IBM Tools Base for z/OS
Version 1 Release 6

Policy Services User's Guide and Reference

IBM
IBM Tools Base for z/OS
Version 1 Release 6

Policy Services User's Guide and Reference
Note: 
Before using this information and the product it supports, read the "Notices" topic at the end of this information.
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About this information

IBM® Tools Base for z/OS® Policy Services (also referred to as Policy Services) is a core IMS™ Tools technology that can monitor specific database state by evaluating the sensor data collected by an IMS Tools product, and by providing a response to any conditions that exceed the threshold values specified for this state.

These topics provide instructions for installing, configuring, and using Policy Services.

To use these instructions, you must have already installed Policy Services by completing the instructions in the Program Directory for IBM Tools Base for z/OS (GI10-8819), which is included with the product media and is also available on the IMS Tools Product Documentation page.

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

- Understand the capabilities of the functions that are associated with Policy Services
- Install and operate Policy Services
- Customize your Policy Services environment
- Diagnose and recover from Policy Services problems
- Use Policy Services 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:

http://www-01.ibm.com/support/docview.wss?uid=swg27020942

The IMS Tools Product Documentation web page includes:

- Links to IBM Knowledge Center for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Recent updates to the user guides, referred to as "Tech docs" ("See updates to this book!")
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions
How to read syntax diagrams

The following rules apply to the syntax diagrams that are used in this information:

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line. The following conventions are used:
  - The >>--- symbol indicates the beginning of a syntax diagram.
  - The ---> symbol indicates that the syntax diagram is continued on the next line.
  - The >--- symbol indicates that a syntax diagram is continued from the previous line.
  - The --->< symbol indicates the end of a syntax diagram.
- Required items appear on the horizontal line (the main path).

►►required_item◄◄

- Optional items appear below the main path.

►►required_item◄◄optional_item

If an optional item appears above the main path, that item has no effect on the execution of the syntax element and is used only for readability.

►►required_item◄◄optional_item

- If you can choose from two or more items, they appear vertically, in a stack.
  If you must choose one of the items, one item of the stack appears on the main path.

►►required_item◄◄required_choice1

►►required_item◄◄required_choice2

If choosing one of the items is optional, the entire stack appears below the main path.

►►required_item◄◄optional_choice1

►►required_item◄◄optional_choice2

If one of the items is the default, it appears above the main path, and the remaining choices are shown below.

►►required_item◄◄default_choice

►►required_item◄◄optional_choice1

►►required_item◄◄optional_choice2

- An arrow returning to the left, above the main line, indicates an item that can be repeated.
If the repeat arrow contains a comma, you must separate repeated items with a comma.

A repeat arrow above a stack indicates that you can repeat the items in the stack.

- Keywords, and their minimum abbreviations if applicable, appear in uppercase. They must be spelled exactly as shown. Variables appear in all lowercase italic letters (for example, column-name). They represent user-supplied names or values.
- Separate keywords and parameters by at least one space if no intervening punctuation is shown in the diagram.
- Enter punctuation marks, parentheses, arithmetic operators, and other symbols exactly as shown in the diagram.
- Footnotes are shown by a number in parentheses; for example, (1).
Part 1. Policy Services overview

IBM Tools Base for z/OS Policy Services (also referred to as Policy Services) is a core IMS Tools technology that supports conditional autonomic database health management functionality for participating IMS Tools products.

Topics:
- Chapter 1, “Policy Services overview,” on page 3
- Chapter 2, “Hardware and software prerequisites,” on page 19
- Chapter 3, “Sensor data service,” on page 21
- Chapter 4, “Policies, rules, and notification lists,” on page 25
- Chapter 5, “Domains, locales, and environments,” on page 53
Chapter 1. Policy Services overview

IBM Tools Base for z/OS Policy Services (also referred to as Policy Services) is a core IMS Tools technology that can monitor specific database state by evaluating the sensor data collected by an IMS Tools product, and by providing a response to any conditions that exceed the threshold values specified for this state.

Topics:
- “What's new in Policy Services” on page 4
- “What does Policy Services do?” on page 5
- “Implementing policy-based database health management” on page 9
- “Policy Services components” on page 12
- “Service updates and support information” on page 15
- “Product documentation and updates” on page 16
- “Accessibility features” on page 18
What's new in Policy Services

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.

SC19-4374-03 - March 2019 - Third Edition (V1.6)

- Chapter 3, “Sensor data service,” on page 21 has been updated.
- PI96507 - Topics Chapter 9, “Modifying rule thresholds,” on page 83 and Chapter 10, “Defining custom rule threshold values for individual databases,” on page 87 have been updated.
- Step-by-step instructions for creating a new maintenance environment have been added. See Chapter 16, “Creating a new maintenance environment,” on page 127.
- PH03269 - The Sensor Data Extractor, which runs as a standard z/OS batch job, extracts sensor data from the IMS Tools Knowledge Base (IMS Tools KB) Sensor Data repository and generates various types of reports. For details, see Chapter 18, “Sensor Data Extractor,” on page 137. Messages and return codes have also been added for this utility.
- “Return/reason codes: Rules Data Store (BSN6400-6599)” on page 548 has been updated.
- Topic "Policy Services recovery" has been removed.

SC19-4374-02 - May 2018 - Second Edition (V1.6)

- PI78387 - Policy Services client SMTP SYSOUT class enhancement
  Updates to the topic "Viewing and modifying the SMTP variables for email and texting" on page 107.
- PI88543
  New policy: IBM.DBDTYPE.FFDBALL
  New procedure topic: Modifying policy actions
- PI93606 - updated maximum number of extents for data element DB_MAX_EXT_DS
- PI93320
  New procedure topic: Chapter 10, “Defining custom rule threshold values for individual databases,” on page 87
  New message BSN7008I
  Update to table: Data elements related to root segments (added data element DB_FLAG_SENSOR_DBINFO)

SC19-4374-01 - October 2016 - First edition (V1.6)

Multiple topics were added or updated to support the RECOVER domain for IMS Recovery Solution Pack, including:

- “Special conditions and best practices for environments” on page 63
- Part 7, “Reference: Domain RECOVERY,” on page 437
What does Policy Services do?

Policy Services is a core IMS Tools technology that supports conditional autonomic database health management functionality for participating IMS Tools products.

Conditional autonomies can provide the following functionality:

- Evaluate the need for any given database maintenance operation to occur or not
- Make recommendations for corrective actions based on user-defined (policy-driven) requirements

In a conditional autonomies environment, a sensor-enabled IMS Tools product can capture the measurement of the state of a specific database condition. This information, called sensor data, is handled by the IMS Tools Knowledge Base server and stored in a central IMS Tools Knowledge Base Sensor Data repository.

Policy Services uses a policy definition to evaluate this data against the threshold values specified for this condition. Policy Services can then provide a response to any events that exceed the threshold limits.

The response can consist of sending warning notifications to administrators and making a recommendation to the IMS Tools product to take a specific corrective action.

Policy-based autonomies can increase the value of IMS to the enterprise:

- Assist in decisions about when a database maintenance task is required, so that time and resources are not used unnecessarily
- Avoid running jobs that consume direct-access storage devices (DASD) and tapes when a maintenance operation is not required at the time
- Provide feedback on the effectiveness of a policy-driven action by reevaluating the condition

Providing assistance for demanding DBA responsibilities

Policy Services can help address the increasing demands being placed on database administrators (DBA) who are responsible for ever-growing information collecting and processing.

