMMSSTH* format where:

- *HH* represents hours
- *MM* represents minutes
- *SS* represents seconds
- *T* represents tenths of a second
- *H* represents hundredths of a second

Make the necessary correction to either the inclusion options data set or the in stream IRT$CNTL DD statement.

IRT020W **OPTION UNKNOWN: *keyword***

Explanation

The *keyword* parameter that is displayed in the message text is not a valid IMS Program Restart Facility option keyword name.

System action

The job continues processing as if the unknown parameter was not specified.

User response

While this specification error does not cause an abend to be issued, review the entry and correct it.

IRT021I **PROGRAM RC=X'*xxxxxxxx*'**

Explanation

The return code of the IMS application program is displayed. The value is displayed in hexadecimal format and represents the fullword value that the program specified in register 15 just before ending.

System action

The job step proceeds to completion.

User response

None. This message is informational.

IRT022I **BYPASS CHECKPOINT PROCESSING IS ACTIVE**

Explanation

Option BYPCHKP=YES was specified, enabling the bypass checkpoint processing feature.

System action

The job step continues to run, bypassing checkpoint processing for some checkpoint calls based on the time interval that was specified for the BCDINTVL parameter.

User response

None. This message is informational.

IRT023I **BCDINTVL=*xxxxxxxx***
BCSTATUS=*xx*
BCRETRN=X'*xxxxxxxx*'
BCREASN=X'*xxxxxxxx*'
BCERRXT=X'*xxxxxxxx*'

Explanation

Bypass checkpoint processing is active. This message displays the parameters related to the bypass checkpoint that are in effect for this job step.

System action

The job step continues running.

User response

None. This message is informational.

IRT024W AUTOXRST=LAST SPECIFIED - LAST VERIFIED CHECKPOINT ID WILL BE SELECTED

Explanation

The extended restart that was attempted uses the last committed checkpoint ID, which is specified in message IRT017I, instead of the last indoubt checkpoint ID. This extended restart is happening because AUTOXRST=LAST was specified.

System action

The job step continues to run.

User response

Remove any special JCL override as soon as possible.

IRT025W USING LAST SUCCESSFUL RESTART CKPTID=*value*

Explanation

IMS Program Restart Facility has reviewed the checkpoints available for restart, and has selected a checkpoint ID returned by DFSZSR00.

System action

The job continues restart processing with the selected checkpoint ID.

User response

None.

IRT026W USING CKPTID FROM OPTIONS DATASET

Explanation

A checkpoint ID was specified in the IRT$CNTL DD or in the CTX data set (as created by the ISPF Job Administration screens). This checkpoint ID value will be used by IMS Program Restart Facility to restart the job.

System action

The job continues restart processing by using the specified checkpoint ID.

User response

None.

IRT027W USING CKPTID FROM JCL

Explanation

IMS Program Restart Facility had an indoubt checkpoint, but the checkpoint ID specified in the JCL (via the CKPTID=JCL symbolic parameter) matched the last verified checkpoint ID. IMS Program Restart Facility will proceed to restart the job using this checkpoint ID instead of the indoubt checkpoint.

System action

The job continues restart processing using the specified checkpoint ID.

User response

None.

IRT028E PROGRAM RC ABEND THRESHOLD REACHED - ABEND FOLLOWS

Explanation

The application terminated and issued a nonzero return code that is equal to, or higher than the value specified in the RCABEND parameter. IMS Program Restart Facility treats this job as if it has ended abnormally.

System action

The job step ends abnormally with a U3624 code, or with the abend code specified by the user in the UABEND parameter.

User response

An automatic extended restart is attempted the next time the job is run.

IRT031W WAITING FOR CTX DSN=*xxxxxxxx*

Explanation

Another job, task, or TSO user exclusively holds the CTX data set. A TSO user might be editing the job override data set in the ISPF Job Administration screens.

System action

The job attempts to allocate the data set every minute for 8 minutes.

User response

None. However, until the TSO user or the batch job holding the data set releases it, the batch job cannot run. If the situation persists, have an operator issue the appropriate display commands to determine the source of the delay (`D GRS,RES=(SYSDSN,`*dsn*).

IRT036W **USING IN-DOUBT CKPTID FROM [OPTIONS | JCL]**

Explanation

IMS Program Restart Facility had an indoubt checkpoint, and the checkpoint ID specified in the JCL (via the CKPTID JCL symbolic parameter) or in the options (IRTOPT, IRT$CNTL or CTX data set) matched the indoubt checkpoint ID. IMS Program Restart Facility will proceed to restart the job using this checkpoint ID instead of the last verified checkpoint.

System action

The job continues restart processing using the specified checkpoint ID.

User response

None.

IRT037W **AUTOXRST=FORCE SPECIFIED - INDOUBT CHECKPOINT ID WILL BE FORCED**

Explanation

The extended restart being attempted uses the indoubt checkpoint ID recorded in the CTDS.
This extended restart is happening because you resubmitted the job with an override with the option AUTOXRST=FORCE.

System action

The job step continues processing.

User response

Remove any overrides from the JCL of the job before the next execution of the job.

IRT038I **JCL SPECIFIED CKPTID=*xxxxxxxx***

Explanation

A value for a symbolic checkpoint ID was specified in the JCL for the job being run.

System action

The job uses this checkpoint ID for any IMS Extended Restart processing.

User response

This message is informational; it reminds you to remove this checkpoint ID from the JCL before the next job run to avoid future U0102 abends.

IRT039E **NO IMS*vvvv* SUPPORT FOR IMS*wwww* EXTENDED RESTARTS**

Explanation

A job that was previously run using IMS version *vvvv* was restarted using IMS *wwww*. IMS Program Restart Facility does not support this restart capability.

System action

The job ends abnormally with a U3621 completion code.

User response

Restart the job by using the same version of IMS that was in use before the abend, or restart the job using a version of IMS that IMS Program Restart Facility provides compatibility for.

IRT040I **JOB RUN UNDER IMS VERSION *vvv* RESTARTING UNDER IMS VERSION *www***

Explanation

A job that was previously run using IMS version *vvv* was restarted using IMS version *www*. IMS Program Restart Facility automatically provides conversion support between releases of IMS.

System action

IMS Program Restart Facility will provide the support for restarting this job under the different release of IMS.

User response

None. This message is informational.

IRT041W **BYPASS CHECKPOINT PROCESSING REQUEST IGNORED - *reason***

Explanation

The request to use the bypass checkpoint processing feature was ignored because of the reason listed in the message. The reason will be one of the following circumstances:

- FAST PATH PRESENT
- FAST PATH PRESENT DBD=*xxxxxxxx*
- IN= HAS BEEN SPECIFIED
- NO CHKP INTERVAL SET (BCDINTVL=0)

IMS Program Restart Facility does not support bypass checkpoint processing in these circumstances.

System action

The job continues running without the bypass checkpoint processing feature.

User response

Review the reason for the failure, and either correct the problem or do not specify BYPCKPT=YES for the job.

IRT042I **BCSTCLST=*xxxxxxxxxxxx***

Explanation

The list of status codes specified by the BCSTCLST parameter that is used by bypass checkpoint processing is displayed.

System action

The job continues running.

User response

None. This message is informational.

IRT043I **CKPTID TABL: *xxxxxxxxxxxx***

Explanation

The parameters for the special checkpoint ID coded in the IRT#CPID table are displayed. The IRT#CPID table name is displayed first. The value specified in the checkpoint ID table for the CKPTID value that is specified in the JCL of the job is displayed next.

System action

The job continues running.

User response

None. This message is informational.

IRT044W **PROGRAM RC THRESHOLD REACHED**

Explanation

The IMS application program terminated with a return code equal to, or higher than the threshold return code specified in the RCERROR parameter.

System action

The job terminates. However, CTDS cleanup is bypassed so that the subsequent restart of the job is considered an extended restart.

User response

None.

IRT046W **IRTRCC00 ESTAE *number* CREATE FAILED: 'RC = X'*aaaa*' REASON = X'*bbbb*'**

Explanation

IMS Program Restart Facility abend protection logic could not be initialized.

System action

The job continues processing.

Certain abends, such as those caused by operator cancel or CPU timeout, are not backed out when the job ends abnormally. In that case, restarting the job causes backout to occur.

User response

Contact IBM Software Support. Provide all job output for analysis.

IRT047I **ENTERING IRTRCC00 ESTAE *number* DUE TO *abend-code* ABEND IN [IRTRCC00 | APPLICATION]**

Explanation

IMS Program Restart Facility abend protection logic has been activated.

System action

IMS Program Restart Facility initiates backout processing.

User response

This message normally occurs when a Sx22 or out-of-memory condition occurs, so that backout processing can be initiated.

Determine the reason for the abend and proceed with normal job restart procedures.

IRT048W **RECURSIVE ENTRY FOR IRTRCC00 ESTAE *number***

Explanation

IMS Program Restart Facility abend protection logic has encountered a problem.

System action

The job terminates.

User response

If backout processing has started for the job when you see this message, it is likely that either the IMS log termination utility or the IMS Batch Backout utility has ended abnormally.

In this case, determine why the utility ended abnormally, and then restart the job so that IMS Program Restart Facility can finish backout processing for the job.

If backout processing has not started for the job, contact IBM Software Support and provide all job output for analysis.

IRT053W **PGM *xxxxxxxx* IOAREA=X'*xxxxxxxxxxxxxxxx*' JOB:*xxxxxxxx***

Explanation

The IOAREA for the XRST call in the application was not initialized to spaces.

System action

The job continues processing as if the area were initialized to spaces.

User response

Change the application program to initialize this field to spaces as time permits.

IRT054I **XRST CKPTID=*value***

Explanation

For some reason, a checkpoint ID that is different from the last verified checkpoint recognized by IMS Program Restart Facility has been selected as the restart checkpoint ID. The checkpoint ID shown in this message will be used for this restart.

System action

The job continues processing.

User response

None. This message is informational.

IRT055I **XRST FOR BMP *zzzzzzzz* ON *xxxx* - ABEND IMSID=*aaaa***

Explanation

The last time the job, that is indicated by the value of *zzzzzzzz*, terminated abnormally on the IMS subsystem that is indicated by the value of *aaaa*. The job is being restarted on the IMS subsystem that is indicated by the value of *xxxx*.

System action

The extended restart continues to be processed for the job.

User response

None. This message is informational.

IRT059I **DETACH SUCCESSFUL**

Explanation

The IMS task has completed processing and IMS Program Restart Facility has detached the task.

System action

Processing continues normally.

User response

None. This message is informational.

IRT060W **IMMEDIATE ABEND U*xxxx* SCHEDULED DB=*xxxxxxxx***

Explanation

This message is issued for ABEND U0474 or ABEND U3303.

For ABEND U0474, an operator has entered a MODIFY *jobname*, STOP command.

For ABEND U3303, one of various IMS licensed programs is attempting to take a database that is being used by the running job offline.

System action

For the U0474 form of this message, the job ends abnormally with a U0474 user abend code. For the U3303 form of this message, the job step of the job is suspended after a U3303 abend and put into a wait state. This wait state persists until the database that was taken offline is started again. When the database is started again, IMS Extended Restart resumes the job step from the last successfully completed checkpoint.

User response

None.

IRT061I **{ATTACH | REATTACH} IN PROGRESS**

Explanation

IMS Program Restart Facility uses MVS ATTACH processing to invoke IMS after the execution environment is prepared for IMS. This message is issued just before invoking IMS to process the application program.

The REATTACH form of the message occurs when IMS processing is interrupted by an abend or by a request by an online reorganization for access to a database. The REATTACH occurs when IMS Program Restart Facility determines that it should try to invoke IMS to restart the application program.

System action

The job continues processing normally.

User response

None. This message is informational.

IRT062W **IMS JOB STEP ABEND code [REASON=*xxxxxxxx*]**

Explanation

The IMS task for the application abnormally terminated. The abend code and, if present, the abend reason code are shown.

System action

The job continues processing normally.

User response

None.

IRT063W **MODIFY COMMAND INVALID - JOB=*xxxxxxxx***

Explanation

You issued an MVS MODIFY command for the job, but the operand was not STOP or HOLD.

System action

The job continues processing.

User response

Issue the MVS MODIFY command again with either the STOP or HOLD operand.

IRT064I **[STOP | HOLD] COMMAND ACCEPTED - JOB=*xxxxxxxx***

Explanation

The MVS MODIFY command that you issued for the job was accepted for processing.

System action

The job step ends abnormally. If the STOP operand was issued, the job step terminates with a U0474 abend.

If the HOLD operand was issued, the application ends abnormally with a U3303 code and goes into a wait state until a MODIFY *jobname*, XRST command is issued.

User response

No action is required if you issued the STOP operand. If you issued the HOLD operand, you must also issue a MODIFY *jobname*, XRST command to resume the job.

IRT066I **[STOP | HOLD] COMMAND ACCEPTED - JOB=*xxxxxxxx* DB=*xxxxxxxx***

Explanation

The MVS MODIFY command that you issued for the job was accepted for processing because the database you specified is used by the job.

System action

The job step ends abnormally. If you issued the STOP operand, the job step terminates with a U0474 abend.

If you issued the HOLD operand, the application ends abnormally with a U3303 code and goes into a wait state.

User response

No action is required if you issued the STOP operand.

If you issued the HOLD operand, you must also issue a MODIFY *jobname*, XRST command to resume the job.

IRT067W **[STOP | HOLD] COMMAND IGNORED - JOB=*xxxxxxxx* DB=*xxxxxxxx***

Explanation

The MVS MODIFY command you issued for the job was ignored because the database specified is not used by the job.

System action

The job continues processing.

User response

None.

IRT069I **MODIFY *xxxxxxxx xxxx***

Explanation

You issued an MVS MODIFY command for the job. The text of the command is displayed in the job log.

System action

The job continues processing.

User response

None. This message is informational.

IRT070I **REATTACH SCHEDULED FOR JOB *jobname* PSB *psb imsid***

Explanation

An abend occurred while processing the application program. An entry in the abend retry table matched the abend condition, so IMS Program Restart Facility will attempt to restart the program after the delay interval has elapsed..

System action

IMS Program Restart Facility waits for the delay interval, and then attempts to restart the abended application program.

User response

None. This message is informational.

IRT071W **REATTACH WAITING FOR MVS CMD: *F jobname, XRST***

Explanation

The displayed job name was held because of a MODIFY *jobname*,HOLD command. The job is now waiting for an operator command MODIFY *jobname*,XRST to allow IMS Program Restart Facility to restart the application program.

System action

The job waits to be issued the MVS command *F jobname, XRST*.

User response

You can either issue the indicated MVS command or issue an MVS CANCEL command.

IRT073E **ABRETRY SYS ABEND CODE MUST BE 3 HEX DIGITS 0-9, A-F ONLY**

Explanation

You have specified an ABRCC system abend completion code incorrectly in the inclusion options data set or in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the incorrect ABRCC control statement.

User response

Correct the ABRCC control statement and resubmit the job.

IRT074E **ABRETRY USER ABEND CODE MUST BE 4 DECIMAL DIGITS 0-9 ONLY**

Explanation

There is an incorrect ABRCC system abend completion code in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the incorrect ABRCC control statement.

User response

Correct the ABRCC control statement and resubmit the job.

IRT075E ABRETRY SYSTEM/USER ABEND CODE REQUIRED

Explanation

There is an valid system or user completion code in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the incorrect ABRCC control statement.

User response

Correct the ABRCC control statement and resubmit the job.

IRT076E ABRETRY RECORD INVALID KEYWORD FOUND

Explanation

There is an invalid keyword parameter in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the ABRCC control statement.

User response

Correct the ABRCC control statement and resubmit the job.

IRT077E ABRETRY REASON= MUST BE 8 HEX DIGITS 0-9, A-F

Explanation

There is an invalid value for the REASON parameter in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response

Correct the ABRCC control statement and resubmit the job.

IRT078E ABRETRY MAXRETRY PARAMETER COUNT MUST BE DEC DIGITS 0-9

Explanation

There is an invalid value for the MAXRETRY parameter in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response

Correct the ABRCC control statement and resubmit the job.

IRT079E ABRETRY DELAY PARAMETER IN MINUTES MUST BE 1-99

Explanation

There is an invalid value for the DELAY parameter in an IRT$CNTL statement.

System action

IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response

Correct the ABRCC control statement and resubmit the job.

IRT083E LOCATE FOR MODULE *name* FAILED

Explanation

IMS Program Restart Facility loaded the module named in the message, but was unable to find the module name in the CDE list.

System action

IMS Program Restart Facility terminates the job step with a U3628 abend code.

User response

Contact IBM Software Support for assistance.

IRT084E INTERCEPT FOR module FAILED RSN=reason

Explanation

IMS Program Restart Facility attempted to set an intercept in the module named in the message, but the attempt failed. The reason code identifies the reason for the failure.

System action

IMS Program Restart Facility terminates the job step with a U3628 abend code.

User response

Contact IBM Software Support for assistance.

IRT085E **MVS IDENTIFY SERVICE FAILED, RC=reason**

Explanation

An MVS IDENTIFY macro failed. The reason code indicates the reason for the failure.

System action

IMS Program Restart Facility terminates the job step with a U3628 abend code.

User response

Contact IBM Software Support for assistance.

IRT086E **PRF OPTIONS MODULE IRT#OPT NOT FOUND**

Explanation

The module that identifies the data set name of the options data set was not found in the STEPLIB of the batch job. Module IRT#OPT should be created during the IMS Program Restart Facility installation process, and be available in the STEPLIB of every IMS DLI or BMP batch job.

System action

IMS Program Restart Facility is not active for this job step.

User response

Ensure that module IRT#OPT is available in the STEPLIB libraries of the job.

IRT087I ***modname*** **ESTAI ABEND=*abcde* [REASON=*reason*]**

Explanation

An abend occurred when the IMS task that executes the application program was running. This message indicates the abend code *abcde* and reason code *reason*, if those values were supplied.

System action

IMS Program Restart Facility continues processing and might attempt an abend retry if specified in the abend retry table.

User response

None. This message is informational.

IRT089I **STIMERM RETURN CODE *rc* CHKPINT FUNCTION NOT AVAILABLE**

Explanation

IMS Program Restart Facility issued an MVS STIMERM request, but the request failed with return code *rc*.

System action

The job continues processing, but the CHKPINT function that warns of excessive time between application checkpoint calls is disabled.

User response

Contact IBM Software Support and provide the STIMERM return code.

IRT090I **CHKPINT EXCEEDED BY *hh*:*mm*:*ss***

Explanation

The checkpoint interval defined in the IMS Program Restart Facility options was exceeded. This interval is defined to provide a warning when the IMS application program fails to issue a =checkpoint call for the interval defined by option CHKPINT.

System action

None.

User response

Investigate whether the CHKPINT interval is too low or why the application program failed to issue a checkpoint call for the *hh*:*mm*:*ss* time period.

IRT097I **TOTAL CHKP CALLS: *nnnn* BYPASSED: *nnnn***

Explanation

The bypass checkpoint processing feature of Program Restart Facility was active during the IMS job step. This message indicates the number of checkpoint calls that were issued by the application program and the number of checkpoint calls that were bypassed by the bypass checkpoint processing feature.

System action

None.

User response

None. This message is informational.

IRT098I **AVERAGE CHKP INTERVAL: *nnnn* SECONDS**

Explanation

The bypass checkpoint processing feature of IMS Program Restart Facility was active during the IMS job step. This message displays the average number of seconds between the checkpoints that were taken after bypass checkpoint processing completed.

System action

None.

User response

None. This message is informational.

IRT100E **UNABLE TO FIND PRF CONTROL BLOCK HKIB**

Explanation

IMS Program Restart Facility attempted to locate module IRTHKIB, but the module was not found in the CDE list.

System action

The job step ends abnormally with a U3628 code.

User response

Gather documentation and contact IBM Software Support.

IRT100I **UNABLE TO FIND PRF CONTROL BLOCK HKIB**

Explanation

The "C" USERMOD was installed to enable the BYPASS LOGGING option, and is running a batch job (DLI/DBB) outside of IMS Program Restart Facility control.

System action

The job continues.

User response

If you want to have this job run outside of IMS Program Restart Facility control, no action need be taken.

If you want to have this job run under IMS Program Restart Facility control, determine why the job is not running under IMS Program Restart Facility control and fix the problem. To diagnose the problem, check the following:

- You have not applied the "B" USERMOD to include the IMS Program Restart Facility modules in your IMS SDFSRESL data set.
- If you choose not to apply the "B" USERMOD, ensure that the IMS Program Restart Facility load modules are part of the job's JOBLIB or STEPLIB concatenation.
- Ensure you have not included the //IRT$IGNR DD DUMMY data definition statement in the job's JCL.

IRT101I **BYPASS LOGGING SUPPORT ENABLED FOR JOB *jobname***

Explanation

The BYPLOGR=YES option was specified for this job. Bypass logging is now active for this job.

System action

The job continues normal processing, although no valid IMS log is created.

User response

None. This message is informational.

IRT103I **DFSULTR0 *input-parameters***

Explanation

The IMS log close utility (DFSULTR0) is being invoked to close an IMS DLI job log so that batch backout can be performed. This message describes the input parameters that are supplied to DFSULTR0 by IMS Program Restart Facility for the log close process.

System action

The job continues processing.

User response

None. This message is informational.

IRT104I **DFSULTR0 {ABEND *code* | RETURN CODE=*nnnn*}**

Explanation

The IMS log close utility has completed. This message displays the return code *nnnn* or abend code *code* that the utility returns after finishing.

System action

The job continues to attempt a batch backout.

User response

None. This message is informational.

IRT105I **DFSBBO00 SYSIN: *xxxxxxxx***

Explanation

The IMS Batch Backout Utility (DFSBBO00) is being invoked to perform batch backout of a previous abend of this job. This message describes the input parameters *xxxxxxxx*, which were supplied to DFSBBO00 by IMS Program Restart Facility for the batch backout process.

System action

The job continues processing.

User response

None. This message is informational.

IRT106I **DFSBBO00 {ABEND *code* | RETURN CODE=*nnnn*}**

Explanation

The IMS batch backout utility has completed. This message describes the return code or abend code that is returned by the utility.

System action

Batch Backout processing has completed for the abended application. The job step terminates with the original application abend code, or with a U3630 completion code if the backout is for a prior execution of this job.

User response

Consult the *IMS Database Utilities* for the return codes to determine the appropriate action.

IRT107I **VERB=*type* RC=*rc* RSN=*reason* DDNAME=*ddname dsn***

Explanation

This message displays information about a dynamic allocation error.

The VERB parameter can have the following values for *type*:

01
Indicates that the dynamic allocation error was caused by an allocation request.

02
Indicates that the dynamic allocation error was caused by a deallocation request.

RC is the hexadecimal return code from the DYNALLOC macro instruction, RSN is the hexadecimal reason code, DDN is the DDNAME, and the data set name *dsn* is displayed if one is available.

System action

The job attempts to continue processing.

User response

Review the reason code to determine the cause of the dynamic allocation failure.

IRT116I ***type yyyyyyyy***

Explanation

The value displayed for *yyyyyyyy* is the data set name that IMS Program Restart Facility can use to dynamically allocate the *type* of data set.

The *type* parameter can be any of the following values:

LOG1
The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if JCL allocation is not being used.

LOG2
The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if JCL allocation is not being used.

LTR1
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate

for the NEWRDER DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBO00).

LTR2
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the NEWRDER2 DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBO00).

BBO1
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBO2
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBDS
Represents the name of the batch backout data set that IMS Program Restart Facility will dynamically allocate to contain control information about logs that will be used by the current job.

System action

The job continues to run.

User response

None. This message is informational.

IRT117E ***type*** **DSNAME NOT VALID -** ***dataset name***

Explanation

The data set name that was generated for a log data set is not valid. The *type* parameter can be any of the following values:

LOG1
The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if JCL allocation is not being used.

LOG2
The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if JCL allocation is not being used.

LTR1
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the NEWRDER DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBO00).

LTR2
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the NEWRDER2 DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBO00).

BBO1
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBO2
Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBDS
Represents the name of the batch backout data set that IMS Program Restart Facility will dynamically allocate to contain control information about logs that will be used by the current job.

System action

The job ends abnormally with a U3630 completion code and a 00000299 reason code.

User response

Correct the specification for the erroneous log data set name mask.

IRT118E **FATAL ERRORS FOUND DURING PARM PROCESSING**

Explanation

Significant errors were found during parameter and option processing phase.

System action

The job ends abnormally with a U3630 completion and a reason code of 00000299.

User response

Check the error messages that precede this message and make the necessary corrections.

IRT125E UNEXPECTED RETURN CODE FROM DFSULTR0

Explanation

The log recovery utility (DFSULTR0) completed with an unexpected return code.

System action

The job step ends abnormally with a U3630 completion code and a reason code of 00000500.

User response

Check the error messages that precede this message for the return code issued by DFSULTR0 and any other messages. Consult *IMS System Utilities* to determine the next course of action.

IRT131E DATASET NAME CANNOT BE GREATER THAN 44 CHARACTERS

Explanation

A log data set name that was generated by the corresponding data set name mask is invalid.

System action

The job ends abnormally with a U3630 completion code and a 00000299 reason code.

User response

Correct the specification for the invalid log data set name mask.

IRT133I AUTOBKO FOR SUBSYSTEM *xxxxxxxx* IS BEING ATTEMPTED

Explanation

IMS Program Restart Facility attempts to perform an automated batch backout either because a prior execution of the job failed and did not successfully backout, or because the job has failed and automatic batch backout processing is being attempted following an abend.

System action

IMS Program Restart Facility attempts automatic batch backout for this failed job.

User response

None. This message is informational.

IRT134E AUTOBKO INFO INDOUBT FOR SUBSYSTEM

Explanation

The information stored in the batch backout data set does not match the attributes of the job that is running.

System action

IMS Program Restart Facility causes the job step to abend with a U3630 completion code and a 00000400 reason code.

User response

Correct the JCL for the job and rerun the job as required.

IRT136E FAILED SUBSYSTEM *xxxxxxxx* ABEND/RERUN PSB CONFLICT

Explanation

The information that is stored in the batch backout control data set for the PSB that was used at the time of the original abend does not match the PSB of the currently running job. See accompanying message IRT137E for more information.

System action

IMS Program Restart Facility causes the job step to abend with a U3630 completion code and a 00000410 reason code.

User response

Correct the JCL for the job being rerun as required.

IRT137E ABENDPSB=*xxxxxxxx* RERUNPSB=*yyyyyyyy* ** NOT A MATCH

Explanation

The information stored in the batch backout control data set for the PSB that was in use at the time of the

original abend does not match the PSB of the job that is currently running.

System action

IMS Program Restart Facility will cause the job step to abend with a U3630 completion code and a 00000410 reason code.

User response

Correct the JCL for the job being rerun as required.

IRT144I AUTOBKO FOR SUBSYSTEM *xxxxxxxx* COMPLETE

Explanation

IMS Program Restart Facility has completed all automatic batch backout processing for this job.

System action

The job step terminates with either the original abend completion code of the failed job, a U3630 abend and a 00000507 reason code, or both.

User response

Prepare the job to be resubmitted. If an extended restart is indicated, the value specified for CKPTID must match the CHKPT ID specified in the DFS395I BACKOUT COMPLETE message or in the DFS888I NO DATABASE RECORDS READ message, which is displayed by the batch backout utility.

IRT145W RERUN/XRST MAY BE PENDING FOR JOB *xxxxxxxx*

Explanation

IMS Program Restart Facility has completed all automatic batch backout processing for this job. This message might be displayed with message IRT144I.

System action

The job step will terminate with a U3630 abend and reason code 00000507.

User response

Prepare the job to be resubmitted. If an extended restart is indicated, the value specified for CKPTID must match the CHKPT ID specified in the DFS395I BACKOUT COMPLETE message or the DFS888I NO DATA BASE RECORDS READ message, which is displayed by the batch backout utility.

IRT146E UNRESOLVED SYMBOLIC IN DSN *xxxxxxxx*

Explanation

One of the log data set names that was generated for a log data set name using mask *xxxxxxxx* contains an unresolved symbolic parameter.

System action

The job ends abnormally with a U3630 completion code and a 00000299 reason code.

User response

Correct the log data set name mask and resubmit the job.

IRT147I BATCH BACKOUT INFORMATION SAVED.

Explanation

The application program ended abnormally and AUTOBKO=NO was specified.

System action

No backout is performed. However, the backout information is saved in the BBDS.

User response

When you rerun the job, the BBDS information is used to backout before the rerun/restart of the application. You might also want to modify the backout information by using the IMS Program Restart Facility ISPF dialog.

IRT148I DUAL LOGGING REQUESTED

Explanation

Dual logging is detected if 1) the IEFRDER2 option is specified in the JCL, or 2) if the IEFRDER2 option is specified in the control cards (for example, IEFRDER2=DYNALLOC).

System action

Both IEFRDER2 and IEFRDER options can be allocated dynamically depending on the options value.

User response

None. However, in the exception where IEFRDER2=JCL is specified, IEFRDER2 must be in the JCL.

If IEFRDER2=JCL is specified and no IEFRDER2 is in the JCL, single logging is in effect.

IRT149W INVALID LOG DSNAME FOR DDN IEFRDER (or IEFRDER2)

Explanation

An invalid data set name was specified for one or more log data sets. Invalid data set names are:

NULLFILE
Temporary data set name
JES file (for example, SYSOUT=*)
DD DUMMY

System action

If IEFRDER=DYNALLOC was specified, the current allocation is deallocated and a new allocation is made using the options definition.

User response

No action is necessary. However, it is recommended that you clean up the JCL for this job.

IRT150E UNEXPECTED RETURN CODE FROM DFSBBO00

Explanation

The batch backout utility (DFSBBO00) completed with an unexpected return code.

System action

The job step ends abnormally with a U3630 completion code and 00000507 reason code.

User response

Review preceding messages for the return code issued by DFSBBO00 and for any other messages that relate to the cause of the failure. Consult *IMS System Utilities* to determine the next course of action.

IRT151W USING UNCATALOGED VOLSERS FOR DSN=*ddddddddd*

Explanation

The IMS Program Restart Facility is using a data set that is not cataloged for a log volume.

System action

None.

User response

Do not use the CATDS option with DBRC or it will cause failures when using the log data set.

IRT152W BYPASS LOGGING OPTION HAS BEEN SELECTED

Explanation

The BYPLOGR option has been selected for this job.

System action

The job step will continue to run, and if all conditions for use of the bypass logging option are met, no logging will be performed.

User response

None.

IRT153E BYPASS LOGGING OPTION NOT ALLOWED WITH IRLM=Y

Explanation

The BYPLOGR option was selected for this job, but IRLM=Y was also specified.

System action

The job step will continue to run, but logging will still occur.

User response

None.

IRT154I BYPASS LOGGING IN EFFECT

Explanation

The BYPLOGR option was selected for this job.

System action

The job step will continue to run and no logging will occur.

User response

None. This message is informational.

IRT155I LIST.LOG OPEN PROCESSING FOR SSID=*ssssssss*

Explanation

The IRTUSTP0 utility has initiated processing to list the open logs for the subsystem ID *ssssssss*.

System action

None.

User response

None. This message is informational.

IRT156I DSPURX00 LINK SUCCESSFUL

Explanation

The IRTUSTP0 utility has completed a DBRC request to list the open logs for the subsystem that was specified in message IRT155I.

System action

None.

User response

None. This message is informational.

IRT157E DSPURX00 LINK ERROR - RC=*nnnn*

Explanation

The IRTUSTP0 utility called the DBRC utility DSPURX00 to list the open logs, but the utility received an unexpected return code, as shown in *nnnn*.

System action

The IRTUSTP0 utility continues to process the logs that were successfully listed by DBRC.

User response

The RECON data sets might contain a log record that causes DBRC to return the error return code. Run a DBRC batch utility on the LIST.LOG OPEN command to identify the reason for the unexpected return code.

IRT158W SVC99 VERB=*vv* DD=*dddddddd* RC=*rc* RSN=*reason*

Explanation

The IRTUSTP0 utility received an unexpected return code from an MVS dynamic allocation. The dynamic allocation verb *vv*, DD name *dddddddd*, return code *rc*, and reason code *reason* are displayed in the message text.

System action

If the error occurred while attempting to allocate a required data set, IRTUSTP0 ends abnormally with a U3630 abend code and reason code 103. If the error occurred while attempting to deallocate a data set, IRTUSTP0 attempts to continue.

User response

Investigate the dynamic allocation return code and reason code to determine the reason for the error.