For example, database reorganization is one of the responsibilities of database administrators that involves complex analysis tasks. Generally, these are time-consuming tasks that require knowledge, expertise, and experience in IMS database space management.

Policy Services provides the following benefits for assisting the DBA:

- Conditionally control when and how often maintenance tasks, such as database reorganization, are performed
- Avoid unnecessary tasks that are based on fixed schedules that do not consider if the tasks are actually required
- Perform some of the often complex and time-consuming analysis tasks required to make effective database space management decisions
- Provide relief in an environment where there is a shortage of knowledge due to insufficient process documentation, and a decline in the population of experienced DBAs
Policy Services details

Policy Services technology is made up of the following services:

- **Sensor data collection and storage services**
  - Static information of database state is collected by the IMS Tools client and later used in policy evaluations.
  - Sensor data is stored in the IMS Tools Knowledge Base Sensor Data repository.

- **Policy definition and management services**
  - Policies are defined by rule conditions that can compare collected database state data with defined threshold limits for the database state.
  - Policy Services provides default policies that can be used by participating IMS Tools products.
    For example, IMS Database Reorganization Expert uses policies that address the need for better space utilization in IMS full-function databases.
  - Policy definitions can be edited, customized, and newly created using the Policy Services ISPF user interface.
  - A wide range of warning levels allow you to configure multiple layers of responses for different policies as they apply to different databases.

- **Policy analysis and evaluation services**
  - Policy Services can help automate day-to-day database space management operations.
  - Policy Services can help evaluate the necessity for any action (response) to happen or not. For example:
    - What adjustments need to be made?
    - What changes need to be implemented?
  - Requested actions are conditioned on user-defined (policy driven) requirements.

IMS Tools integration with Policy Services

Specific IMS Tools products can use Policy Services technology to conditionally control the operation of specific database maintenance tasks.

For example, IMS Database Reorganization Expert offers database administrators the capability of centrally controlling the reorganization of IMS full-function databases when a reorganization of a database is truly required. This capability helps avoid unnecessary reorganizations that are based on fixed schedules that do not consider if a reorganization is actually required. Early warning notification can be provided when changes are necessary in database definition parameters or in space allocation parameters for the database data sets.

The combination of Policy Services, IMS Tools Knowledge Base, and the IMS Database Reorganization Expert tool can help you manage IMS database reorganizations effectively and efficiently by:

- Performing statistical analysis and apply policies to determine if action is appropriate
- Helping proactive planning for database management
- Improving database availability
- Reducing system resource waste
- Storing historical data for later analysis
IMS Database Reorganization Expert supports conditional control of the database reorganization maintenance task with the following features:

- Evaluate an IMS full-function database and determine the need for reorganization
- Request the reorganization process only when database reorganization need is deemed necessary as the result of policy evaluation
- Re-evaluate the reorganized database to check the effect of the reorganization action
- Provide a comprehensible summary report on the database status, and when the database is reorganized, detect any change in the status

IMS Tools Knowledge Base is the foundational infrastructure that provides a centralized information management environment for IMS Tools products. IMS Tools Knowledge Base allows you to store, manage, and access information resources (such as reports, sensor data, policies, and rules) that are generated or used by any tool product that has been enabled and registered to participate in this environment.

IMS Tools Knowledge Base provides a common information management service that allows the sharing of data generated and used by multiple tool products within a sysplex. IMS Tools Knowledge Base is managed from a single, centralized user interface.

The following functional overview diagram shows an environment composed of the following components and services:

- IMS Tools Knowledge Base central repository service
- Report service, for archiving reports generated by IMS Tools products
- Sensor data service, for collecting database state information (for use, in this example, by Policy Services)
- Policy Services, for providing evaluation of database state statistics (sensor data) against user-defined threshold limits (policies) on those states
- An IMS Tool product (for example, IMS Database Reorganization Expert), that provides conditional database reorganization capability and responds to recommendations from Policy Services for exception notification and action (REORG).
Figure 1. Example conditional reorganization scenario
Implementing policy-based database health management

As an IMS database administrator (DBA), you have many IMS maintenance tasks to perform, often with too little time.

The following list identifies some of the major tasks required of a DBA to manage database health:
1. Gathering data on database activity
   - LISTCAT
   - Pointer checker
   - DASD volume analysis
   - Transaction performance
   - System resource use
2. Analyzing database state data
3. Identifying priority issues
   - Immediacy of problems
   - Service level agreements
   - Application priority
4. Scheduling maintenance into time windows
   - Application availability
   - System resources
5. Monitoring IMS systems for problems
6. Analyzing results and reports

Policy-based conditional database management can relieve you from some of the more typical database maintenance tasks. Policy Services can be particularly useful in taking over the duties of capturing, storing, and analyzing database state information required to make decisions about performing specific maintenance tasks.

An important goal of Policy Services technology is to free up time and resources, and allow you to spend time using new IMS technologies that facilitate emerging business needs.

In the following sections, questions and solutions about implementing policy-based database health management are explored. The information in these sections uses the example of conditional database reorganization as provided by IMS Database Reorganization Expert.

Determining policy definitions

Questions:
- How can the space of this database be managed?
- Which database statistics can I observe?

Solutions:
You can write down answers to these questions, discuss them with fellow DBAs in your shop, and decide on those policies which would make the greatest impact on the efficiency of your organization.
Handling conditional reorganization

Questions:
• Is the database state so critical that I need to take immediate action?

Solutions:
• An IMS Database Reorganization Expert job, for example, can use its Smart Reorg utility and a policy to evaluate the current state of the database, determine the severity level of any threshold exception, and respond with message notifications and an action to perform database reorganization.
• The database can be reorganized only when reorganization is needed.

Refining exception detection and notification

Questions:
• What exception state is observed for the database?
• What database statistics can be observed to detect such exception states?
• What database states are considered so severe or critical that an immediate reorganization or restructure is needed?

Solutions:
• Policy condition exceptions are classified based on the exception type (class) and severity levels.
• A wide range of warning levels allow you to configure multiple layers of responses for different policies as they apply to different databases.

Establishing notification lists for exception messages

Questions:
• Who can know about exceptions to policy conditions?

Solutions:
• Exception messages can be sent to:
  – Designated TSO users by using TSO/E SEND command
  – Designated z/OS operator consoles by using z/OS WTO service
  – Designated email and text message addresses
• Exception messages are recorded in a report and in a journal.

Post-reorganization feedback, analysis, and fine-tuning

Questions:
• When was this database reorganized last time?
• Were the past database reorganizations effective?
• Could I know why the database was reorganized?
• Could I know whether the reorganization performed was effective in removing severe exceptions?
• Is the policy effectively configured for the database?

Solutions:
• The Diagnosis Report is produced by IMS Database Reorganization Expert.
• The Diagnosis Report provides the following information:
  – Summary of policy evaluation
    - Specific policy applied to the database
    - Reorganization need (phase 1)
- Result of policy evaluation, including exception messages with
  exception class and level
- Result of policy reevaluation (phase 2) after reorganization (if
  reorganization was performed)
- A summary message for the reorganization effect
- Database statistics before and after reorganization (and their differences)
Policy Services components

Policy Services uses a large set of components to implement the analysis of sensor data, evaluate policies against this data, and respond to threshold violations with exception messages and process actions.