IRT159E DFSULTR0 DUP MODE ERROR(S) FOUND

Explanation

IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to perform duplicate processing.

System action

The batch job ends abnormally.

User response

Try to close the log by using the standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT160W DFSULTR0 REP MODE MAY BE REQUIRED

Explanation

IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to perform duplicate processing.

System action

The batch job ends abnormally.

User response

Try closing the log by using the standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT161W DFSULTR0 MAY BE REQUIRED

Explanation

IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to close the log.

System action

The batch job ends abnormally.

User response

Try closing the log by using the standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT163E ERROR ALLOCATING SYSIN

Explanation

The IRTUSTP0 utility attempted to allocate a SYSIN data set that is used to call DBRC, but the allocation failed.

System action

The batch job ends abnormally with abend code 3630 and reason code 103.

User response

Review the MVS syslog for the job error messages that occurred before the IRT163E message.

IRT164E ERROR ALLOCATING SYSPRINT

Explanation

The IRTUSTP0 utility attempted to allocate a SYSPRINT data set that is used in calling DBRC, but the allocation failed.

System action

The batch job ends abnormally with abend code 3630 and reason code 103.

User response

Review the MVS syslog for the job for error messages that occurred before the IRT164E message.

IRT165E ERROR ALLOCATING BCMPRINT

Explanation

The IRTUSTP0 utility attempted to allocate DD BCMPRINT, but the allocation failed.

System action

The batch job ends abnormally with abend code 3630 and reason code 103.

User response

Review the MVS syslog for the job error messages that occurred before the IRT165E message.

IRT166E ERROR ALLOCATING BCMPUNCH

Explanation

The IRTUSTP0 utility attempted to allocate DD BCMPUNCH, but the allocation failed.

System action

The batch job ends abnormally with abend code 3630 and reason code 103.

User response

Review the MVS syslog for the job error messages that occurred before the IRT166E message.

IRT167E FATAL ERROR HAS OCCURRED

Explanation

The IRTUSTP0 utility encountered a fatal error.

System action

The batch job ends abnormally with abend code 3630 and reason code 103.

User response

Review the MVS syslog for the job error messages that occurred before the IRT167E message.

IRT170I LOG BLOCK COUNT =*nnnnnnnn*

Explanation

The bypass logging option was in use for this job. The number *nnnnnnnn* of blocks that were bypassed by this feature is shown.

System action

None.

User response

None. This message is informational.

IRT171E UNABLE TO FORCE LOG CLOSE

Explanation

Either IMS Program Restart Facility was unable to read the interim log to determine the block count, or no blocks were written to the interim log.

System action

The job ends abnormally with abend code 3630 and reason code 500.

User response

Review the MVS syslog of this job for additional related error messages about the log close process or log open failures.

IRT172W **IMS RELEASE UNKNOWN – AUTOBKO=YES PROCESSING BYPASSED**

Explanation

IMS Program Restart Facility encountered an unknown release of IMS, causing it to be bypassed, so automated batch backout is unavailable for this job execution.

System action

Automated batch backout processing is performed for this job.

User response

Determine if additional maintenance is required for IMS Program Restart Facility to support the version of IMS that is to run the job.

IRT173W **AUTOBKO PROCESSING BYPASSED - DFSBSCD LOAD FAILED**

Explanation

An MVS LOAD failed for module DFSBSCD.

System action

The job continues without automatic batch backout processing.

User response

Ensure that the IMS RESLIB is included in the STEPLIB concatenation of the job.

IRT174E **BATCH BACKOUT PROCESSING FAILED**

Explanation

An IMS batch DLI job failed and required Batch Backout processing. The Batch Backout processing failed.

System action

The job ends abnormally either with the original abend code or with the abend code specified for the job's IMS Program Restart Facility job entry CMPCBKER specification.

User response

Determine the reason for the Batch Backout failure by searching the job's JESLOG for prior IMS Program Restart Facility or Batch Backout messages.

Correct both the problem that caused the backout to fail and the problem that caused the original abend, and then resubmit the job.

IMS Program Restart Facility retries the Batch Backout processing when the job is restarted.

IRT174I **BATCH BACKOUT PROCESSING COMPLETE**

Explanation

An IMS batch DLI job failed and required Batch Backout processing. The Batch Backout processing completed successfully.

System action

The job ends abnormally either with the original abend code or with the abend code specified for the job's IMS Program Restart Facility job entry CMPCBKOK specification.

User response

Fix the problem that caused the job to abend and resubmit the job.

IRT175I **BACKOUT NOT REQUIRED FOR SUBSYSTEM *jobname***

Explanation

IMS Program Restart Facility determined that a batch backout was required for a job, and performed backout processing. IMS batch backout determined that backout was not required.

System action

The job continues processing.

User response

None. This message is informational.

IRT176W **VSAM BUFFERPOOL RESET REQUEST NAME TOKEN [CREATE | ACCESS] FAILURE. RETURN CODE = 0X*yyyyyyyy***

Explanation

An IMS batch DLI job failed and required Batch Backout processing.

An attempt to create a VSAM buffer pool reset request, or to access a currently-existing request, failed with the provided return code.

System action

The job continues.

User response

Verify that Batch Backout processing worked as expected. If so, no further action is required.

If not, resubmit the job to allow IMS Program Restart Facility to request backout processing independent of the application.

Contact IBM Software Support to report the original failure.

IRT177W **PREVIOUS VSAM BUFFERPOOL RESET REQUEST SET TO NO**

Explanation

An IMS batch DLI job failed and required Batch Backout processing.

IMS Program Restart Facility attempted to create a VSAM buffer pool reset request and discovered a currently-existing request.

This request was set to not reset the VSAM buffer pool.

System action

The job continues.

User response

Verify that Batch Backout processing worked as expected. If so, no further action is required.

If not, resubmit the job to allow IMS Program Restart Facility to request backout processing independent of the application.

Contact IBM Software Support to report the original failure.

IRT178W **UNABLE TO REQUEST VSAM BUFFER POOL RESET**

Explanation

An IMS batch DLI job failed and required Batch Backout processing.

IMS Program Restart Facility attempted to create a VSAM buffer pool reset request and was unable to do so.

System action

The job continues.

User response

Verify that Batch Backout processing worked as expected. If so, no further action is required.

If not, resubmit the job to allow IMS Program Restart Facility to request backout processing independent of the application.

Contact IBM Software Support to report the original failure.

IRT180E **DBRC FAILURE IN IMS LOGGER EXIT. RC= *xxxx***

Explanation

The BYPASS LOGGING option was selected and IMS Program Restart Facility's IMS logger exit failed to mark the temporary log in error.

System action

The job fails with a U4002 abend.

User response

The DBRC output is found as a SYSOUT data set in the job, with the DDNAME IRTDSPPR. Review the DBRC output. If the problem is environmental, fix the problem and restart the job. If the problem is due to a failure of one of the DBRC commands, contact IBM Software Support for assistance.

IRT181E **LOGGER EXIT CANNOT CLOSE BYPASS LOG [IEFRDER | IEFRDER2]**

Explanation

The BYPASS LOGGING option was selected, and IMS Program Restart Facility's IMS logger exit could not close the temporary log.

System action

The logger exit fails with a U4002 abend. IMS Program Restart Facility notes this in message IRT087I and causes the job to fail with a U3667 abend.

User response

Review the job output for system messages detailing the problem. Fix the problem and restart the job. If you cannot fix the problem or the problem re-occurs, contact IBM Software Support for assistance.

IRT182E **LOGGER EXIT BYPASS LOG [ALLOCATION | DEALLOCATION] FAILURE FOR [IEFRDER | IEFRDER2]. S99ERROR=*xxxx*, S99INFO=*yyyy***

Explanation

The BYPASS LOGGING option was selected, and IMS Program Restart Facility's IMS logger exit could not either deallocate the temporary log or allocate the dummy bypass log.

System action

The logger exit fails with a U4002 abend. IMS Program Restart Facility notes this in message IRT087I and causes the job to fail with a U3667 abend.

User response

Review the S99ERROR and S99INFO codes to determine why the failure occurred. Fix the problem and restart the job. If you cannot fix the problem or the problem re-occurs, contact IBM Software Support for assistance.

IRT183E **RDJFCB FAILURE IN IMS LOGGER EXIT. RC=*xxxx***

Explanation

The BYPASS LOGGING option was selected, and IMS Program Restart Facility's IMS logger exit could not find allocation information for the dummy bypass log.

System action

The logger exit fails with a U4002 abend. IMS Program Restart Facility notes this in message IRT087I and causes the job to fail with a U3667 abend.

User response

Contact IBM Software Support for assistance.

IRT184E **LOGGER EXIT CANNOT OPEN DUMMY BYPASS LOG**

Explanation

The BYPASS LOGGING option was selected, and IMS Program Restart Facility's IMS logger exit could not open the dummy bypass log.

System action

The logger exit fails with a U4002 abend. IMS Program Restart Facility notes this in message IRT087I and causes the job to fail with a U3667 abend.

User response

Review the job output for system messages detailing the problem. Fix the problem and restart the job. If you cannot fix the problem or the problem re-occurs, contact IBM Software Support for assistance.

IRT200E **OPTION *keyword* VALUE NOT A VALID VALUE FOR THIS KEYWORD**

Explanation

The value specified for the option *keyword* is invalid.

System action

The job continues processing. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

User response

Review the specification of the option that is specified in the message and correct the value.

IRT201E **OPTION *keyword* INVALID - CAN ONLY BE SPECIFIED AS A GLOBAL OPTION**

Explanation

The option *keyword* cannot be specified in a source other than the global options. If the value was

specified in the IRT$CNTL DD statement or in the CTX data set, it should be removed.

System action

The job continues processing. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

User response

Review the specification of the option and correct or remove the specification.

IRT202E **OPTION *keyword* INVALID - LENGTH OF VALUE EXCEEDS MAX ALLOWED**

Explanation

The option *keyword* has a value that exceeds the maximum allowable value for that keyword.

System action

The job continues processing. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

User response

Review the specification of the option and correct or remove the specification.

IRT203E **OPTION *keyword* VALUE NOT NUMERIC**

Explanation

The option *keyword* has a value that exceeds the maximum allowable value for that keyword.

System action

The job continues processing. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

User response

Review the specification of the option and correct the value.

IRT204W **OPTION *keyword* HAS CHANGED FORMAT - SPECIFY THIS VALUE MANUALLY**

Explanation

The format for specifying the *keyword* option value in IMS Program Restart Facility 2.2 differs from the format for specifying the option value in IMS Program Restart Facility 2.1.

System action

The job continues processing. The value for the *keyword* option is ignored.

User response

Specify the option value in the correct format.

IRT205I **OPTION *keyword* IS NO LONGER SUPPORTED AND IS IGNORED**

Explanation

The option *keyword* is not supported in this version of IMS Program Restart Facility.

System action

The job continues processing. This option is ignored.

User response

Review the specification of this option.

IRT210W **IMSGROUP VALUES SPECIFIED IN THE ISPF INTERFACE CANNOT BE OVERRIDEN**

Explanation

There was an IMSGROUP specification found in the IRT$CNTL input or in the CTX data set. IMS Program Restart Facility only allows IMS group specifications in the ISPF generated options modules.

System action

The job continues processing. The specification is ignored.

User response

Review and remove the specification of the IMSGROUP statement.

IRT211E **ALLOCATION FAILED ERRCODE=*code* DSN=*dsn***

Explanation

IMS Program Restart Facility attempted to allocate the CTX data set associated with the job execution, but the allocation failed.

System action

The job ends abnormally with a U3622 abend code.

User response

Review the dynamic allocation error code in the message. If a TSO user is editing job options using the job administration panels in the IMS Program Restart Facility ISPF interface, the allocation can fail because the data set is in use.

IRT212E CTX DATA SET NOT AVAILABLE

Explanation

IMS Program Restart Facility attempted to allocate the CTX data set associated with the job execution a total of eight times (once every two minutes), but the data set was still in use after the eighth attempt.

System action

The job ends abnormally with a U3622 abend code.

User response

If a TSO user is editing job options using the job administration panels in the IMS Program Restart Facility ISPF interface, the data set will not be available to be allocated to the job.

IRT221E SWAREQ FAILED RC=*rc*

Explanation

An MVS SWAREQ macro execution returned with unexpected return code *rc*.

System action

The job ends abnormally with a U4001 abend code.

User response

Review the return code, and contact IBM Software Support for assistance.

IRT222E OPEN FAILED FOR *ddname* DATA SET RC=*rc*

Explanation

An MVS OPEN attempt failed for DD name *ddname*.

System action

The job ends abnormally with a U4001 abend code.

User response

Review the JESLOG of the job for additional error messages, and contact IBM Software Support for assistance.

IRT223E CLOSE FAILED FOR *ddname* DATA SET RC=*rc*

Explanation

An MVS CLOSE attempt failed for DD name *ddname*.

System action

The job ends abnormally with a U4001 abend code.

User response

Review the JESLOG of the job for additional error messages, and contact IBM Software Support for assistance.

IRT224E UNEXPECTED RECORD TYPE FOUND IN AUDIT LOG – *code*

Explanation

An invalid audit record was encountered while reading the audit log. The *code* parameter is a numeric code that identifies where the error was found, and why.

System action

The job ends abnormally with a U4001 abend code.

User response

Contact IBM Software Support for assistance. A copy of the audit log data set will probably be requested.

IRT225E UNEXPECTED *rec-type* RECORD SUBTYPE IN AUDIT LOG – *code*

Explanation

An invalid audit record was encountered while reading the audit log. The *rec-type* parameter is the internal record type. The *code* parameter is a numeric code that identifies where the error was found, and why.

System action

The job ends abnormally with a U4001 abend code.

User response

Contact IBM Software Support for assistance. A copy of the audit log data set will probably be requested.

IRT226E IRTAUDIT DD NOT FOUND

Explanation

The IRTAUDIT DD statement was not found in the JCL of the IRTAUDT batch utility.

System action

The job ends abnormally with a U4001 abend code.

User response

Ensure that the IRTAUDIT DD statement is present in the JCL of the batch job, and that it refers to the audit log data set.

IRT231I PROCESSING INPUT FROM IRT$BBDS

Explanation

A batch backout data set was found for this job. IMS Program Restart Facility will read the statements in the data set to determine if any backout processes are required.

System action

The job continues processing.

User response

The statements that were read from the BBDS data set are listed in the subsequent IRT232I messages.

IRT232I *bbds-statement*

Explanation

A batch backout data set was found for this job. IMS Program Restart Facility reads the statements in the data set to determine if any backout processes are required. The statement *bbds-statement* is one of the statements that IMS Program Restart Facility read.

System action

The job continues processing.

User response

None. This message is informational.

IRT236E VOLSER OVER 6 CHARS DETECTED IN BBDS

Explanation

A BBDS input statement listed a log volume serial number that exceeds six characters.

System action

The job terminates with a U3628 abend.

User response

Contact IBM Software Support for assistance. Provide a copy of the BBDS data set for analysis, and retain the output from the original abending job.

IRT237E LOG DSN SYMBOLIC SUBSTITUTION FAILED

Explanation

The batch backout process attempted to perform symbolic substitution for one of the IMS log data set names, as specified in the log data set name options. The symbolic substitution process encountered an error.

System action

The job terminates with a U3628 abend.

User response

Review the job output for any other messages that might indicate the cause of the failure. Also, review the log data set names that were specified in the log options.

IRT238E BBDS DDNAME NOT FOUND

Explanation

The BBDS data set processing module did not find the DD name of the BBDS data set.

System action

The job terminates with a U3628 abend.

User response

Review the job output for any other messages that might indicate the cause of the failure, such as a dynamic allocation failure.

IRT239W BBDS OPTION UNKNOWN: *keyword*

Explanation

The BBDS data set contains a statement with an invalid keyword. The option *keyword* is listed in the message.

System action

The invalid statement is ignored, and processing continues.

User response

The batch backout data set (BBDS), which begins with *BBDSHLQ* (specified in Global Options), might not have been created properly by IMS Program Restart Facility.

Check the BBDS specifications in the target job. A batch backout data set is created with the following naming convention:

BBDSHLQ.*jobname*.*imsid*.*psbname*.BK0

If the BBDS has not been created properly, delete it, and run a batch backout manually. If these actions do not resolve the problem, contact IBM Software Support.

IRT241E **INVALID *logtype* DSN VALUE – *dsn***

Explanation

The batch backout process attempted to perform symbolic substitution for *dsn*, where *dsn* is an IMS log data set name, as specified in the log data set name options. The symbolic substitution process encountered an error. The *logtype* is the four-character log type (LOG1, LTR2, BBO2, BYP).

System action

The job terminates with a U3628 abend.

User response

Review the job output for any other messages that might indicate the cause of the failure. Also, review the log data set names that are specified in the log options.

IRT250E **LOAD FAILED FOR *modname* - BYPCHKP PROCESSING WILL NOT BE AVAILABLE**

Explanation

An MVS LOAD failed for module *modname*.

System action

Bypass checkpoint processing is disabled for this job step.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT251E **UNABLE TO ISSUE ERROR MESSAGE DUE TO ERROR LOCATING CONTROL BLOCK**

Explanation

The IMS Program Restart Facility message routing routine was unable to locate the IRTHKIB module in storage.

System action

A message that was going to be written to the job output is not issued.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT252E **IRTMSG RECEIVED AN INVALID REQUEST BYTE**

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message that was going to be written to the job output is not issued.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT253E **IRTMSG FILL REQUEST WITH MSG IN PROGRESS**

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message that was going to be written to the job output is not issued.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT254E IRTMSG RECEIVED AN INVALID WTO FLAG BYTE

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message that was going to be written to the job output is not issued.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT255E IRTMSG SRCH REQUEST WITH NO MSG IN PROGRESS

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message that was going to be written to the job output is not issued.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT256E IRTMSG EXEC REQUEST WITH NO MSG IN PROGRESS

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message to be routed to job output is ignored.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT257E IRTMSG INPUT REQUEST WITH MSG IN PROGRESS

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message to be routed to job output is ignored.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT258E IRTMSG SKIP REQUEST WITH MSG IN PROGRESS

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

System action

A message to be routed to job output is ignored.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT259E DYNAMIC ALLOCATION FAILED FOR IRTPRINT ERROR=*code* INFO=*code*

Explanation

The IMS Program Restart Facility message routing routine attempted to dynamically allocate the IRTPRINT data set to the SYSOUT class that is specified in the global options. The request failed.

System action

IMS Program Restart Facility messages will not be written to the IRTPRINT data set.

User response

Review the job output for any additional messages that might indicate the reason for the error. Also, review the SYSOUT specification in the global options to ensure that a valid SYSOUT class is specified.

IRT260E OPEN FAILED FOR *ddname*

Explanation

An MVS OPEN was attempted for DD name *ddname*, but the request failed.

System action

IMS Program Restart Facility messages will not be written to the indicated data set.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT261E IRTMSG LENGTH OF MESSAGE EXCEEDS 126

Explanation

The IMS Program Restart Facility message routing routine was invoked with an invalid message length.

System action

The message is ignored.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT262I PRF OPTIONS IN USE FOR THIS EXECUTION:

Explanation

A list of all the options used for the job is displayed after this message.

System action

Job processing continues.

User response

None. This message is informational.

IRT263I ABRETRY=NO - NO ABEND RETRY TABLE ENTRIES ARE ACTIVE

Explanation

No abend retry table entries are printed because ABRETRY=NO is specified.

System action

Job processing continues.

User response

None. This message is informational.

IRT264I NO ABEND RETRY TABLE ENTRIES ARE ACTIVE

Explanation

No abend retry table entries are printed because no active abend retry entries are active.

System action

Job processing continues.

User response

None. This message is informational.

IRT265E SWAREQ FAILED RC=*rc*

Explanation

An MVS SWAREQ macro execution returned with the unexpected return code *rc*.

System action

The job ends abnormally with a U4001 abend code.

User response

Review the return code, and contact IBM Software Support for assistance.

IRT266E OPEN FAILED FOR IRTPRINT DATA SET RC=*rc*

Explanation

An MVS OPEN request for the IRTPRINT data set failed with return code *rc*.

System action

The job terminates with a U4001 abend code.

User response

Check that the IRTPRINT data set is properly specified in the JCL of the job. Also, review the job log for messages related to this error.

IRT267E CLOSE FAILED FOR IRTPRINT DATA SET RC=*rc*

Explanation

An MVS CLOSE request for the IRTPRINT data set failed with return code *rc*.

System action

The job terminates with a U4001 abend code.

User response

Check that the IRTPRINT data set is properly specified in the JCL of the job. Also, review the job log for messages related to this error.

IRT268E **VALIDATION OF JOB OPTIONS ENTRY FAILED**

Explanation

An error occurred when validating a job options entry in the IRTOPT data set.

System action

The job terminates with a U4001 abend code.

User response

Contact IBM Software Support. Provide a copy of the IRTOPT data set and the job output.

IRT269E **ERROR LOADING OPTIONS MODULES**

Explanation

The options list module attempted to load modules from the IRTOPT data set, but MVS LOAD experienced an error.

System action

The job terminates with a U4001 abend code.

User response

Contact IBM Software Support. Provide a copy of the IRTOPT data set and the job output.

IRT270E **VALIDATION OF HKIB CONTROL BLOCK FAILED IN MODULE IRTOPTM**

Explanation

IMS Program Restart Facility attempted to locate module IRTHKIB, but the module was not found in the CDE list.

System action

The job step ends abnormally with a U4000 code.

User response

Contact IBM Software Support for assistance.

IRT271E **VALIDATION OF *type* CONTROL BLOCK FAILED IN MODULE IRTOPTR**

Explanation

IMS Program Restart Facility failed to validate one of its main control blocks.

System action

The job step ends abnormally with a U4000 code.

User response

Contact IBM Software Support for assistance.

IRT272E **IRTOPT DSN NOT PRESENT IN MODULE IRTOPTR**

Explanation

The data set name of the IRTOPT data set was not populated as it should have been when module IRTOPTR was called.

System action

The job step ends abnormally with a U4000 code.

User response

Review and correct the IRTOPT data set specified in the ISPF Primary Option Menu panel, and retry the request. If these actions do not resolve the problem, contact IBM Software Support.

IRT273E **LOAD FAILED FOR MODULE *modname* ABEND *code* IN MODULE IRTOPTR**

Explanation

Module IRTOPTR attempted to load the *modname* IRTOPT member, but the load failed. The abend code *code* is associated with the load failure.

System action

The job step ends abnormally with a U4000 code.

User response

Review the abend code and any other messages in the job log that might be related to the load failure.

IRT274E **MODULE IRT#OPT IS INVALID - INVALID LENGTH/AUTH CODE**

Explanation

The IRT#OPT module created during the IMS Program Restart Facility installation process is invalid.

System action

The job step ends abnormally with a U4000 code.

User response

Review the IRT#OPT module, and recreate the IRT#OPT load module that defines the IRTOPT data set name.

IRT275E **MODULE IRT#OPT IS INVALID - DSNAME NOT PRESENT IN MODULE**

Explanation

The IRT#OPT module created during the IMS Program Restart Facility installation process is invalid.

System action

The job step ends abnormally with a U4000 code.

User response

Review the IRT#OPT module, and recreate the IRT#OPT load module that defines the IRTOPT data set name.

IRT276W **DELETE FOR MODULE *modname* FAILED RC=*rc***

Explanation

MVS DELETE macro *modname* returned with unexpected return code *rc*.

System action

Job processing continues.

User response

Review the job output for messages that might be associated with the error, and contact IBM Software Support for assistance.

IRT277E **DYNAMIC ALLOCATION FAILED RC=*rc* ERR CODE=*code* INFO=*code* DSN=*dsn***

Explanation

Dynamic allocation failed for the data set name *dsn*. The return code *rc* and error code *code* can be used to identify the reason for the failure.

System action

The job step ends abnormally with a U4000 completion code.

User response

Review the job output for messages that might be associated with the error. Also, review the error code associated with the failure to identify the reason for the error.

IRT278E **OPEN FAILED FOR IRTOPT DATA SET RC=*rc***

Explanation

An MVS OPEN request for the IRTOPT data set failed with return code *rc*.

System action

The job step ends abnormally with a U4000 completion code.

User response

Review the job output for messages that might be associated with the error.

IRT279E **CLOSE FAILED FOR IRTOPT DATA SET RC=*rc***

Explanation

An MVS CLOSE request for the IRTOPT data set failed with return code *rc*.

System action

Job processing continues.

User response

Review the job output for messages that might be associated with the error.

IRT280E **DYNAMIC UNALLOCATION FAILED RC=*rc* ERR CODE=*errorcode* INFO=*code* DDN=*ddname***

Explanation

Dynamic deallocation failed for the DD name *ddname*. The return code *rc* and error code *errorcode* can be used to identify the reason for the failure.

System action

Job processing continues.

User response

Review the job output for messages that might be associated with the error. Also, review the error code associated with the failure to identify the reason for the error.

IRT282E **MODULE *modname* IS INVALID (*reason*)**

Explanation

The *modname* member of the IRTOPT data set was loaded successfully, but the module failed validation for the reason *reason*.

System action

The job terminates with a U4000 abend code.

User response

Review the job output for messages that might be associated with the error. Make a backup of the IRTOPT data set that contains the invalid module. Consider restoring the IRTOPT data set from a backup that did not experience this error.

IRT283E **INVALID ENTRY VECTOR DETECTED IN MODULE IRTOPTR**

Explanation

Module IRTOPTR was called by another IMS Program Restart Facility program before the proper parameters were set.

System action

The job terminates with a U4000 abend code.

User response

Retain a copy of the job output and contact IBM Software Support for assistance.

IRT291E **VALIDATION OF *type* CONTROL BLOCK FAILED IN MODULE IRTOPTW**

Explanation

IMS Program Restart Facility failed to validate one of its main control blocks.

System action

The job terminates with a U4000 abend code.

User response

Retain a copy of the job output and contact IBM Software Support for assistance.

IRT292E **DYNAMIC ALLOCATION FAILED RC=*rc* ERR CODE=*code* INFO=*code* DSN=*dsn***

Explanation

Dynamic allocation failed for data set name *dsn*. The return code *rc* and error code *code* can be used to identify the reason for the failure.

System action

The job step ends abnormally with a U4000 code.

User response

Review the job output for messages that might be associated with the error. Also, review the error code associated with the failure to identify the reason for the error.

IRT294E **RESERVE FAILED FOR IRTOPT DATA SET RC=*rc***

Explanation

An MVS RESERVE request returned with the unexpected return code *rc*.

System action

The job step ends abnormally with a U4000 completion code.

User response

Review the job output for messages that might be associated with the error. Also, review the return code that is associated with the failure to identify the reason for the error.

IRT295I **WAITING FOR ACCESS TO UPDATE THE IRTOPT DATA SET**

Explanation

An MVS RESERVE request indicates that another user is using the IRTOPT data set or the volume where the IRTOPT data set is allocated.

System action

IMS Program Restart Facility waits for access to the IRTOPT data set.

User response

None. This message is informational.

IRT296E **OPEN FAILED FOR *ddname* DATA SET RC=*rc***

Explanation

An MVS OPEN request returned with an unexpected return code indicating that the OPEN request failed. The DD name *ddname* and return code *rc* are indicated in the message.

System action

The job step ends abnormally with a U4000 code.

User response

Review the job output for messages that might be associated with the error.

IRT297E **BLOCK SIZE OF IRTOPT DATA SET LESS THAN 6144**

Explanation

The block size of the IRTOPT data set being written is less than 6144. The minimum block size for IRTOPT is 6144.

System action

The job step ends abnormally with a U4000 code.

User response

Reallocate the IRTOPT data set with a block size of at least 6144.

IRT298E **OPTIONS MODULE SIZE TO BE WRITTEN IS INVALID**

Explanation

The module that writes updated IRTOPT options modules has detected an error in the load module passed to it to be written.

System action

The job step ends abnormally with a U4000 code.

User response

Retain the job output and contact IBM Software Support.

IRT299E **NOTE FAILED RC=*rc***

Explanation

An MVS NOTE request returned with an unexpected return code.

System action

The job step ends abnormally with a U4000 completion code.

User response

Review the job output for messages that might be associated with the error.

IRT300E **STOW FAILED RC=*rc* REASON CODE=*reason***

Explanation

An MVS STOW request returned with an unexpected return code. The return code *rc* and reason code *reason* are displayed in the message.

System action

The job step ends abnormally with a U4000 completion code.

User response

Review the job output for messages that might be associated with the error.

IRT301W **CLOSE FAILED FOR *ddname* DATA SET RC=*rc***

Explanation

An MVS CLOSE request returned with an unexpected return code for DD name *ddname*.

System action

The job continues processing.

User response

Review the job output for messages that might be associated with the error.

IRT302W DEQUEUE FAILED FOR *ddname* RC=*rc*

Explanation

An MVS DEQ request returned with the unexpected return code *rc* for DD name *ddname*.

System action

The job continues processing.

User response

Review the job output for messages that might be associated with the error.

IRT303E UNABLE TO LOCATE TIOT ENTRY FOR DDNAME *ddname*

Explanation

Program Restart Facility was unable to locate the TIOT entry for the DDNAME indicated in the message.

System action

The job terminates with a U4000 abend code.

User response

Contact IBM Software Support for assistance.

IRT304S SWAREQ FAILED RC=*rc*

Explanation

An MVS SWAREQ request returned with unexpected return code *rc*.

System action

The job terminates with a U4000 abend code.

User response

Review the job output for messages that might be associated with the error.

IRT307E INVALID AUDIT RECORD ENCOUNTERED DURING LOGGING

Explanation

While writing queued audit records, an invalid audit record was encountered.

System action

The job terminates with a U4000 abend code.

User response

Obtain a dump for the error condition, and contact IBM Software Support for assistance.

IRT308E ENQUEUE FAILED FOR IRTAUDIT RC=*rc*

Explanation

An MVS ENQ request to enqueue the IRTAUDIT data set returned with unexpected return code *rc*.

System action

The job terminates with a U4000 abend code.

User response

Review the job output for messages that might be associated with the error.

IRT309W DYNAMIC UNALLOCATION FAILED RC=*rc* ERR CODE=*code* INFO=*code* DDN=*ddname* DS=*dsn*

Explanation

An MVS dynamic deallocate request failed for DD name *ddname* and the listed data set name *dsn*.

System action

The job continues processing.

User response

Review the job output for messages that might be associated with the error. Report the error to IBM Software Support.

IRT312E ERROR LOADING JOB OPTIONS

Explanation

An error occurred while attempting to load the IMS Program Restart Facility options modules.

System action

The job terminates with a U3622 abend.

User response

Review the job output for messages that might be associated with the error.

IRT315I PRF LOADED FROM APF AUTHORIZED LIBRARY

Explanation

After reviewing the execution environment, IMS Program Restart Facility has determined that it is being loaded from an APF Authorized Library.

Examples are JOBLIB, STEPLIB, MVS Link List, and Link Pack Area.

System action

Job processing continues.

User response

None. This message is informational.

IRT316I PRF INACTIVATED FOR THIS JOB – *reason*

Explanation

After reviewing the execution environment and job options, IMS Program Restart Facility has determined that it should be inactive while this job runs.

As indicated by the *reason* parameter, IMS Program Restart Facility is inactive for any of the following reasons:

NAME/TOKEN ENTRY PRESENT
IMS Program Restart Facility allows a user program to define an MVS name or token entry to exclude the job from IMS Program Restart Facility processing. The name entry "ZSSLIMS_IRT$EXCL" was found for this job, so the is excluded from IMS Program Restart Facility processing.

USER EXIT IRTUXIN0 REQUEST
User exit IRTUXIN0 was found and called, and it returned a nonzero return code, which indicates that IMS Program Restart Facility should be deactivated.

MBR=*program-name* IS AUTO-EXCLUDED
Several OEM and IMS products call the IMS Region Controller (DFSRRC00) in a way that IMS Program Restart Facility does not support. This can cause abends in the IMS or OEM product.

When IMS Program Restart Facility detects that it is being called by one of these programs, it deactivates itself to protect you from abends and other problems that can occur in this environment.

The current list of programs that are known to have issues, for which IMS Program Restart Facility deactivates itself, are:

- IXPBATDV (Compuware File-AID for IMS)
- DFS3UACB (IBM IMS ACB Generation and Catalog Populate utility)
- DFS3CCIO (IBM IMS Catalog Copy Import utility)
- DFS3PU00 (IBM IMS Catalog Populate utility)
- DFS3ID00 (IBM IMS Data Definition utility)

EXCLUSION DDNAME FOUND
The job had a DD name that is defined in the DD name table of the IRTOPT options library. The DD name that was found indicates that IMS Program Restart Facility should be deactivated.