Sensor Data Service component

The Sensor Data Service component provides services to construct and deconstruct the sensor data that is stored in the Sensor Data repository. The Sensor Data Service ensures that the data stored is known and valid.

The Sensor Data Service provides a transparent method for data storage and retrieval, and shelters the user from data format issues.

The communication between the client application (such as IMS Database Reorganization Expert and stand-alone DB Sensor) and the Sensor Data Service is handled by the Sensor Data API. This API creates a communications environment and manages requests and responses, such as writes, retrieves, and deletes.

Data Dictionary component

The Data Dictionary component provides a standardized method for the definition of data across multiple formats. The Data Dictionary component allows the various IMS Tools products to use data from each other without having to understand the tool-specific format of the data.

Sensor data is stored in the Sensor Data repository and is shared among the IMS Tools products participating in the Policy Services environment. Data stored in the present must be comprehensible in future years and releases. The Data Dictionary provides a homogeneous view of Policy Services data. The data is given a context that makes it independent of the actual format of the data. This context provides requesters of the data with a consistent data view.

The Data Dictionary describes all data elements that are stored in (and retrieved from) the Sensor Data Service. The dictionary documents the nature of the data and provides all data providers and consumers a clear understanding of the meaning of the data element values. The dictionary also documents the valid data values and ranges for data elements to enforce the data understanding and to enable dictionary services to protect the data consumers.

Policy Services API

The Policy Services API is the communication path for IMS Tools products and the ISPF user interface to connect to other Policy Services components.

Action Manager component

The Action Manager component is responsible for delegating actions to the IMS Tools product upon request. This component notes and records all action results reported by the client product.

In particular, notification actions are requested by the Action Manager component. Message actions are formatted and journaled by the Action Manager component. The Action Manager supports two-phase processing:

- The first phase of processing returns only processes and related messages.
• The second phase produces only message actions. This phase allows for a reassessment of the state after the processes requested in phase 1 are effected, resulting in more meaningful messaging.

**Policy Validation component**

The Policy Validation component validates policies when they are created, during maintenance updates, and before evaluation.

**Policy Evaluation component**

The Policy Evaluation component evaluates policy rules in accordance with rule evaluation strategy and directives.

A given rule might be applicable to a subset of the resource types supported by the policy. Rule evaluation does not process rules that are not applicable to the resource being processed based on the resource type attribute for the rule.

**Policy Data Store component**

The Policy Data Store component provides access to and storage of policy definition objects. The Policy Data Store component is responsible for reading and writing policy definitions to and from the repository.

The Policy Data Store component provides transformation methods that convert between the data structure optimized for storage and the structures required for efficient functional reference. The component provides a full set of functions for creating and maintaining policy definitions.

Policy definitions exist in two forms:
• Policy templates
• Policy streams

Policy templates describe the contents of a policy and ultimately are transformed into policy streams at bind time. Policy streams are syntactically correct and functionally complete policy definitions. Policy streams represent the updating of a policy template with the most recent rule, notification list, and action definitions provided by maintenance updates.

The policy is defined and stored in template form only. A policy stream is generated for a policy on demand and then is disposed of when it is no longer needed. Advanced users can hand code and import a policy stream. These policy streams do not have a corresponding template. There is no transformation from a stream to a template.

Policies are referred to only by name. Therefore, policy templates and policy streams share the same name space.

**Rule Data Store component**

The Rule Data Store component provides access to and storage of rule objects.

Rule objects exist in two forms
• Rule templates
• Rule streams
Rule templates describe the contents of a rules stream and are transformed into rule streams. They exist to simplify and constrain the definitional process.

The Rule Data Store component is responsible for reading and writing rule objects to and from the repository.

**Notification List Data Store component**

The Notification List Data Store component is responsible for reading and writing notification lists and directory entries to and from the permanent media. The component provides transformation methods that convert between the data structure optimized for storage and the structures required for efficient functional reference.

**Notification List Manager component**

Policy actions include the ability to notify one or many parties. The Notification List Manager component provides a message broadcast service.

Messages sent to the Notification List Manager are forwarded to one or more destinations. Message destinations include:

- TSO
- WTO
- Email
- Texting

The Notification List Manager component provides a description of the destination including a name, address, destination type, and possibly an address of a delivery agent.

The component journals each notification request and the results of each notification attempted. The requester is informed of overall success (for example, all succeeded, all failed, some succeeded, invalid request, invalid notification list).

**Policy Environment Services component**

The Policy Environment Services component provides, through the ISPF user interface, the ability to maintain and distribute policies, rules, and notification lists. The component is responsible for maintaining policy environments and related information that is kept in the repository.

The Policy Environment Services component manages all knowledge of the physical data storage by manipulating the data structures and limiting access to these data structures.

**Journal Manager component**

Journaling provides a record of policy-related activities. The Journal Manager collects activities that document product usage at varying levels and collects diagnostic entries at varying levels.

The journal events are written to a file locally (based on DD presence). If no journal DD statement exists, the journal is not written. The purpose of this journal is to assist in Policy Services problem analysis.
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:

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:

http://www-01.ibm.com/support/docview.wss?uid=swg27020942

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- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions

IBM Redbooks® publications that cover IMS Tools are available from the following web page:

http://www.redbooks.ibm.com

The IBM Information Management System website shows how IT organizations can maximize their investment in IMS databases while staying ahead of today's top data management challenges:

https://www.ibm.com/software/data/ims/

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To automatically receive emails that notify you when new technote documents are released, when existing product documentation is updated, and when new product documentation is available, you can register with the IBM My Notifications service. You can customize the service so that you receive information about only those IBM products that you specify.

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1. Go to http://www.ibm.com/support/mysupport
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 helps IBM to provide quality information. Send any comments that you have about this book or other IMS Tools documentation to comments@us.ibm.com. Include the name and version number of the product and the title and number of the book. If you are commenting on specific text, provide the location of the text (for example, a chapter, topic, or section title).
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. Hardware and software prerequisites

Policy Services is installed by using SMP/E and standard RECEIVE, APPLY, and ACCEPT processing.

**Hardware prerequisites**

IBM Tools Base for z/OS is installed using the SMP/E RECEIVE, APPLY, and ACCEPT process. For detailed instructions on how to install the product, refer to the Program Directory for IBM Tools Base for z/OS. The program directory is included with the product media and is also available on the IMS Tools Library page.

Policy Services (5655-V93) operates on any hardware configuration that supports the required version of IMS.

**Software prerequisites**

The installation and operation of Policy Services requires the following software:

**Operating system:**

- IBM z/OS, V2.1 (5650-ZOS) or later
Chapter 3. Sensor data service

Sensor data is the data collected by an IMS Tools product when it measures the condition (or state) of one or more databases.

This sensor data is information captured at an instance in time that represents the condition, or state, of one or more databases. The data can be used for later analysis and policy evaluation.

Policies consist of a set of rules that each define threshold limits for specific types of database conditions. The policy service mechanism evaluates threshold values against the actual data values that an IMS Tools product collects and stores in the IMS Tools Knowledge Base Sensor Data repository.