PGM=DFSBBO00
IMS Program Restart Facility deactivates itself when the IMS batch backout utility is run.

EXCLUDE=YES
The job options specified that the job should be excluded from IMS Program Restart Facility processing.

REGJBP=NO
The job has a region type of JBP, but the IMS Program Restart Facility option REGJBP=NO, meaning that JBP jobs should be excluded.

System action

The job continues processing without IMS Program Restart Facility.

User response

None. This message is informational.

IRT317I IMS GROUP IN USE FOR THIS EXECUTION: *name*

Explanation

The IMS Program Restart Facility IMS group definition *name* was found and will be used for this job execution. This message is followed by message IRT318, which shows the actual IMSIDs that are included in this group definition.

System action

The job continues processing.

User response

None. This message is informational.

IRT318I *imsid-list*

Explanation

An IMS Program Restart Facility IMS group definition was found and will be used for this job execution. This message displays the IMSIDs that are included for the group name that is shown in message IRT317I.

System action

The job continues processing.

User response

None. This message is informational.

IRT320I OPTIONS IN USE: AUTOXRST=*value*

Explanation

An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

System action

The job continues processing.

User response

None. This message is informational.

IRT321I OPTIONS IN USE: TRACK=*value*

Explanation

An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

System action

The job continues processing.

User response

None. This message is informational.

IRT330I OPTIONS IN USE: AUTOBKO=*value*

Explanation

An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

System action

The job continues processing.

User response

None. This message is informational.

IRT331I OPTIONS IN USE: BYPLOGR=*value*

Explanation

An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

System action

The job continues processing.

User response

None. This message is informational.

IRT332I OPTIONS IN USE: NOLOGRO=*value*

Explanation

An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

System action

The job continues processing.

User response

None. This message is informational.

IRT341E ABTABLE *name* REQUESTED FOR THIS JOB WAS NOT FOUND

Explanation

IMS Program Restart Facility options for this job requested the specific abend retry table name *name*. However, there was no abend retry table with that name defined in the IMS Program Restart Facility options.

System action

The job continues processing with abend retry disabled.

User response

Review the ABTABLE name that was selected for this job, and either correct the ABTABLE name or create an abend retry table with the proper name.

IRT342I PROCESSING INPUT FROM *source*

Explanation

IMS Program Restart Facility reads option overrides from several sources. The records read from these sources are shown in the IRTPRINT output if IRTPRINT is enabled. The *source* in the message will be one of the following values:

BCM$CNTL
The BCM$CNTL DD statement, which is available for former Batch Backout Manager customers who have not converted to using DD name IRT$CNTL.

IRT$CNTL
The IRT$CNTL data set can be included in a job to provide overrides to options.

CTX DATA SET
The CTX data set is created when the IMS Program Restart Facility ISPF interface job administration option is used to specify overrides for a specific job execution.

System action

The job continues processing.

User response

None. This message is informational.

IRT343I *source-record*

Explanation

This message displays the input record that was read from the option override source location. This message follows message IRT342I.

System action

The job continues processing.

User response

None. This message is informational.

IRT344E LOAD FAILED FOR MODULE IRTHKIB

Explanation

An MVS LOAD request for module IRTHKIB failed.

System action

The job terminates with a U3628 abend code.

User response

Review the job output for additional messages that might describe the reason for the LOAD failure.

IRT345E ALLOCATION FAILED FOR IRTOPT DATA SET ERROR=*code* INFO=*rcode*

Explanation

Dynamic allocation failed for the IRTOPT options data set. The error code *code* and reason code *rcode* that are associated with the dynamic allocation request are shown in the message.

System action

The job terminates with a U3622 abend code.

User response

Review the IRT#OPT module to determine the data set name that is being allocated for the options data set.

IRT346E ERROR LOADING DDNAME TABLE OPTIONS

Explanation

During IMS Program Restart Facility initialization in an IMS batch job, the DD table is loaded from the IRTOPT data set. This table defines the DD names that cause a job to be excluded from IMS Program Restart Facility processing. An error occurred while loading the DD table.

System action

The job terminates with a U3622 abend code.

User response

Review the job output for additional messages that describe the cause of the error.

IRT348I IMS PROGRAM RESTART FACILITY 2.2 INITIALIZING

Explanation

IMS Program Restart Facility initialization has begun.

System action

The job continues processing.

User response

None. This message is informational.

IRT349I PRF IS ACTIVE FOR THIS JOB EXECUTION

Explanation

Program Restart Facility initialization has determined that it should be active while this job is running.

System action

The job continues processing.

User response

None. This message is informational.

IRT350I AUTOBKO DISABLED BY DDNAME *ddname*

Explanation

IMS Program Restart Facility initialization detected a DD name in the JCL of this job that was also defined in the DD name table to disable AUTOBKO.

System action

The job continues processing, although AUTOBKO is disabled.

User response

None. This message is informational.

IRT351I AUTOBKO DISABLED BY MODULE BCMNOBBM

Explanation

IMS Program Restart Facility initialization detected that module BCMNOBBM was loaded in storage. This module disables AUTOBKO.

System action

The job continues processing, although AUTOBKO is disabled.

User response

None. This message is informational.

IRT352E INVALID OPTION PASSED TO IRTZGETV

Explanation

IMS Program Restart Facility program IRTZGETV was invoked without the appropriate entry parameters being defined.

System action

The job terminates with abend code U4001.

User response

Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT353W ERROR PARSING A CTDS DATA SET NAME (*code*)

Explanation

IMS Program Restart Facility encountered an error condition while parsing and building the checkpoint tracking data sets.

In checkpoint tracking data sets (CTDSs), which begin with *CTDSHLQ* (specified in Global Options), a data set is detected that does not conform to the following naming convention:

CTDSHLQ.jobname.imsgroup.psbname.pgmname.suffix

where *suffix* is either CTA, CTB, CTX, or LOG.

The *code* variable is an internal code that IBM Software Support uses to identify the cause of the error. The *code* value indicates the following:

1
The length of a variable in the naming convention is invalid. For example, *imsgroup* must be 4 characters or less.

2
The suffix of a data set is not CTA, CTB, CTX, or LOG.

System action

The job listing is presented, but it might be missing a job.

User response

Ensure that checkpoint tracking data sets are specified correctly and that *CTDSHLQ* is unique; if not, correct the values and retry the request. If these actions do not resolve the problem, contact IBM Software Support.

IRT354I **IMS PRF JOB RESTART DATA FOR JOB *jobname* DELETED BY USER *userid***

Explanation

A user deleted IMS Program Restart Facility restart data (the CTDS data sets) using the DELETE line command in the ISPF dialog for IMS Program Restart Facility.

System action

The next execution of the job will not be a restart.

User response

None. This message is informational.

IRT355I **IMS PRF JOB RESTART DATA FOR JOB *jobname* UPDATED BY USER *userid***

Explanation

A user that was updating a job status in the IMS Program Restart Facility ISPF interface changed the restart options for job *jobname*. This message is written to the MVS SYSLOG as an audit trail to identify when job restart data was updated.

System action

None. Restart data has been updated for the next execution of an IMS batch job.

User response

None. This message is informational.

IRT356I **IMS PRF JOB RESTART DATA FOR JOB *jobname* EDITED BY USER *userid***

Explanation

A user that was updating a job status in the IMS Program Restart Facility ISPF interface changed the restart options for job *jobname*. This message is written to the MVS SYSLOG as an audit trail to identify when job restart data was updated.

System action

None. Restart data has been updated for the next execution of an IMS batch job.

User response

None. This message is informational.

IRT357E **INVALID AUDIT RECORD ENCOUNTERED IN MODULE name *userid***

Explanation

While processing audit records for the IMS Program Restart Facility audit log, an error was found.

System action

The task ends with a U4000 abend code.

User response

Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT358E **VALIDATION OF JOB OPTIONS ENTRY FAILED *code***

Explanation

While processing IMS Program Restart Facility job option entries, an error was encountered during validation.

System action

The task ends with a U4001 abend code.

User response

Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT359E **UNABLE TO FIND CURRENT ENTRY IN IJS TABLE**

Explanation

While processing IMS Program Restart Facility job option entries, an error occurred while locating the job entry that was being edited.

System action

The task ends with a U4001 abend code.

User response

Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT361E **IRTPUTV WAS PASSED AN INVALID OPTION FLAG**

Explanation

IMS Program Restart Facility program IRTZPUTV was invoked without the appropriate entry parameters being defined.

System action

The job terminates with abend code U4001.

User response

Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT365W RDORETRY DISABLED BECAUSE [ABRETRY=NO | PSB NOT R/O]

Explanation

The RDORETRY=YES specification for the job has been disabled. You have either specified ABRETRY=NO or are using a PSB that is not read-only. IMS Program Restart Facility does not attempt to restart the job should it abend.

Note: When IMS Program Restart Facility activates RDORETRY processing, IMS Program Restart Facility:

- Modifies your DBRC setting to "NO",
- Deallocates the files specified by your IEFRDER/ IEFRDER2 DD statements, and
- Re-allocates them as DD DUMMY.

IMS Program Restart Facility does not perform these tasks when RDORETRY processing is disabled.

System action

The job continues processing with RDORETRY processing disabled.

User response

If you do not require RDORETRY processing, no action is necessary.

If you do not want IMS Program Restart Facility to generate the message, you can modify the job options to specify RDORETRY=NO.

If you require RDORETRY processing, ensure you are using a read-only PSB, and specify ABRETRY=YES as a job option. Additionally, ensure that the job's ABTABLE job option points to the appropriate abend table.

IRT370W CHECKPOINT INSERTION REQUEST IGNORED - *reason*

Explanation

The request to use the checkpoint insertion feature was ignored because of the reason listed in the message. The reason can be one of the following:

- IN= HAS BEEN SPECIFIED
- INCORRECT PARAMETERS
- THE SPECIFIED PCB DOES NOT EXIST
- THE SPECIFIED PCB IS NOT A DBPCB
- PCB MUST BE 2-2500

IMS Program Restart Facility does not support the checkpoint insertion feature in these circumstances.

System action

The job continues running without the checkpoint insertion feature.

User response

Review the reason for the failure, and either correct the problem or do not specify ISRTCHKP=YES for the job.

IRT371W BYPASS AND CHECKPOINT INSERTION REQUESTS IGNORED - MUTUALLY EXCLUSIVE OPTIONS

Explanation

The bypass checkpoint function and the checkpoint insertion function are mutually exclusive. Specify only one of these parameters.

System action

The job continues. The ISRTCHKP and the BYPCHKP specifications are ignored.

User response

Specify either the EXPDT, EXPDL, or RETPD parameter.

IRT372W ICPINTVL MUST BE IN HHMMSSTH FORMAT

Explanation

The ICPINTVL parameter was specified incorrectly.

System action

The job continues processing as if the ICPINTVL parameter was not specified.

User response

Specify an 8-digit number in the form *hhmmssth*, where:

- *hh* represents hours
- *mm* represents minutes
- *ss* represents seconds
- *t* represents tenths of a second
- *h* represents hundredths of a second

Make the necessary correction.

IRT373I **CHECKPOINT INSERTION FEATURE IS ACTIVE**

Explanation

Option ISRTCHKP=YES was specified, enabling the checkpoint insertion feature.

System action

The job step continues to run, inserting some checkpoint calls based on the time interval that was specified by the ICPINTVL parameter.

User response

None. This message is informational.

IRT374I **CALLTYPE(*xx*) POS(*xxxx*) STATUS(*xx*) PCB(*xxxxxxxx*) ICPINTVL(*xxxxxxxx*)**

Explanation

The checkpoint insertion feature is active. This message displays the parameters related to the checkpoint insertion feature that are in effect for this job step.

System action

The job step continues running.

User response

None. This message is informational.

IRT375I **ICSTCLST=*xxxxxxxx***

Explanation

The list of status codes specified by the ICSTCLST parameter that is used by the checkpoint insertion feature is displayed.

System action

The job continues running.

User response

None. This message is informational.

IRT376I **TOTAL CHKP CALLS: *nnnn* INSERTED: *iiii***

Explanation

The checkpoint insertion feature of IMS Program Restart Facility was active during the IMS job step. This message indicates the number of checkpoint calls that were issued during the processing and the number of checkpoint calls that were inserted by the checkpoint insertion feature.

System action

None.

User response

None. This message is informational.

IRT377E **LOAD FAILED FOR *modname* - CHECKPOINT INSERTION FEATURE WILL NOT BE AVAILABLE**

Explanation

An MVS LOAD failed for module *modname*.

System action

The checkpoint insertion feature is disabled for this job step.

User response

Review the job output for additional messages that might indicate the reason for the error.

IRT378E **CHECKPOINT INSERTION FAILED - *text***

Explanation

An error occurred while attempting to insert a checkpoint call. One of the following additional information will be displayed:

- CALLTYPE(*xxxx*) STATUS(*xx*) PCB ADDR(*xxxxxxxx*) PARM ADDR(*xxxxxxxx*)
- SUBROUTINE CALL FAILED

- PRF INSERTED BASIC CHKP BEFORE XRST CALL; REVIEW THE PARAMETERS

System action

The job ends abnormally with a U3631 completion code.

User response

Contact IBM Software Support. Provide all job output for analysis.

IRT551I ***type*** **JOB** ***jobname*** **PGM** ***pgmname*** **PSB** ***psbname*** **REGID=*nnnn*** **DATE=*date*** **TIME=*time***

Explanation

IMS has begun processing the application program *pgmname*. The date and time are displayed in coordinated universal time (UTC) as in the IMS DFS0540I message, which is issued during IMS processing of XRST and symbolic CHKP calls.

System action

The job continues processing.

User response

None. This message is informational.

IRT601I **//IVPSYSIN:** ***options***

Explanation

This message identifies the Install Verification Program (IVP) options that are defined in the IVPSYSIN DD statement.

System action

None.

User response

None. This message is informational.

IRT602I **XRST CKPTID=*id***

Explanation

When an IVP program performs a restart, the restart checkpoint ID that is used for the IMS restart is shown in this message.

System action

None.

User response

None. This message is informational.

IRT603W **DI21PART GN STATUS=*st***

Explanation

An unexpected status code was returned from an IMS GN call for database DI21PART. The status code *st* is shown in the message.

System action

The IVP program ends.

User response

Review the MVS SYSLOG of the job for any IMS error messages that might indicate the reason for the unexpected status code. Messages for BMP jobs might be written to the IMS master terminal instead of the MVS SYSLOG of the job. Also, review the status code shown in the message.

IRT604E **DI21PART REPOSITION GU STATUS=*st***

Explanation

An unexpected status code was returned following a GU call to the DI21PART database, which was preceded by a CHKP call.

System action

The job ends abnormally with a U3618 abend code.

User response

Review the status code and any other IMS error messages that might be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IRT605I **CKPTLAST STATUS=*st***

Explanation

The final checkpoint call issued by the IVP sample program received unexpected status code *st* from IMS.

System action

The job ends.

User response

Review the status code and any other IMS error messages that might be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IRT606I CHKP STATUS=*status*

Explanation

A checkpoint call issued by the IVP sample program received an unexpected status code from IMS.

System action

Processing continues.

User response

Review the status code and any other IMS error messages that might be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IRT651E ABENDCNT= MUST BE NUMERIC

Explanation

The ABENDCNT parameter in the IVPSYSIN data set had a non-numeric specification.

System action

The specification is ignored.

User response

Specify a numeric value for the ABENDCNT parameter.

IRT652E ABENDCMP= MUST BE NUMERIC

Explanation

The ABENDCMP parameter in the IVPSYSIN data set had a non-numeric specification.

System action

The specification is ignored.

User response

Specify a numeric value for the ABENDCMP parameter.

IRT653E ABENDRSN= MUST BE NUMERIC

Explanation

The ABENDRSN parameter in the IVPSYSIN data set had a non-numeric specification.

System action

The specification is ignored.

User response

Specify a numeric value for the ABENDRSN parameter.

IRT654E GBCNT= MUST BE NUMERIC

Explanation

The GBCNT parameter in the IVPSYSIN data set had a non-numeric specification.

System action

The specification is ignored.

User response

Specify a numeric value for the GBCNT parameter.

IRT655E SETRC= MUST BE NUMERIC

Explanation

The SETRC= parameter in the IVPSYSIN data set had a non-numeric specification.

System action

The specification is ignored.

User response

Specify a numeric value for the SETRC parameter.

IRT656I IVPDB1 REPL COMPLETE

Explanation

A REPL call that was issued by the IVP sample program completed.

System action

Processing continues.

User response

None. This message is informational.

IRT657I IVPDB2 REPL COMPLETE

Explanation

A REPL call that was issued by the IVP sample program completed.

User response

None. This message is informational.

System action

Processing continues.

ISPF messages (IRTA, IRTB, IRTC)

This topic describes the ISPF messages that are issued by IMS Program Restart Facility.

There are two types of messages that are issued by IMS Program Restart Facility:

- Runtime messages that are written to the output of a job (IRT)
- ISPF messages that are presented to the user by ISPF (IRTA, IRTB, IRTC)

Use the information in these messages to help you diagnose and solve IMS Program Restart Facility problems.

ISPF message format

ISPF messages are initially presented to the user in the form of a short message in the upper right corner of the screen. You can obtain the long version of the message, which contains additional information about the nature of the error, by pressing the ISPF help key (typically PF1).

IMS Program Restart Facility ISPF messages include the following message categories:

- IRT**A** - ISPF errors
- IRT**B** - operational errors
- IRT**C** - invalid options

The long versions of IMS Program Restart Facility ISPF messages adhere to the following format:

```
IRTannnx
```

where:

IRT
Indicates that the message was issued by IMS Program Restart Facility

annn
Indicates the message identification number where *a* is a letter, and *nnn* is a 3-digit number.

x
Indicates the severity of the message:

A
Indicates that operator intervention is required before processing can continue.

E
Indicates that an error occurred, which might or might not require operator intervention.

I
Indicates that the message is informational only.

W
Indicates that the message is a warning to alert you to a possible error condition.

Each message also includes the following information:

Long message:
The long version of the ISPF message typically contains additional information about the nature of the error.

System action:
The System action section explains what the system will do in response to the event that triggered this message.

User response:
The User response section describes whether a response is necessary, what the appropriate response is, and how the response will affect the system or program.

IRTA000E ISPF VDEFINE Failed

Long message

An ISPF VDEFINE service call in module *xxxxxxxx* failed RC=*xx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA001E ISPF DISPLAY Failed

Long message

An ISPF DISPLAY service call in module *xxxxxxxx* for panel *xxxxxxxx* failed RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA002E ISPF SETMSG Failed

Long message

An ISPF SETMSG call in module *xxxxxxxx* for message *xxxxxxxx* failed RC=*xx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA003E ISPF TBEND Failed

Long message

An ISPF TBEND service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA004E ISPF TBCREATE Failed

Long message

An ISPF TBCREATE service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA005E ISPF TBADD Failed

Long message

An ISPF TBADD service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA006E ISPF TBTOP Failed

Long message

An ISPF TBTOP service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA007E ISPF TBDISPL Failed

Long message

An ISPF TBDISPL service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA008E ISPF TBDELETE Failed

Long message

An ISPF TBDELETE service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA009E ISPF TBMOD Failed

Long message

An ISPF TBMOD service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA010E ISPF TBSORT Failed

Long message

An ISPF TBSORT service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA011E ISPF Table In Use

Long message

An ISPF TBOPEN service call from module *xxxxxxxx* failed for table *xxxxxxxx* due to an ENQ failure.

System action

The request fails.

User response

Another TSO user (or a split screen of a single user) already has a required ISF table open. Ensure that the other ISPF session is closed before trying to issue the function again.

IRTA012E ISPTLIB Not Alloc

Long message

An ISPF TBOPEN service call from module *xxxxxxxx* failed for table *xxxxxxxx* due to ISPTLIB not being allocated.

System action

The request fails.

User response

The IMS Program Restart Facility ISPF application does not save any tables, so this error should not occur. Contact IBM Software Support.

IRTA013E ISPF TBOPEN Failed

Long message

An ISPF TBOPEN service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA014E ISPF Table Not Found

Long message

An ISPF TBSORT service call in module *xxxxxxxx* for table *xxxxxxxx* failed because the table was not found.

System action

The request fails.

User response

The IMS Program Restart Facility ISPF application does not save any tables, so this error should not occur. Contact IBM Software Support.

IRTA015E ISPF TBCLOSE Failed

Long message

An ISPF TBCLOSE service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA016E ISPF TBGET Failed

Long message

An ISPF TBGET service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA017E ISPF CONTROL Failed

Long message

An ISPF CONTROL *xxxxxxxx* service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA018E ISPF TBBOTTOM Failed

Long message

An ISPF TBBOTTOM service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA019E ISPF TBSCAN Failed

Long message

An ISPF TBSCAN service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA020E ISPF VPUT Failed

Long message

An ISPF VPUT service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA021E ISPF TBSKIP Failed

Long message

An ISPF TBSKIP service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA022E ISPF VGET Failed

Long message

An ISPF VGET service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA023E ISPF TBPUT Failed

Long message

An ISPF TBPUT service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA024E ISPF FTOPEN Failed

Long message

An ISPF FTOPEN service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA025E ISPF FTINCL Failed

Long message

An ISPF FTINCL service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA026E ISPF FTCLOSE Failed

Long message

An ISPF FTCLOSE service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA027E ISPF BROWSE Failed

Long message

An ISPF BROWSE service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA028E ISPF TBQUERY Failed

Long message

An ISPF TBQUERY service call in module *xxxxxxxx* for table *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA029E ISPF BRIF Failed

Long message

An ISPF BRIF service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA030E ISPF VCOPY Failed

Long message

An ISPF VCOPY service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA031E ISPF VREPLACE Failed

Long message

An ISPF VREPLACE service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA032E ISPF EDIT Failed

Long message

An ISPF EDIT service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA033E ISPF EDIF Failed

Long message

An ISPF EDIF service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA034E ISPF CONTROL ERROR Fail

Long message

An ISPF CONTROL ERROR service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA035E ISPF ADDPOP Failed

Long message

An ISPF ADDPOP service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA036E ISPF REMPOP Failed

Long message

An ISPF REMPOP service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA037E ISPF DISPLAY Failed

Long message

An ISPF DISPLAY service call in module *xxxxxxxx* failed with RC=*xx*. PNL=*xxxxxxxx* MSG=*xxxxxxxx* CURSOR=*xxxxxxxx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA038E ISPF LMINIT Failed

Long message

An ISPF LMINIT service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTA039E ISPF LMFREE Failed

Long message

An ISPF LMFREE service call in module *xxxxxxxx* failed with RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB000E Copy Table Invalid

Long message

The Copy table name specified contained an error in at least one of the field values.

System action

The request fails.

User response

Correct any errors in the abend retry table that you are trying to copy.

IRTB001E Copy Table Name Invalid

Long message

The Copy table name specified was not found in the abend retry table.

System action

The request fails.

User response

Enter a valid table name.

IRTB002E Unable To Find IRTOPT DD

Long message

PRF module *xxxxxxxx* was unable to find the TIOT entry for the IRTOPT DD.

System action

The request fails.

User response

Verify that the IRTOPT data set name specified on the IMS Program Restart Facility main menu is a valid fully qualified data set name with no quotes.

IRTB003E SWAREQ macro failed

Long message

An SWAREQ request failed in module *xxxxxxxx* with return code *xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB004E Allocation failed

Long message

Allocation Failed for *xxxxxxxx* data set RC=*xx* Error Code=*xxxx* Info Code *xxxx*.

System action

The request fails.

User response

If the allocation failed for the IRTOPT data set, correct the data set name on the IMS Program Restart Facility ISPF main menu. If the allocation failed for the IRTAUDIT data set, ensure that the data set name specified in the global options for the Audit Log data set exists.

IRTB005E Deallocation failed

Long message

Deallocation Failed for *xxxxxxxx* data set RC=*xx* Error Code=*xxxx* Info Code *xxxx* DDN=*xxxxxxxx*.

System action

The request fails.

User response

Review the error code and DDNAME, and contact IBM Software Support for assistance.

IRTB006E Open Failed

Long message

OPEN failed for DDNAME *xxxxxxxx* for *xxx* data set.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB007E STOW Failed

Long message

STOW failed for the options module RC=*xx* SC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB008E NOTE Failed

Long message

NOTE failed for the options module RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB009E Error in Options Module

Long message

The options module length is invalid

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB010E RESERVE error

Long message

A RESERVE for the IRTOPT data set failed RC=*xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB011E Command Conflict

Long message

There was more than one `Move`, `Before`, or `After` line command. There can only be one `Move` and one `Before` or `After` line command.

System action

None.

User response

Correct the `M - Move`, `B - Before`, and `A - After` line commands so that there is one `M - Move` line command and either one `A - After` or `B - Before` line command specified.

IRTB012E Move Command Pending

Long message

There is only a `Move` or a `Before` or `After` line command. Enter the remaining line command to allow the move to complete.

System action

None.

User response

Enter the remaining line command to allow the `Move` command to complete.

IRTB013E IRTOPT BLKSIZE invalid

Long message

The block size of the IRTOPT data set is less than 6144. It must be at least 6144.

System action

The request fails.

User response

Reallocate the IRTOPT data set with a block size of at least 6144.

IRTB014E Load failed for *xxxxxxxx*

Long message

An MVS load failed for module *xxxxxxxx* in module *xxxxxxxx* abend code *xxxx-xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB015E Dynamic Allocation fail

Long message

Dynamic allocation failed RC=*xx* Error Code=*xxxx* Info Code *xxxx* Module *xxxxxxxx* DSN=*xxxx*

System action

The request fails.

User response

If the IRTOPT data set failed, correct the data set name on the IMS Program Restart Facility ISPF main menu. If the IRTAUDIT data set failed, ensure that the data set name that was specified in the global options for the Audit Log data set exists.

IRTB016E Open failed for IRTOPT

Long message

An MVS open failed for the IRTOPT data set (DDN=*xxxxxxxx*) RC=*xx* in module *xxxxxxxx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB017E Dynamic Unalloc Failed

Long message

Dynamic unallocation failed RC=*xx* Error Code=*xxxx* Info=*xxxx* Module *xxxxxxxx* DDN=*xxxxxxxx*

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB018E Table Name not Found

Long message

An internal error occurred saving the Abend Retry Table.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB019E Global Options Not Found

Long message

options_module_name cannot be created until Global Options have been created.

System action

The request fails.

User response

Ensure that global options are defined in the IRTOPT data set before you define other options.

IRTB020I CANCEL Command Accepted

Long message

The CANCEL command was processed. Any changes made were not saved to the IRTOPT data set.

System action

Updates are not saved.

User response

None. This message is informational.

IRTB021I Options Saved

Long message

Options have been saved to the IRTOPT data set.

System action

Updates are saved.

User response

None. This message is informational.

IRTB022E Invalid command

Long message

The entered command is invalid.

System action

The command is ignored.

User response

Enter the correct command.

IRTB023I No Options Changed

Long message

There were no changes in the IMS Program Restart Facility options, so the options were not saved.

System action

Options were not saved.

User response

None. This message is informational.

IRTB024I Cancel Command Accepted

Long message

Changes to the prior screen were discarded. Any changes made on other screens are still waiting to be saved.

System action

Updates on the prior screen were discarded.

User response

None. This message is informational.

IRTB025E Recovery Error

Long message

There was an error in option *xxxxxxxx* but the option name was not found in the table of option names by *xxxxxxxx*.

System action

Option *xxxxxxxx* is ignored.

User response

Review option *xxxxxxxx*, and correct the value.

IRTB026E Invalid Line Command

Long message

The entered line command, &LINECMD, is not a valid line command. Valid commands are *S*, *I*, and *D*.

System action

The command is ignored.

User response

Review and correct the line command.

IRTB027E No IMSIDs in group

Long message

There were no IMSIDs defined for this group. You must define at least one IMSID for a group.

System action

IMS Program Restart Facility waits for a valid IMSID to be specified.

User response

Add one or more IMSIDs to the IMSGROUP definition.

IRTB028E Duplicate Abend Entry

Long message

The Abend Code (*xxxx*) and Reason Code (*xxxxxxxx*) are already defined. Update the existing entry instead of inserting a new abend entry.

System action

None.

User response

Change the abend code or reason code, or cancel adding the abend table entry.

IRTB029E Error Reading Abend Tbl

Long message

There was an error processing the options data set - error occurred reading Abend Retry table, code *xxxx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB030E Error Reading IMSGROUPs

Long message

There was an error processing the options data set - error occurred reading IMSGROUPs, code *xxxx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB031E Error – Duplicate IMSID

Long message

IMSID *xxxx* appears more than once in the IMSGROUP definition. Remove the duplicate entry.

System action

The request fails.

User response

An IMSID can only appear once in an IMSGROUP definition.

IRTB032E Duplicate IMSGROUP

Long message

The IMSGROUP name, *xxxxxxxx*, is already in use. Use a different IMSGROUP name.

System action

The request fails.

User response

Specify an unused IMSGROUP name.

IRTB033E Invalid line command

Long message

The only valid line commands are S, D, and I.

System action

The invalid line command is ignored.

User response

Correct the line command.

IRTB034E Invalid IMSGROUP name

Long message

The IMSGROUP name specified is blank or invalid.

System action

The request is ignored.

User response

Correct the IMSGROUP name.

IRTB035E IMSIDs not Consecutive

Long message

The IMSIDs specified for group &IMSGROUP have intervening blank IMSIDs.

System action

The request is ignored.

User response

Remove the blank IMSIDs that are interspaced between valid IMSIDs.

IRTB036E Group has no IMSIDs

Long message

Group *xxxxxxxx* has no IMSIDs.

System action

The request is ignored.

User response

Add at least one valid IMSID to the IMS group definition.

IRTB037E Duplicate IMSID

Long message

A single IMSID can only appear in one group. IMSID *xxxx* appears in groups *aaaaaaaa* and *bbbbbbbb*.

System action

The IMS group is not saved.

User response

The duplicate IMSID must be removed from one of the groups.

IRTB038E Dup Abend/Reason Code

Long message

The abend code and reason code were changed on the edit Abend Retry screen, but the new Abend/reason code is already defined.

System action

The abend retry entry is not saved.

User response

Update the abend code or reason code, or use the CANCEL command to remove the updates that you entered.

IRTB040E Error locating CTDS

Long message

Catalog search using IGGCSI00 encountered an error. IGGCSI RC=*xx* Reason=*xx.xx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB041I No Jobs Found

Long message

There were no active or abended jobs found to list.

System action

The request fails.

User response

None. This message is informational.

IRTB042E CTDSHLQ is Invalid

Long message

The CTDSHLQ IMS Program Restart Facility option is either not defined or is invalid. Check PRF Global Options to verify CTDSHLQ value.

System action

The request fails.

User response

Review and correct the CTDSHLQ parameter.

IRTB043E Allocation Failed

Long message

Dynamic Allocation failed for data set *xxxx* RC=*xx* INFO=*xxxx* ERRC=*xxxx*

System action

The request fails.

User response

Review the data set name and reason codes to determine the reason for the allocation failure.

IRTB044E RACF® Error

Long message

RACF error for data set *xxxx* RC=*xxxx*.

System action

The request fails.

User response

Review the MVS SYSLOG for other indications of the security error.

IRTB045E Error in Global Options

Long message

There was an invalid value in the Global Options. Edit the Global Options to correct this error before editing job options.

System action

The request fails.

User response

Use the ISPF interface to edit the global options. When you edit the global options, any invalid option values will be presented for you to correct.

IRTB046E Duplicate Table Name

Long message

The specified table name to be inserted already exists.

System action

The request fails.

User response

Use a different table name that is not already in use.

IRTB047E Global Options Not Found

Long message

The specified PRF Options Data Set does not have a Global Options member defined. Specify a valid Options Data Set Name.

System action

The request fails.

User response

Update the IRTOPT data set name that is specified on the IMS Program Restart Facility ISPF main menu.

IRTB048E Open Failed

Long message

An MVS Open for the temporary report file failed with a return code of *xxxx*.

System action

The request fails.

User response

Review the MVS SYSLOG to determine if there are any other error messages that indicate the reason for the failure.

IRTB049E Close Failed

Long message

An MVS Close for the temporary report file failed with a return code of *xxxx*.

System action

The request fails.

User response

Review the MVS SYSLOG to see if there are any other error messages that indicate the reason for the failure.

IRTB050E Dynamic Allocation Fail

Long message

Dynamic allocation failed RC=*xx* Error Code=*xxxx* Info=*xxxx* Module *xxxxxxxx* for Report Output data set.