The sensor data is stored in the Sensor Data repository as records made up of data element values. The data record is stored in a well-understood and flexible format that allows its use years and multiple product releases later in time. The data and its format is understandable between products and releases to ensure reliable functionality.
Sensor Data repository

All sensor data is handled by the IMS Tools Knowledge Base server and stored in an IMS Tools Knowledge Base Sensor Data repository.

IMS Tools Knowledge Base provides a common information management service that allows the sharing of data generated by multiple tool products within a sysplex from a single, centralized interface.

Data records and elements

Sensor data is stored in the IMS Tools Knowledge Base Sensor Data repository in the form of records made up of data element values. A data element consists of a data element tag and a data element value pair.

Sensor data records are a collection of information related to a client application that are valid with their dictionary definitions and their element structure. A collection of sensor data records is processed as a group by using the record set identifier (RSI).
Data elements are used by services outside of sensor service functions, such as the policy evaluation component. The self-describing nature of a data element, as dictated by the Data Dictionary, facilitates generic data manipulation.

**Data Dictionary**

Sensor data is stored in the IMS Tools Knowledge Base Sensor Data repository and is shared among the IMS Tools products participating in the Policy Services environment. Data stored in the present must be comprehensible in future years and releases. The Data Dictionary provides the rigor in data type adherence for Policy Services.

The Data Dictionary describes all data elements (names and attributes) that are stored in (and retrieved from) the sensor data service. The dictionary documents the nature of the data and provides all data providers and consumers a clear understanding of the meaning of the data element values. The dictionary also documents the valid data values and ranges for data elements to enforce the data understanding and to enable dictionary services to protect the data consumers.

There is a set of rules for managing the elements defined in the dictionary that is available for both for the maintainer of the dictionary and for the client products.

**Sensor Data Store service**

The Sensor Data Store component provides services to construct and deconstruct the sensor data stored in the IMS Tools Knowledge Base Sensor Data repository. The sensor data store ensures that the data stored is known and valid.

The Sensor Data Store provides a transparent method for data storage and retrieval, and shelters the user from data format issues.

**Sensor Data Read service**

The Sensor Data Read component provides services to retrieve the sensor data from the IMS Tools Knowledge Base Sensor Data repository.

The Sensor Data Read reads the requested sensor data from the IMS Tools Knowledge Base Sensor Data repository, and then constructs a list of data elements for client components.

**Sensor Data API**

The communication between the client application (such as IMS Database Reorganization Expert and stand-alone DB Sensor) and the Sensor Data Store or the Sensor Data Read is handled by the Sensor Data API. This API creates a communications environment and manages requests and responses, such as writes, retrieves, and deletes.

**Data validation and transformational layer**

The Sensor Data Store uses a validation and transformational layer to ensure that all data being written to the repository is usable and that all data being retrieved is in a useful format.
Write validation ensures that all the data elements are defined in the dictionary and conform to their definitions. The validation service also ensures the integrity of the record and data structure.

Read validation also ensures the integrity of the record and data structures. The transformation service provides mapping of the data from the records into the format and location requested by the client product.
Policy Services is a core IMS Tools technology that can monitor specific database state by evaluating the sensor data collected by an IMS Tools product, and by providing a response to any conditions that exceed the threshold values specified for this state.

Topics:
- “What is a policy?” on page 26
- “What is sensor data?” on page 30
- “What is a rule?” on page 31
- “What is an exception?” on page 35
- “What is an action?” on page 38
- “What is a directory entry?” on page 43
- “What is a notification list?” on page 44
- “Exporting and importing Policy Services objects” on page 46
- “Example policy evaluation process flow” on page 48
- “Example scenario for conditional reorganization” on page 51
What is a policy?

A policy is the expression, or definition, that is used by Policy Services to evaluate specific database states, such as the state of space utilization at a specific instance in time.

The policy definition is used to evaluate the database state, and specifies how Policy Services responds to any events that reach or exceed the threshold values specified for this state.

A policy definition consists of the following components:

- **One or more condition expressions (rules) that are used to evaluate the database statistics (sensor data) that are collected by the IMS Tools product**
  A condition is a Boolean expression that compares threshold values that are defined in the rule to the collected sensor data values (data elements) that represent the database statistics at an instance in time.
  The purpose of the rule is to detect an exception to the database state by using the rule condition.

- **A resulting exception when a condition threshold has been reached or exceeded**
  Each rule contains threshold values that specify the limits (numeric or percentage) for each data element that is being evaluated.
  The exception is defined in the condition and consists of an exception class (exception type), a severity level (warning, severe, critical), and the message text that describes the exception.
  The exception class identifies a type of database condition such as fragmented free space, too many split segments, or RAP overload.
  Each severity level is mapped to an action type (a message, a process, or both).

- **An action to perform when an exception for a specific severity level occurs**
  Actions consist of warning messages that are sent to members of one or more notification lists, and processes that can be implemented by the client application (such as database reorganization).

The following figure shows how a policy consists of a set of rules and a list of actions:
Policy templates are distributed by Policy Services. You can customize policies to detect exceptions to specific database states, or to change the action that the IMS Tools client takes in response to an exception. You can also create new custom policies for a specific database or group of databases in your environment.

There are two methods for creating and customizing policies:

- Create a new policy by using an existing policy as a model
  You must copy the existing policy, rename the copied version, then customize this copy.
- Create a completely new policy
  You must build the policy from a blank template.

Policies can be designed to apply to the following database combinations:

- A specific database type
- A subgroup of databases (for example, all HISAM database types)
- All database types

Policies are defined as applicable to one or more resource types. It is not logical, for example, to check for CI Splits in an OSAM data set. Resource types can include the following database types:

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM
- DEDB
- INDEX
- PSINDEX
To simplify the management of policy definitions, you can define policies that apply to many resource types, and you can define rules that test thresholds that might not apply to every resource.

**What is a policy template and a policy stream?**

Policy definitions exist in two forms:

- Policy templates
- Policy streams

Policy templates describe the contents of a policy and ultimately are transformed into policy streams when a policy lookup is requested by Policy Services. Policy streams are syntactically correct and functionally complete policy definitions. Policy streams represent the on demand updating (binding) of a policy template with the most recent rule, notification list, and action definitions that are provided by maintenance updates.

A policy stream is built from a policy template and all referenced rules (created as needed) when a policy lookup is requested by the Policy Services API client. The Policy Services ISPF user interface does not provide any means to define, modify, or save a policy stream. The policy stream is disposed of when it is no longer needed.

Advanced users can manually code and import a custom policy stream. These custom policy streams do not have a corresponding template.

Streams are not transformed to templates.

Policies are referred to only by name. Therefore, the policy templates and policy streams share the same name space.

**Guidelines for editing a policy stream**

You can export a policy template as a policy stream and then edit the policy stream, although this procedure is not recommended. The capability to edit a policy stream is available to those advanced users who need to modify sections of the policy that are not available through the user interface.

If this process is not handled correctly, an edited policy stream can fail during the evaluation of sensor data. The user is responsible for resolving and correcting such problems. The user is also responsible for ensuring that the modified policy stream is valid, and that it is the user's own process that performs the validation.