System action

The request fails.

User response

Review the dynamic allocation error code to determine the reason for the allocation failure.

IRTB051E Dynamic Unalloc Fail

Long message

Dynamic unallocation failed RC=*xx* Error Code=*xxxx* Info=*xxxx* Module *xxxxxxxx* DDN=*xxxxxxx*.

System action

The request fails.

User response

Review the dynamic allocation error code to determine the reason for the deallocation failure.

IRTB052E Global Options Error

Long message

An error occurred loading the PRF Global Options. Review the Global Options to determine the cause of the error.

System action

The request fails.

User response

Use the ISPF interface to edit the global options. When you edit the global options, any invalid option values will be presented for you to correct.

IRTB053E Options in Use

Long message

Another user is currently editing the options you selected (options module *xxxxxxxx*).

System action

The request fails.

User response

Wait for the other TSO user to finish editing the options and then retry.

IRTB054E Enqueue Failed

Long message

An MVS Enqueue failed for the PRF Audit Log (RC=*xxxx*).

System action

The request fails.

User response

Review the return code from the enqueue request and contact IBM Software Support for assistance.

IRTB055E SWAREQ Failed

Long message

An MVS SWAREQ returned an unexpected return code, *xxxx*.

System action

The request fails.

User response

Review the return code from the enqueue request and contact IBM Software Support for assistance.

IRTB056E Open Failed

Long message

An MVS OPEN macro failed for the *xxxx* data set.

System action

The request fails.

User response

Review the MVS SYSLOG to see if any other error messages indicate the reason for the failure.

IRTB057E Unexpected Record Type

Long message

An unexpected record type was encountered in the PRF Audit Log data set. Record type found was *xxxx*.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB058E Audit Log not Defined

Long message

There is no Audit Log data set name defined in the Global Options for this Options Data set.

System action

The request fails.

User response

To use the audit log features, enable audit logging by entering a data set name in the AUDITLOG global option.

IRTB059E Unexpected Audit Record

Long message

There was an unexpected *xxxx* audit record subtype encountered in the Audit Log.

System action

The request fails.

User response

Gather documentation and contact IBM Software Support.

IRTB060E Cannot allocate dataset

Long message

The data set was allocated to another task.

RC=*xxxxxxx* Error Code=*yyyyyyyyy* Info=*zzzzzzzz* Module *aaaaaaaa* DSN=*bbb*.

System action

The panel is redisplayed.

User response

Deallocate the file from the task currently allocating the file, and retry the request.

IRTB061E Dataset not found

Long message

The data set was not found.

RC=*xxxxxxx* Error Code=*yyyyyyyyy* Info=*zzzzzzzz* Module *aaaaaaaa* DSN=*bbb*.

System action

The panel is redisplayed.

User response

Correct the file name and retry the request.

IRTB062E Audit log alloc error

Long message

The originally specified audit log *xxxx* was not found.

Option 0 is the only valid option.

Correct the audit log specification and enter SAVE before continuing.

System action

The panel is redisplayed.

User response

Enter option 0 from the Update Global Options panel and correct the audit log specification.

Enter SAVE and continue.

IRTB063E Audit log change error

Long message

The originally specified audit log *xxxx* was not found.

You can only change the AUDITLOG option.

Enter CANCEL, modify only the AUDITLOG option, then enter SAVE.

System action

The panel is redisplayed.

User response

Cancel the changes you made on the Global Only Options panel.

Modify the AUDITLOG option to either remove the AUDITLOG specification or point to a valid audit log, and then enter SAVE.

IRTB064E Audit log has changed

Long message

You have changed the audit log specification.

You must enter SAVE or CANCEL to continue.

System action

The panel is redisplayed.

User response

Enter SAVE to save the change to the audit log specification, or enter CANCEL to discard the change to the audit log specification.

IRTB065E Invalid IJE entry found

Long message

Invalid IJE entry was created in the internal block for some reason. Your request has been canceled. Try it again.

System action

The request fails.

User response

This error should not occur. Contact IBM Software Support.

IRTC010E AUTOWTOR Option Invalid

Long message

The AUTOWTOR value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the AUTOWTOR option.

IRTC011E AUTOXRST Option Invalid

Long message

The AUTOXRST value specified is not valid. The value must be specified as YES, NO, FORCE, or LAST.

System action

None.

User response

Enter a valid value for the AUTOXRST option.

IRTC012E CKPTID Option Invalid

Long message

The CKPTID value specified is not valid. The value must be specified as NOMSGS, NOMSG540, NOMSG542, NOMSG681, or NO681542.

System action

None.

User response

Enter a valid value for the CKPTID option.

IRTC013E EXCLUDE Option Invalid

Long message

The EXCLUDE value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the EXCLUDE option.

IRTC014E FSTOP Option Invalid

Long message

The FSTOP value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the FSTOP option.

IRTC015E IGNXIOA Option Invalid

Long message

The IGNXIOA value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the IGNXIOA option.

IRTC016E IMSLOGR Option Invalid

Long message

The IMSLOGR value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the IMSLOGR option.

IRTC017E RCABEND Option Invalid

Long message

The RCABEND value specified is not valid. The value must be blank or a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the RCABEND option.

IRTC018E RCERROR Option Invalid

Long message

The RCERROR value specified is not valid. The value must be blank or a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the RCERROR option.

IRTC019E RDORETRY Option Invalid

Long message

The RDORETRY value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC021E REGJBP Option Invalid

Long message

The REGJBP value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the REGJBP option.

IRTC022E TEMPUNIT Option Invalid

Long message

The TEMPUNIT value specified is not valid. The value must be specified as a valid UNIT name (as coded in UNIT= in JCL).

System action

None.

User response

Enter a valid value for the TEMPUNIT option.

IRTC023E TRACK Option Invalid

Long message

The TRACK value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the TRACK option.

IRTC024E UABEND Option Invalid

Long message

The UABEND value specified is not valid. The value must be blank or a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the UABEND option.

IRTC025E BYPCHKP Option Invalid

Long message

The BYPCHKP value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the BYPCHKP option.

IRTC026E BCDINTVL Option Invalid

Long message

The BCDINTVL value specified is not valid. The value must be specified as a time interval in the form *hhmmssth*.

System action

None.

User response

Enter a valid value for the option.

IRTC027E BCERRXT Option Invalid

Long message

The BCERRXT value specified is not valid. The value must be blank or a number between 0 and 9999.

System action

None.

User response

Enter a valid value for the BCERRXT option.

IRTC028E BCREASN Option Invalid

Long message

The BCREASN value specified is not valid. The value must be blank or a number between 0 and 9999.

System action

None.

User response

Enter a valid value for the BCREASN option.

IRTC029E BCRETRN Option Invalid

Long message

The BCRETRN value specified is not valid. The value must be blank or a number between 0 and 9999.

System action

None.

User response

Enter a valid value for the option.

IRTC030E BCSTATUS Option Invalid

Long message

The BCSTATUS value specified is not valid. The value must be blank or a two character status code.

System action

None.

User response

Enter a valid value for the BCSTATUS option.

IRTC031E BCSTCD Option Invalid

Long message

The BCSTCD value specified is not valid. The value must be blank or two character status codes.

System action

None.

User response

Enter a valid value for the BCSTCD option.

IRTC032E CTDSHLQ Option Invalid

Long message

The CTDSHLQ value specified is not valid. The value must be specified as a valid data set name prefix.

System action

None.

User response

Enter a valid value for the option.

IRTC033E CTDSNAM Option Invalid

Long message

The CTDSNAM value specified is not valid. The value must be specified as BOTH, NOPSB, or NOPGM.

System action

None.

User response

Enter a valid value for the CTDSNAM option.

IRTC034E CTDSHLQ Option Invalid

Long message

The CTDSHLQ value specified is not valid. The value must be 8 characters or less when CTDSNAM is BOTH.

System action

None.

User response

Enter a valid value for the CTDSHLQ option.

IRTC035E CTDSHLQ Option Invalid

Long message

The CTDSHLQ value specified is not valid. The value must be 17 characters or less when CTDSNAM is NOPGM or NOPSB.

System action

None.

User response

Enter a valid value for the CTDSHLQ option.

IRTC036E CTDSDACL Option Invalid

Long message

The CTDSDACL value specified is not valid. The value must be blank or a valid SMS data class name.

System action

None.

User response

Enter a valid value for the CTDSDACL option.

IRTC037E CTDSMGCL Option Invalid

Long message

The CTDSMGCL value specified is not valid. The value must be blank or a valid SMS management class name.

System action

None.

User response

Enter a valid value for the CTDSMGCL option.

IRTC038E CTDSSTCL Option Invalid

Long message

The CTDSSTCL value specified is not valid. The value must be blank or a valid SMS Storage class name.

System action

None.

User response

Enter a valid value for the option.

IRTC039E CTDSTRKS Option Invalid

Long message

The CTDSTRKS value specified is not valid. The value must be specified as a number between 1 and 9999.

System action

None.

User response

Enter a valid value for the option.

IRTC040E CTDSUNIT Option Invalid

Long message

The CTDSUNIT value specified is not valid. The value must be blank or a valid UNIT name (UNIT=).

System action

None.

User response

Enter a valid value for the option.

IRTC041E CTDSVOL Option Invalid

Long message

The CTDSVOL value specified is not valid. The value must be blank or a valid volume serial number (VOL=SER=).

System action

None.

User response

Enter a valid value for the option.

IRTC042E CTDSVOL Option Invalid

Long message

The CTDSVOL value specified is not valid. The value must be blank or a name of 6 characters or less.

System action

None.

User response

Enter a valid value for the CTDSVOL option.

IRTC043E DBRC Option Invalid

Long message

The DBRC value specified is not valid. The value must be blank or Y, or N.

System action

None.

User response

Enter a valid value for the DBRC option.

IRTC044E IRLM Option Invalid

Long message

The IRLM value specified is not valid. The value must be blank or Y, or N.

System action

None.

User response

Enter a valid value for the option.

IRTC045E IRLMNM Option Invalid

Long message

The IRLMNM value specified is not valid. The value must be blank or a valid IRLM subsystem name.

System action

None.

User response

Enter a valid value for the IRLMNM option.

IRTC046E LOCKMAX Option Invalid

Long message

The LOCKMAX value specified is not valid. The value must be blank or number between 0 and 32767.

System action

None.

User response

Enter a valid value for the option.

IRTC047E CHKPCMP Option Invalid

Long message

The CHKPCMP value specified is not valid. The value can be left blank or specified as a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the CHKPCMP option.

IRTC048E CHKPCNT Option Invalid

Long message

The CHKPCNT value specified is not valid. The value can be left blank or specified as a number between 1 and 999.

System action

None.

User response

Enter a valid value for the IRTC048E option.

IRTC049E ABRETRY Option Invalid

Long message

The ABRETRY value specified is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC050E SHOWOPTS Option Invalid

Long message

The SHOWOPTS value specified is not valid. The value must be specified as either YES, ONLY, or PRINT.

System action

None.

User response

Enter a valid value for the option.

IRTC051E DEBUG Option Invalid

Long message

The DEBUG value specified is not valid. The value must be blank or up to 8 hexadecimal digits.

System action

None.

User response

Enter a valid value for the DEBUG option.

IRTC052E SYSOUT Option Invalid

Long message

The SYSOUT value specified is not valid. The value must be specified, even if the DEBUG and SHOWOPTS options do not request the use of SYSOUT.

System action

None.

User response

Enter a valid value for the option.

IRTC053E ABCDE Option Invalid

Long message

The Abend Code value is not valid. It must be specified as a system abend (S*xxx*) or a user abend (U*nnnn*).

System action

None.

User response

Enter a valid value for the option.

IRTC054E ABRSN Option Invalid

Long message

The Abend Reason Code value is not valid. It must be specified as an 8 character hexadecimal value less than 7FFFFFFF.

System action

None.

User response

Enter a valid value for the option.

IRTC055E DELAY Option Invalid

Long message

The DELAY value must be specified in the format *hh*:*mm*:*ss* and must be less than 24 hours.

System action

None.

User response

Enter a valid value for the option.

IRTC056E MAXRETRY Option Invalid

Long message

The MAXRETRY value must be specified as 0 or a number less than 32768.

System action

None.

User response

Enter a valid value for the MAXRETRY option.

IRTC057E AGN Option Invalid

Long message

The AGN value must be blank or an up to 8 character value.

System action

None.

User response

Enter a valid value for the AGN option.

IRTC058E APARM Option Invalid

Long message

The APARM value must start and end with a quote (').

System action

None.

User response

Enter a valid value for the APARM option.

IRTC059E CPUTIME Option Invalid

Long message

The CPUTIME value must be blank or a value of 0 to 1440.

System action

None.

User response

Enter a valid value for the option.

IRTC061E GSGNAME Option Invalid

Long message

The GSGNAME value must be blank or an up to 8 character name.

System action

None.

User response

Enter a valid value for the option.

IRTC062E AUDITLOG Option Invalid

Long message

The AUDITLOG value must be specified as the fully qualified unquoted data set name of the Audit Log data set.

System action

None.

User response

Enter a valid value for the option.

IRTC063E OPT Option Invalid

Long message

The OPT value must be blank or C, N, or W.

System action

None.

User response

Enter a valid value for the OPT option.

IRTC064E PARDLI Option Invalid

Long message

The PARDLI value must be blank or 0 or 1.

System action

None.

User response

Enter a valid value for the PARDLI option.

IRTC065E PREINIT Option Invalid

Long message

The PREINIT value must be blank or a 2 character member name suffix.

System action

None.

User response

Enter a valid value for the PREINIT option.

IRTC066E PRLD Option Invalid

Long message

The PRLD value must be blank or a 2 character member name suffix.

System action

None.

User response

Enter a valid value for the PRLD option.

IRTC067E SSM Option Invalid

Long message

The SSM value must be blank or an up to 4 character member name suffix.

System action

None.

User response

Enter a valid value for the option.

IRTC068E STIMER Option Invalid

Long message

The STIMER value must be blank or 0, 1, or 2.

System action

None.

User response

Enter a valid value for the STIMER option.

IRTC069E TMINAME Option Invalid

Long message

The TMINAME value must be blank or an up to 4 character Transport Manager name.

System action

None.

User response

Enter a valid value for the TMINAME option.

IRTC070E FORCEID Option Invalid

Long message

The FORCEID value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the FORCEID option.

IRTC071E BBDSHLQ Option Invalid

Long message

The BBDSHLQ value must be a valid data set prefix, with 1 or more qualifiers.

System action

None.

User response

Enter a valid value for the BBDSHLQ option.

IRTC072E BBDSDACL Option Invalid

Long message

The BBDSDACL value must be a valid Data Class name.

System action

None.

User response

Enter a valid value for the BBDSDACL option.

IRTC073E BBDSMGCL Option Invalid

Long message

The BBDSMGCL value must be a valid Management Class name.

System action

None.

User response

Enter a valid value for the BBDSMGCL option.

IRTC074E BBDSSTCL Option Invalid

Long message

The BBDSSTCL value must be a valid Storage Class name.

System action

None.

User response

Enter a valid value for the BBDSSTCL option.

IRTC075E BBDSUNIT Option Invalid

Long message

The BBDSUNIT value must be a valid MVS UNIT= name.

System action

None.

User response

Enter a valid value for the BBDSUNIT option.

IRTC076E BBDSVOL Option Invalid

Long message

The BBDSVOL value must be a valid MVS volume name.

System action

None.

User response

Enter a valid value for the BBDSVOL option.

IRTC077E FABXRST Option Invalid

Long message

The FABXRST value must be a specified as either YES or NO.

System action

None.

User response

Enter a valid value for the FABXRST option.

IRTC078E IRT#CPID Option Invalid

Long message

The IRT#CPID value must be a specified a valid module name.

System action

None.

User response

Enter a valid value for the IRT#CPID option.

IRTC079E CHKPINT Option Invalid

Long message

The CHKPINT value must be a specified as a valid timestamp (*hh*:*mm*:*ss*).

System action

None.

User response

Enter a valid value for the CHKPINT option.

IRTC080E LOG BLKSZ Option Invalid

Long message

The BLKSZ value for a LOG data set must be specified as a number between 8 and 32760.

System action

None.

User response

Enter a valid value for the BLKSZ option.

IRTC081E LOG BUFNO Option Invalid

Long message

The BUFNO value for a LOG data set must be specified as a number between 3 and 255.

System action

None.

User response

Enter a valid value for the option.

IRTC082E LOG DCBDS Option Invalid

Long message

The DCBDS value for a LOG data set must be a valid fully qualified, unquoted, data set name of an existing data set.

System action

None.

User response

Enter a valid value for the option.

IRTC083E LOG DSNAM Option Invalid

Long message

The DSNAM value for a LOG data set must be a valid fully qualified, unquoted, data set name.

System action

None.

User response

Enter a valid value for the DSNAM option.

IRTC084E LOG EXPDL Option Invalid

Long message

The EXPDL value for a LOG data set must be a valid long Julian date in the format *yyyyddd*.

System action

None.

User response

Enter a valid value for the EXPDL option.

IRTC085E LOG EXPDT Option Invalid

Long message

The EXPDT value for a LOG data set must be a valid Julian date in the format *yyddd*.

System action

None.

User response

Enter a valid value for the EXPDT option.

IRTC086E LOG LRECL Option Invalid

Long message

The LRECL value for a LOG data set must be specified as a number between 4 and 32760.

System action

None.

User response

Enter a valid value for the LRECL option.

IRTC087E LOG PRIME Option Invalid

Long message

The PRIME value for a LOG data set must be specified as a number between 1 and 9999.

System action

None.

User response

Enter a valid value for the PRIME option.

IRTC088E LOG RETPD Option Invalid

Long message

The RETPD value for a LOG data set must be specified as a number between 1 and 9999.

System action

None.

User response

Enter a valid value for the RETPD option.

IRTC089E LOG SECND Option Invalid

Long message

The SECND value for a LOG data set must be specified as a number between 1 and 9999.

System action

None.

User response

Enter a valid value for the SECND option.

IRTC090E LOG SPACE Option Invalid

Long message

The SPACE value for a LOG data set must be specified as either TRKS or CYLS.

System action

None.

User response

Enter a valid value for the option.

IRTC091E LOG UNCNT Option Invalid

Long message

The UNCNT value for a LOG data set must be specified as a number between 1 and 59.

System action

None.

User response

Enter a valid value for the UNCNT option.

IRTC092E LOG UNIT Option Invalid

Long message

The UNIT value for a LOG data set must be specified as a valid MVS unit name.

System action

None.

User response

Enter a valid value for the UNIT option.

IRTC093E LOG VLCNT Option Invalid

Long message

The VLCNT value for a LOG data set must be specified as a number between 1 and 255.

System action

None.

User response

Enter a valid value for the VLCNT option.

IRTC094E Exclusive Options Entered

Long message

The Log options EXPDT, EXPDL, and RETPD are mutually exclusive. Specify only one of these parameters.

System action

None.

User response

Specify either the EXPDT, EXPDL, or RETPD parameter.

IRTC095E ABTABLE Option Invalid

Long message

The ABRETRY option is required if ABRETRY is specified as YES.

System action

None.

User response

Enter a valid value for the ABTABLE option.

IRTC096E IMSGROUP Required

Long message

The IMSGROUP name is a required field.

System action

None.

User response

Enter a valid value for the option.

IRTC097E CTDSNAM changed to BOTH

Long message

The CTDSNAM option value is set to BOTH when CTDSHLQ is less than 9 characters.

System action

The CTDSNAM option value is changed to BOTH, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.

User response

If this option value is acceptable, no response is necessary. Otherwise, specify a CTDSHLQ value greater than 8 characters.

NOTE: Specifying a CTDSHLQ value greater than 8 characters is not recommended because it increases the chances that multiple jobs might attempt to use the same CTDS files. If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery. Refer to the global options references for CTDSNAM and CTDSHLQ in "Global options reference" on page 36.

IRTC100E AUTOBKO Option Invalid

Long message

The AUTOBKO option must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the AUTOBKO option.

IRTC101E BYPLOGR Option Invalid

Long message

The BYPLOGR option must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC102E BYPLOGR Enabled Globally

Long message

The BYPLOGR has been enabled on a global basis. Bypass Logging on all jobs is probably not what you want!

System action

None.

User response

Specifying a value of NO for the BYPLOGR global option is highly recommended.

IRTC103E CATDS Option Invalid

Long message

The CATDS option must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the CATDS option.

IRTC104E CMPCBKOK Option Invalid

Long message

The CMPCBKOK option must be specified as a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the CMPCBKOK option.

IRTC105E CMPCBKER Option Invalid

Long message

The CMPCBKER option must be specified as a number between 1 and 4095.

System action

None.

User response

Enter a valid value for the CMPCBKER option.

IRTC106E FORCELTR Option Invalid

Long message

The FORCELTR option must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the FORCELTR option.

IRTC107E IEFRDER Option Invalid

Long message

The IEFRDER option must be specified as JCL, DUMMY, DYNALLOC, or FORCE.

System action

None.

User response

Enter a valid value for the IEFRDER option.

IRTC108E IEFRDER2 Option Invalid

Long message

The IEFRDER2 option must be specified as JCL, DUMMY, DYNALLOC, or FORCE.

System action

None.

User response

Enter a better value for the IEFRDER2 option.

IRTC109E NOLOGRO Option Invalid

Long message

The NOLOGRO option must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the NOLOGRO option.

IRTC110E COPY1 Option Invalid

Long message

The COPY1 option must contain valid characters.

System action

None.

User response

Enter a valid value for the COPY1 option.

IRTC111E COPY2 Option Invalid

Long message

The COPY2 option must contain valid characters.

System action

None.

User response

Enter a valid value for the COPY2 option.

IRTC112E AUDTOPMD Option Invalid

Long message

The AUDTOPMD value specified is not valid. The value must be either YES or NO.

System action

None.

User response

Enter a valid value for the AUDTOPMD option.

IRTC113W AUDTOPMD Process Skipped

Long message

Global Options have been saved. However, the AUDTOPMD option processing is skipped because another TSO user is currently editing other options (options module *xxxxxxxx*).

System action

None.

User response

If you do not intend to change the AUDTOPMD option, you can ignore this warning message.

If you want to change the AUDTOPMD option, wait for the other TSO user to finish editing the options, and then retry.

IRTC114E ISRTCHKP Option Invalid

Long message

The ISRTCHKP value specified is not valid. The value must be either YES or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC115E PCB Option Invalid

Long message

The PCB value specified is not valid. The value must be one of the following: a valid PCB name, a number between 2 and 2500, an asterisk ("*"), or blank.

System action

None.

User response

Enter a valid value for the option.

IRTC116E ICPINTVL Option Invalid

Long message

The ICPINTVL value specified is not valid. The value must be specified as a time interval in the form *hhmmssth*.

System action

None.

User response

Enter a valid value for the option.

IRTC117E CALLTYPE Option Invalid

Long message

The CALLTYPE value specified is not valid. The value must be either GU or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC118E POS Option Invalid

Long message

The POS value specified is not valid. The value must be either ROOT or NO.

System action

None.

User response

Enter a valid value for the option.

IRTC119E ICSTCLST Option Invalid

Long message

The ICSTCLST value specified is not valid. The value must be a list of two-character status codes or blank.

System action

None.

User response

Enter a valid value for the option.

IRTC120E Mutually Exclusive Options Specified

Long message

The bypass checkpoint option (BYPCHKP) and the checkpoint insertion option (ISRTCHKP) are mutually exclusive. Specify only one of these parameters.

System action

None.

User response

Specify either the BYPCHKP or ISRTCHKP parameter.

IRTC121E USEJCLID Option Invalid

Long message

The specified USEJCLID value is not valid. The value must be specified as either YES or NO.

System action

None.

User response

Enter a valid value for the USEJCLID option.

Abend codes

This topic describes the abend codes that are issued by IMS Program Restart Facility.

Use the information in these codes to help you diagnose and solve IMS Program Restart Facility problems.

For each abend code, the following accompanying information is provided where applicable:

Explanation:
The Explanation section explains what the message text means, why it occurred, and what its variables represent.

System action:
The System action section explains what the system will do in response to the event that triggered this message.

User response:
The User response section describes whether a response is necessary, what the appropriate response is, and how the response will affect the system or program.

474

Explanation

Both IMS Program Restart Facility and IMS can issue this abend. IMS Program Restart Facility issues this abend when an MVS MODIFY *jobname*,STOP command is issued.

System action

The job step ends abnormally with a U0474 completion code.

User response

None.

3303

Explanation

Both IMS Program Restart Facility and IMS can issue this abend. IMS Program Restart Facility issues this abend when an MVS MODIFY *jobname*,HOLD command is issued or when IMS Online Reorganization Facility requires exclusive use of a database.

System action

The job step ends abnormally with a U3303 completion code, and job processing is paused.

User response

If IMS Online Reorganization Facility has requested that the job be paused, no action is required. In this case, IMS Online Reorganization Facility will notify the job when it can restart autonomically after it no longer requires exclusive use of a database. If an MVS MODIFY *jobname*,HOLD command was issued to pause the job, use the MVS MODIFY *jobname*,XRST command to restart job processing.

3618

Explanation

The IMS Program Restart Facility IVP program IRTIVPG1 detected an unexpected condition while it was reading the DI21PART database. It attempted to

reposition to the last root after a checkpoint call, but an unexpected status was returned by IMS. Message IRTIV04E shows the status code that was received.

System action

The job step ends abnormally with a U3618 completion code.

User response

The job can be restarted, although depending on the cause of the error, the restarted job might still receive the same abend. For BMP jobs, review the IMS JESLOG to see whether any other IMS error conditions occurred at the time of the failure. For DLI jobs, review the JESLOG of that job. Correct the underlying cause of the condition code.

3619

Explanation

The IVP program ended abnormally because the threshold for the number of successful checkpoints (as set in the CHKPCNT parameter) was exceeded. This abend code can be updated by changing the CHKPCMP parameter to a different abend code.

System action

The job step ends abnormally with a U3619 completion code.

User response

Rerun the abended job step.

3620

Explanation

Dynamic allocation failed while trying to create the CTDS. Message IRT006E in the JESLOG log of the job provides information about the return codes that describe the dynamic allocation error.

System action

The job step ends abnormally with a U3620 completion code.

User response

For more information about the dynamic allocation failure, see message “IRT006E” on page 93.

3621

Explanation

The current program and PSB do not match the program and PSB recorded in the CTDS from the previous abend of the job. Before the abend, messages IRT008E and IRT009E are written to the JESLOG log of the job. These messages provide details about the job.

System action

The job step ends abnormally with a U3621 completion code.

User response

Determine the reason why the information for the abended job that was saved in the CTDS data set does not match the information for the current job, which is shown in message IRT008E. The reason might be that a job with the same job name was run with a different program or PSB name before the original abending job was restarted.

3622

Explanation

An error occurred while trying to load IMS Program Restart Facility options. This error is accompanied by error messages that describe the error, including IRT012E, IRT211E, IRT212E, IRT312E, IRT345E, and IRT346E.

System action

The job step ends abnormally with a U3622 completion code.

User response

Review the job output from messages IRT012E, IRT211E, IRT212E, IRT312E, IRT345E, and IRT346E, and the output from other messages that indicate the cause of the failure. This abend is typically caused by a dynamic allocation failure or invalid load modules in the IRTOPT data set.

3623

Explanation

Dynamic allocation failed while trying to allocate or deallocate a data set, such as a CTDS or LOG, that might be required for extended restart.

System action

The job step ends abnormally with a U3623 completion code.

User response

For more information about the dynamic allocation failure, see message “IRT006E” on page 93.

3624

Explanation

An application terminated with a nonzero return code greater than or equal to the return code value specified in the RCABEND parameter. The abend code that is issued can be updated by changing the UABEND options (3624 is the default abend code). This abend is accompanied by message IRT028E.

System action

The job step ends abnormally with a U3624 completion code without doing any cleanup of the CTDS for the job. At the next execution of this job, the job will be restarted.

User response

When this job step is restarted, an automatic extended restart is attempted. For more information, see message “IRT028E” on page 96 and the description of the RCABEND parameter.

3625

Explanation

When restarting a job, an indoubt checkpoint might be committed. However, IMS Program Restart Facility was unable to confirm if the checkpoint is committed, possibly because the IMS control region ended abnormally before the checkpoint call completed.

System action

The job step ends abnormally with a U3625 completion code.

User response

For more information, see message “IRT011E” on page 94. You must investigate the last checkpoint committed by IMS, and use the AUTOXRST=LAST or AUTOXRST=FORCE option to allow the job to restart.

3626

Explanation

The value for the CTDSHLQ parameter was more than the maximum number of characters allowed. The CTDSHLQ parameter has an 8-character maximum when the CTDSNAM option is not set to BOTH, and a 17-character maximum in all other cases.

System action

The job step ends abnormally with a U3626 completion code.

User response

See message IRT005E for more details.

3627

Explanation

AUTOWTOR=YES was specified in the options. An automatic extended restart was possible, and the operator replied ABEND to the IRT014A WTOR when the job was resubmitted.

System action

The job step terminates abnormally with a U3627 completion code.

User response

See message IRT014A for more detailed information.

3628

Explanation

Processing encountered an error. An error message preceding the abend describes the error that was encountered. Messages IRT083E, IRT084E, IRT085E, IRT086E, IRT100E, IRT236E, IRT237E, IRT238E, IRT241E, or IRT344E might be issued to indicate the reason for the abend.

System action

The job step terminates abnormally with a U3628 completion code.

User response

Review the job log of the abending job to find the error messages. For more information, see the error message descriptions.

3630

Explanation

IMS Program Restart Facility processing encountered an error, typically related to DLI batch backout processing. This abend might also be issued when

batch backout processing completes successfully during job initialization (meaning that a backout was pending for the job when it was resubmitted).

An error message that precedes the abend describes the error that was encountered. Messages IRT039E, IRT107E, IRT118E, IRT125E, IRT134E, IRT136E, IRT137E, IRT161W, or IRT172E might be issued to indicate the reason for the abend.

System action

The job step terminates abnormally with a U3630 completion code.

User response

For more information, review the job log of the abending job to find error messages and refer to the description of the error.

3773

Explanation

This abend can be issued by IMS Program Restart Facility when certain debug features are enabled. It should not occur unless the IBM Software Support directed you to update options for the job and provide a memory dump.

System action

The job step ends abnormally with a U3773 completion code.

User response

For more information, review the job log of the abending job to find error messages and refer to the description of the error messages found.

4000

Explanation

IMS Program Restart Facility detected an error while reading the IRTOPT data set, or during processing in an IMS Program Restart Facility batch utility or in the ISPF environment. An error message is written to the system log (JESLOG of the job/TSO user that encountered the error).

System action

The process ends abnormally with a U4000 completion code. In an ISPF environment, any changes are not saved.

User response

Review the JESLOG/SYSLOG for error messages that indicate the cause of the error condition, and refer to those messages for further information.

4001

Explanation

IMS Program Restart Facility detected an error during processing in an IMS Program Restart Facility batch utility or in the ISPF environment. An error message is written to the system log, which is in the JESLOG of the job or TSO user that encountered the error.

System action

The process ends abnormally with a U4001 completion code. In an ISPF environment, any changes are not saved.

User response

Review the JESLOG/SYSLOG for error messages that indicate the cause of the error condition, and refer to those messages for further information.

4002

Explanation

A fatal error has occurred in the IMS Program Restart Facility IMS logger exit's initialization phase. Refer to prior messages for an explanation of the problem.

System action

The job ends abnormally.

User response

Refer to the prior error messages to determine how to fix the problem. When you have fixed the problem, the job can be restarted because no updates have taken place.

Gathering diagnostic information

Before you report a problem with IMS Program Restart Facility to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

Provide the following information for all IMS Program Restart Facility problems:

- A clear description of the problem and the steps that are required to re-create the problem
- All messages that were issued as a result of the problem
- Product release number and the number of the last program temporary fix (PTF) that was installed
- The version of IMS that you are using and the type and version of the operating system that you are using

Provide additional information based on the type of problem that you experienced:

For ISPF online abends, provide the following information

- A screen capture of the panel that you were using when the abend occurred
- The job log from the TSO session that encountered the abend
- A description of the task that you were doing before the abend occurred
- If there is an ISPF message, press the help key (usually PF1) and provide the full text of the long form of the error message

For errors in batch processing, provide the following information

- The complete job log
- Print output
- Contents of the any data sets that were used during the processing

  For example, checkpoint tracking data sets (CTDS) and the options data set (IRTOPT)

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