The following conditions apply to exporting a policy template as a policy stream and then editing the policy stream:

- Do not modify the ORIGINAL_NAME(IBM.policy_name) statement within the policy stream. This statement is required to refer to the origin of the policy.
- Modify the NAME(policy_name1) statement to have a new name NAME(policy_name99). This statement allows you to import the new policy stream.

If a policy template and a user-built policy stream have the same policy name, the policy template always replaces the policy stream in the repository. However, the
user-built policy stream is never allowed to be imported to replace a policy template.
What is sensor data?

Sensor data is information captured at an instance in time that represents the condition, or state, of one or more databases. The data can be used for later analysis and policy evaluation.

Each policy consists of a set of rules that define threshold limits for specific types of database conditions. The policy service mechanism evaluates these threshold values against the sensor data that an IMS Tools product collects and stores in the IMS Tools Knowledge Base Sensor Data repository.

The sensor data is stored in the Sensor Data repository as a group (or a set) of records made up of data elements. A data element consists of a data element tag and a data element value pair. A policy and the required data elements are presented to the decision-making processing as a pair.

IMS Tools Knowledge Base provides a common information management service that allows the sharing of data that is generated by multiple tool products within a sysplex from a single, centralized interface.

The following figure shows the storage of sensor data elements in a repository:

![Sensor Data repository stores rule data elements](image)

As an example, the following categories of sensor data are collected by IMS Database Reorganization Expert:

- Database record statistics (per database or HALDB partition)
- Randomizer statistics (per HDAM or PHDAM partition)
- Volume and extents statistics (per data set)
- Data set space usage statistics (per data set)
- IMS space utilization statistics (per data set)
- HISAM and SHISAM statistics (for HISAM)
What is a rule?

A rule is made up of a simple or complex condition and a corresponding exception that is detected by this condition.

A rule compares the stored data element values to the predefined threshold values that specify the limits for that set of data element values.

For example, if database state information is being collected, a rule can set the boundary, or limit, for a specific type of database state. During a policy evaluation, the rule’s conditional expression compares the sensor data that was collected for this state (a set of data element values) against the limit that was specified in the rule for this state (a set of threshold values).

Each IMS Tools product that participates in the Policy Services environment is responsible for capturing and storing data elements for the appropriate information that it is interested in evaluating.

The following outline illustrates the components of a rule:

- **Rule condition**
  - Conditional expression
    - The rule’s conditional expression is the formula that compares stored data element values with the threshold values specified for this data.
    - The conditional expression uses one or more variables (for example &1, &2, &3) to represent the threshold value for that condition.
  - Threshold sets
    - A threshold set consists of the group of threshold variables (used in the conditional expression) with assigned threshold values.
    - A threshold value specifies the boundary, or limit, for the specific database state being governed by this rule.
    - Each threshold set in a rule template uses the same group of threshold variables. Each set is distinguished by its name.
    - A rule template typically has at least three threshold sets predefined by IBM (HIGH, MED, LOW). Custom sets can also be created.

- **Threshold exception**
  - Exception class
  - Exception (severity) level (WARNING, SEVERE, or CRITICAL)
  - Exception message text

Policies depend on the condition and exception expressions provided by rules in order to evaluate the state of a database and identify the exception state. Policies can contain one or more rules.

You can customize the following features of a rule:

- Threshold values in each threshold set
- Exception message text
- Association of a severity level with a threshold set
- Add new (user-defined) threshold sets and values

The following figure shows the condition and exception components of a rule, and expands on the features of the condition:
Data elements used by the rule condition

A rule performs a comparison of a set of data element values to a set of threshold values. Each participating IMS Tools product collects and stores database state data as data element values.

Examples of database states and associated data elements include:

Percentage of CI or CA splits in a HISAM or SHISAM database
Data elements: DB_PCT_NUM_CI_SPLIT and DB_PCT_NUM_CA_SPLIT

IMS free space availability
Data elements: DB_BYTES_SEG, DB_PCT_BYTES_SEG, DB_BYTES_FREE_SPACE, and DB_PCT_BYTES_FREE_SPACE

Percentage of overflow data in an HDAM or PHDAM database
Data elements: DB_PCT_BYTES_OVFL

Number of database records
Data element: DB_NUM_ROOT

Imbalanced HDAM or PHDAM randomizing
Data elements: DB_PCT_NUM_UNUSED_RAP and DB_PCT_NUM_SYNONYM
Threshold variables, values, and sets

A rule specifies the boundary, or limit, for a particular database state as a set of threshold values. The policy service evaluates the set of threshold values against the set of values of the appropriate data elements for this database state that were collected and stored in the repository.

For example, the rule template that specifies the limits on IMS free space availability (IBM.FREE_SPACES.10) contains the following set of conditions and threshold variables:

- Threshold on the total bytes of segments in the data set (threshold variable &1)
- Threshold on the percentage of total segment data against the used space that is allocated for the data set (threshold variable &2)
- Threshold on the total bytes of free spaces remaining in the data set (threshold variable &3)
- Threshold on the percentage of total free spaces against the used space that is allocated for the data set (threshold variable &4)

The group of threshold variables with assigned threshold values is called a threshold set. For example:

\[\begin{align*}
&1 &= 8589934592 \\
&2 &= 70 \\
&3 &= 0 \\
&4 &= 30
\end{align*}\]

Each rule template contains at least three predefined IBM threshold sets with the following name designations: LOW, MED(IUM), HIGH. However, some rule templates contain fewer threshold sets. For example, the rule template that checks the RECON IC NEEDED flag (IBM.IC_NEEDED) supports only one threshold set (&1=Y) that sets the data element value for DB_DBRC_IC_NEEDED to Y when the RECON IC NEEDED flag is ON.

Custom threshold sets with unique names (such as IMS2HIGH, IMS3LOW) can also be defined and included with the rule template.

Each threshold set typically has different threshold values. The goal is to create (and have available for policy evaluation) a range of different boundaries for the particular database state governed by the rule.

Multiple policies can use the same rule. Therefore, a wide range of thresholds allows you to configure multiple layers of exceptions and responses for different policies as they apply to the needs of different databases.

In the previous example, the conditions are evaluated with the logical OR, which means that the rule condition is said to be met (or TRUE) if one or more of these individual threshold comparisons are reached in one or more of the data sets that compose the database.

Example: Rule threshold sets

The following example shows a combination of predefined IBM and user-created threshold sets for the rule template that governs IMS free space availability:
Table 1. Example threshold sets for the rule template IBM.FREE_SPACES.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold variables and values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW (IBM predefined)</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 70</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 30</td>
</tr>
<tr>
<td>MED (IBM predefined)</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 80</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 20</td>
</tr>
<tr>
<td>HIGH (IBM predefined)</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 10</td>
</tr>
<tr>
<td>IMS3LOW (user-created)</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 60</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 40</td>
</tr>
<tr>
<td>IMS3HIGH (user-created)</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 85</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 15</td>
</tr>
</tbody>
</table>

**Important:** The threshold value 8589934592 for the variable &1 and the threshold value 0 for the variable &3 represent the upper threshold value and the lower threshold value that are never reached. In this rule condition, these threshold values are used to disable the evaluation of the data element values that correspond to &1 and &3. Change these values only if you want to monitor these conditions.

The threshold sets for this rule template can be used by several policies. Each policy uses some combination of the threshold sets that are provided in the rule template (up to a maximum of three sets). For example:

- POLICY1
  LOW, MED, IMS3HIGH
- POLICY2
  IMS3LOW, MED, HIGH
- POLICY3
  IMS3LOW, IMS3HIGH

When a policy evaluation determines that a set of threshold values satisfies the rule condition, Policy Services recognizes the condition as an exception at a specific exception severity level. An exception to a rule condition prompts the policy to respond with an action that is associated with the threshold set that contains the values that were exceeded.
What is an exception?

A rule is made up of a condition that specifies a threshold boundary for a particular database state and a corresponding exception that defines the response to any crossing of that boundary.

The rule exception has three components:
• Exception class
• Exception severity level
• Exception message

The following figure shows the condition and exception components of a rule, and expands on the features of the exception:

---

**Figure 6. Rule exception components**

**Exception class**

The exception class represents the specific database state type that is being governed by the rule. The exception class is used to map the exception to a specific action in the policy.

For example, the rule IBM.FRAGMENTATION.10 monitors free space fragmentation in a database. The exception class defined for this rule is: FRAGMENTED_FREE_SPACES
Exception severity level

The exception severity level is a category that represents a degree of concern for the detected exception.

There are three fixed exception severity levels:
- WARNING
- SEVERE
- CRITICAL

A policy is used to map threshold sets (LOW, MED, HIGH, custom) to exception severity levels to form a functional rule. Only one threshold set is mapped to each exception severity level.

You use the Policy Services ISPF user interface to configure this mapping for each rule template that is used in individual policies. The following table illustrates that threshold sets are mapped to severity levels:

<table>
<thead>
<tr>
<th>Threshold sets</th>
<th>&gt;&gt;MAP TO&gt;&gt;</th>
<th>Severity levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>MYLOW</td>
<td>WARNING</td>
</tr>
<tr>
<td>MED</td>
<td>MYHIGH</td>
<td>SEVERE</td>
</tr>
<tr>
<td>HIGH</td>
<td></td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Although there is no predefined correlation between the threshold sets (LOW, MED, and HIGH) and severity levels (WARNING, SEVERE, and CRITICAL), each predefined IBM policy by default makes the following correlations:
- LOW with WARNING
- MED with SEVERE
- HIGH with CRITICAL

Each threshold set typically uses different threshold values. The goal is to create (and have available for policy evaluation) a range of different boundaries for the particular database state governed by the rule template.

Multiple policies can use the same rule template. Therefore, a wide range of thresholds allows you to configure multiple layers of exceptions and responses for different policies as they apply to the needs of different databases.

Exception message text

The exception message is the text that can be used by the resulting policy action to describe the database state that crossed a rule threshold set.

For example (for rule template IBM.FREE_SPACES.10):
IMS space utilization statistics of %RESOURCE% has reached or crossed a threshold.

You cannot use the Policy Services user interface to modify the text of the exception message for any rule template.
The variable %RESOURCE% is replaced by the DBD name or the HALDB partition name when the message is printed or sent.
What is an action?

A policy also defines the mapping of a rule exception and severity level to a resulting action.

A policy implements an action when a rule condition is reached or exceeded during a policy evaluation.

An action for each exception is actually an action recommendation. An action is determined by the action list defined in the policy. Three forms of an action are possible:

- **Send an exception message for each exception detected**
  The exception message is sent to the destinations that are contained in the notification list or lists that are associated with that exception class and severity level either specified by the Rule, or the Policy. For example (for rule IBM.FREE_SPACES.10):
  IMS space utilization statistics of %RESOURCE% has reached or crossed a threshold.
  The exception message text is contained in the rule template.
  Messages are typically sent to the client's SYSOUT and recorded in the Policy Services journal report.

- **Perform a process only** (for example, perform a database reorganization)
  Policy Services can recommend a specific process to the caller (client) of the Policy Services.
  The purpose of the recommended process is to remove the detected exception or lower the level of the exception.

- **Recommend a process and send an exception message for each exception that remains after the process**
  A process action can also be accompanied by the standard exception message that is associated with the rule.
  The process action is delegated to and handled by the IMS Tools client or some other external program.
  The associated exception message is handled by Policy Services.

The following figure shows the features of an action list entry for a policy:
Example action process flow

An exception message associated with a rule is sent only when at least one notification list is attached to the rule. If a notification list is not defined for the rule, the notification list that is defined by the policy for the summary notification is used.

The process action is not performed immediately and the exception message associated with the process action is not sent immediately. The resulting action or actions are determined by the set of process actions recommended by the policy evaluation.

For example, in the Smart Reorg utility of IMS Database Reorganization Expert, multiple reorganization processes, each of which was recommended for a different exception, result in a single reorganization action.

The reorganization is performed by the Smart Reorg utility only once, not multiple times. The exception message that was associated with an action is sent only when the exception still remains after the action has been performed.

At the end of a policy evaluation session, a message that summarizes the result of the policy evaluation is sent to the destinations contained in the notification list or lists associated with the policy if at least one exception was detected by a rule defined in the policy. The message is called the summary message for the policy evaluation session.

Action selection: Exception-to-action mapping

The form of action depends on how the specific rule exception was mapped in the policy. A rule threshold set is mapped to a severity level for the exception class that is associated with the rule. In turn, the severity level is mapped to an action.

The following table illustrates that threshold sets are mapped to severity levels that are mapped to an action type:
Table 3. Thresholds mapped to severity levels mapped to policy actions

<table>
<thead>
<tr>
<th>Threshold sets</th>
<th>&gt;&gt;MAP TO&gt;&gt;</th>
<th>Severity levels</th>
<th>&gt;&gt;MAP TO&gt;&gt;</th>
<th>Policy Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>WARNING</td>
<td></td>
<td></td>
<td>Message</td>
</tr>
<tr>
<td>MED</td>
<td>SEVERE</td>
<td></td>
<td></td>
<td>Process</td>
</tr>
<tr>
<td>HIGH</td>
<td></td>
<td>CRITICAL</td>
<td></td>
<td>Message</td>
</tr>
<tr>
<td>MYLOW</td>
<td></td>
<td></td>
<td></td>
<td>Process</td>
</tr>
<tr>
<td>MYHIGH</td>
<td></td>
<td></td>
<td></td>
<td>Process</td>
</tr>
</tbody>
</table>

For example, the custom threshold set MYLOW can be mapped to severity level WARNING, which in turn is mapped to the action of sending an exception message out to the notification list that is associated with this exception class and severity level.

In predefined policies provided by IBM, the severity-level-to-action mappings are fixed for each exception class and are not customizable through the Policy Services ISPF user interface:

- WARNING always maps to a message action
- SEVERE always maps to a message action
- CRITICAL maps to either a message action or a process action

The following topics contain a table for each policy that shows the exception class and severity level pairs that specifically result in a process action:

- Chapter 22, “Domain REORG policies,” on page 389
- Chapter 25, “Domain RECOVERY policies,” on page 457

Exception message format

Exception messages are sent to the target by the Policy Services Action Manager. Those exception messages are also returned to the Policy Services client IMS Tool, such as IMS Database Reorganization Expert, with information on the source of the exception detection.

The following example from the Diagnosis Report of IMS Database Reorganization Expert shows how an exception message from Policy Services can appear:

The size of a database data set in BKDB has reached or exceeded a threshold

**Message text**

The message text that comes from the text contained in the rule template (indicating the resource affected; the database BKDB in this example)

You cannot modify the message content.

**Class** The exception class name

**Level** The severity level (WARNING, SEVERE, CRITICAL)

**Rule** The rule template that detected this exception

**Threshold Set**

The name of the threshold set in this rule template that was used to detect this exception

This threshold set was mapped to the severity level.
Additional information about message actions

Although reaching or exceeding a rule condition can trigger one of the three severity levels, the text of the exception message for each severity level is the same (shared among all severity levels). The text comes from the IMS Reorganization Expert report. The messages are distinguished by the return of the exception class and severity level type with the message.

For example:

The size of a database data set in BKDB has reached or exceeded a threshold
Class: DATA_SET_SIZE_GROWTH    Level: WARNING
Rule: R:IBM.DBDS_GROWTH.10    Threshold Set: MYLOW

The size of a database data set in BKDB has reached or exceeded a threshold
Class: DATA_SET_SIZE_GROWTH    Level: SEVERE
Rule: R:IBM.DBDS_GROWTH.10    Threshold Set: MED

The size of a database data set in BKDB has reached or exceeded a threshold
Class: DATA_SET_SIZE_GROWTH    Level: CRITICAL
Rule: R:IBM.DBDS_GROWTH.10    Threshold Set: MYHIGH

In the conditional reorganization scenario of Reorganization Expert, Policy Services uses the same exception class messages for both the phase 1 first evaluation and the phase 2 second evaluation that is made after the actions recommended in phase 1 have been performed.

In the policy evaluation that is performed by Autonomics Director, only the phase 1 policy evaluation is performed.

Additional information about the summary message

A set of summary messages are defined for the policy domain and they are specific to the domain and the resource type. The appropriate summary message is selected based on the combination of the results of phase 1 and phase 2 policy reevaluations.

In the conditional reorganization scenario of Reorganization Expert, the summary message is returned after phase 2 processing completes successfully and at the same time the standard exception message or messages are returned. If the phase 2 policy evaluation fails, a specific summary message is returned that indicates the reason. The appropriate summary message is selected based on the combination of the results of phase 1 processing, process action (such as REORG of the Database), and phase 2 policy reevaluations.

In Autonomics Director, the summary message is returned at the phase 1 policy evaluation.

Policy Services messages can direct you to the IMS Tool for which the summary message was issued, where more tool-specific explanation, system action, and user action information is available.

Additional information about process actions

The response to a recommendation to perform a process action is specific to the IMS Tools client product.
For example, the Smart Reorg utility in IMS Database Reorganization Expert can respond to a Policy Services recommendation and perform a reorganization process. In this example, the recommendation is returned to the tool's Conditional Reorganization Support Service, which internally calls Policy Services.

The recommendation for a process action can be accompanied by the standard exception message that is appropriate for the exception class and severity level. This exception message describes the rule condition that was reached or exceeded and that caused the recommendation for the process action.
What is a directory entry?

A directory entry is the mechanism used by Policy Services to define users who can receive exception notifications messages that are sent out to warn or report on results of policy evaluations.

A single directory entry defines a name of a user, the connection type (such as WTO or TSO), and all connection specifications that are required to deliver a message to that user. You use the Policy Services user interface to define directory entries.

Directory entries are used to populate one or more notification lists. Notification lists are used by a policy when a rule exception occurs and the resulting action requires a warning message to be sent to appropriate users, as defined by the notification list mechanism.

Policy Services supports two directory entry types:

- WTO
- User (TSO, EMAIL, or TEXTING)

The WTO directory entry contains the following information fields:

- Short name
- Long name
- Description
- Delivery type:
  - WTO

The User directory entry contains the following information fields:

- Short name
- Long name
- Description
- Delivery type:
  - TSO, EMAIL, or TEXTING
What is a notification list?

A notification list is a mechanism for grouping users into unique business categories, such as all DBAs, or all users who represent an installation application area or a set of databases associated with a given application or location.

The notification list is created by including the directory entry short names of the users who are appropriate for the required notification category. Notification lists can contain both directory entries and other notification lists.

The short name used in a notification list maps to the directory entry of that user. The directory entry contains the information (for example, TSO and WTO IDs) that are required to deliver messages. You use option 3 Notification lists, directory entries management on the Policy Services user interface to define lists that include one or more directory entries.

The following example shows how notification lists can include combinations of WTO consoles, TSO users, and other notification lists:

Table 4. Example notification lists

<table>
<thead>
<tr>
<th>Notification list A</th>
<th>Notification list B</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSOUSER1</td>
<td>TSOUSER1</td>
</tr>
<tr>
<td>TSOUSER2</td>
<td>TSOUSER4</td>
</tr>
<tr>
<td>TSOUSER3</td>
<td>TSOUSER5</td>
</tr>
<tr>
<td>CONSOLE1</td>
<td>CONSOLE2</td>
</tr>
<tr>
<td></td>
<td>NOTLISTC</td>
</tr>
</tbody>
</table>

A policy and each rule in the policy can refer to one or more notification lists. The directory entries contain the information such as user name, destination type, destination address, and description. If an exception is raised by the evaluation of a policy, a message can be sent to all destinations (directory entries) listed in the notification lists that are specified by the rule.

Important: If a notification list is not specified by the rule, the notification list that is specified by the policy, the summary notification list, is used to send a message to all destinations if an exception is raised by the evaluation of a policy.

In a rule, notification lists are associated with a threshold set and severity level combination. For example:

Table 5. Example notification list associations

<table>
<thead>
<tr>
<th>Action</th>
<th>Severity level</th>
<th>Threshold set</th>
<th>Notification list</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESSAGE</td>
<td>WARNING</td>
<td>LOW</td>
<td>Notification List A</td>
</tr>
<tr>
<td>MESSAGE</td>
<td>SEVERE</td>
<td>MED</td>
<td>Notification List A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Notification List B</td>
</tr>
<tr>
<td>REORG</td>
<td>CRITICAL</td>
<td>HIGH</td>
<td>Notification List A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Notification List C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Notification List E</td>
</tr>
</tbody>
</table>

The following figure shows the mapping of specific notification lists to specific severity level and threshold set combinations:
Notification lists can be associated with two notification message types:

- **Exception messages**
  Each exception class that is associated with a rule template can have three severity levels (WARNING, SEVERE, CRITICAL).
  You can associate one or more notification lists with each rule threshold set and severity level combination.

- **Summary messages**
  The summary message is sent after the second evaluation phase.
  This message provides information about the results of the policy reevaluation that takes place after action was taken in response to an exception during the first policy evaluation.
  The summary message is sent also when an exception was detected but no associated process action was designated, or the recommended process action was canceled for some reason.

*Figure 8. Notification lists associated with severity level and threshold set combinations*
Exporting and importing Policy Services objects

The installed policy and rule templates can be copied and customized, and then exported to and imported from another environment.

Directory entries and notification lists can also be exported and imported.

The initial package of predefined IBM policies and rules is installed from partition data sets (PDS). This package is installed into the IMS Tools Knowledge Base Input repository as a set of policy and rule templates.

Policy templates describe the contents of a policy and ultimately are transformed into policy streams when a policy lookup is requested by Policy Services.

You can use the export and import functions to:
• Move policy and rule templates to and from another environment
• Back up the policy and rule templates

The export process begins by preparing a selection list for export and by creating an export package with the selected objects. Exported packages are created as partition data sets (PDS).

Exported packages consist of one member with control information and other members for each exported object.

You can then use the import process to install exported packages in another environment in the same domain.
Figure 9. Exporting and importing
Example policy evaluation process flow

To illustrate a policy evaluation process flow, the following example is based on the conditional database reorganization capabilities of the IMS Database Reorganization Expert product.

IMS Database Reorganization Expert uses Policy Services to provide advanced functions that help IMS database administrators perform database reorganization tasks.

Database reorganization is one of the responsibilities of database administrators that involves complex analysis tasks. Generally, these are time-consuming tasks that require knowledge, expertise, and experience in IMS database space management. IMS Database Reorganization Expert can reduce the complexity of the database reorganization tasks for IMS full-function databases by helping you automate the analysis and response to specific database conditions.

The IMS Database Reorganization Expert Smart Reorg utility enables the conditional reorganization feature. This feature automates the database diagnosis process and, only when database reorganization is deemed necessary, runs the reorganization job, all in a single job step. A Smart Reorg utility job that is run with the conditional reorganization feature is referred to as conditional reorganization job.

The following example process flow shows how various policy and rule components are used by Policy Services during a conditional reorganization job.

<table>
<thead>
<tr>
<th>Process flow</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The conditional reorganization job is initialized.</td>
<td>IMS Database Reorganization Expert - Smart Reorg utility</td>
</tr>
<tr>
<td>The selected policy is read.</td>
<td>SYS.DBDTYPE.HDAM</td>
</tr>
<tr>
<td></td>
<td>The SYS. policy is a copied predefined IBM basic policy for HDAM full function databases.</td>
</tr>
<tr>
<td>An example rule from this policy evaluates the statistics of Free Space Elements (FSE) in HD database data sets.</td>
<td>IBM.FRAGMENTATION.10</td>
</tr>
<tr>
<td>The rule contains a condition expression for evaluating the statistics of Free Space Elements (FSE) in HDAM database data sets.</td>
<td>The condition expression for this rule specifies the threshold values that are evaluated:</td>
</tr>
<tr>
<td></td>
<td>• Threshold value &amp;1 - the average number of free space elements (FSEs) per block or CI in the data set</td>
</tr>
<tr>
<td></td>
<td>• Threshold value &amp;2 - the average number, per block or CI, of FSEs whose lengths are less than the length of smallest segment in the data set</td>
</tr>
<tr>
<td></td>
<td>• Threshold value &amp;3 - the number of FSEs in the data set</td>
</tr>
<tr>
<td></td>
<td>• Threshold value &amp;4 - the number of FSEs that can hold a smallest segment in the data set</td>
</tr>
<tr>
<td></td>
<td>• Threshold value &amp;5 - the number of FSEs that can hold a largest segment in the data set</td>
</tr>
<tr>
<td>Process flow</td>
<td>Example</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| Data element (sensor data) values are collected and evaluated against the value of each threshold in the condition expression. | DB_AVG_NUM_FSE for &1  
DB_AVG_NUM_NOREUSE_FSE for &2  
DB_NUM_FSE for &3  
DB_NUM_FSE_MIN for &4  
DB_NUM_FSE_MAX for &5 |

The rule contains threshold sets that define threshold values for varying levels of the rule conditions.  Threshold sets:  

| LOW | &1 = 5  
&2 = 5  
&3 = 2147483648  
&4 = 2147483648  
&5 = 2147483648 |
| MED | &1 = 10  
&2 = 10  
&3 = 2147483648  
&4 = 2147483648  
&5 = 2147483648 |
| HIGH | &1 = 20  
&2 = 20  
&3 = 2147483648  
&4 = 2147483648  
&5 = 2147483648 |

Rule threshold sets are mapped to a maximum of three exception severity levels.  

| LOW => WARNING  
MED => SEVERE  
IMS3HIGH => CRITICAL |

Only the selected (mapped) threshold are used in a policy evaluation.  

Policy evaluation detects that the threshold set IMS3HIGH was crossed, which eventually generates the defined exception in the CRITICAL severity level.  

Exception class for ruleIBM.FRAGMENTATION.10 is:  
FRAGMENTED_FREE_SPACES
<table>
<thead>
<tr>
<th>Process flow</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy actions are defined for the exception class FRAGMENTED_FREE_SPACES at the policy severity level CRITICAL.</td>
<td>The REORG action recommends to the Smart Reorg utility of IMS Database Reorganization Expert to perform a reorganization (unloading and reloading without DBD change) of the database. The action process (REORG) is handled by the client tool's function (the parallel reorganization function of the Smart Reorg utility). The message process (send out exception message to the notification lists specified for the CRITICAL severity level of this rule) is handled by Policy Services. Once the REORG action completes, the IMS Tool product performs phase two. Based on the results of the REORG process, a summary message is issued that clarifies the results of the REORG. The summary message indicates the degree of improvement that resulted from the REORG action.</td>
</tr>
<tr>
<td>The actions include a REORG process and an exception message.</td>
<td>The exception messages for the exceptions detected in the first phase evaluation are suppressed and not sent.</td>
</tr>
<tr>
<td>Phase 2 policy evaluation for the status of the reorganized database detects no crossing of any threshold set of any rule.</td>
<td>The summary message is sent after the second evaluation phase. Since no exception is observed after the reorganization action, the following summary message is sent and returned to the Smart Reorg utility: BBE2900I resource name IN RECONID=recon id HAS BEEN REORGANIZED, AND NO EXCEPTIONS WERE DETECTED AFTER THE REORG.</td>
</tr>
</tbody>
</table>
Example scenario for conditional reorganization

Policy Services can monitor a specific database state by evaluating statistical data that is collected by an IMS Tools product, and providing a response to any conditions that exceed the threshold limits specified for this state.

Policy Services provides policy-based database management for members of the IMS Tools product family that are enabled to participate in an autonomies environment. All information is stored in and managed by central repositories that are controlled by IMS Tools Knowledge Base.

IMS Database Reorganization Expert, together with Policy Services, can assist the duties of database administration by providing policy-based conditional database reorganization for the databases that are important to the business.

The conditional reorganization job is similar to a standard IMS Database Reorganization Expert job. The main difference is that the conditional reorganization job, based on user configuration, decides whether to reorganize the database.

With IMS Database Reorganization Expert, you are relieved from researching stored statistics to determine the need for a reorganization. However, you still must request that the conditional reorganization evaluate the appropriate databases within the correct timeframe. You must also prioritize the database reorganizations for any limited maintenance windows.

IMS Database Reorganization Expert uses its Smart Reorg utility to coordinate the evaluation of reorganization policies, and to implement an appropriate response to the reaching or exceeding of thresholds that are specified for the sensor data that is collected by the tool.

Phase 1 sensor data collection, analysis, and evaluation

1. The Database Administrator submits a Smart Reorg driver job with the option CONDREORG=YES.
2. The driver initializes the conditional reorganization environment.
3. A selected conditional reorganization policy definition is read from the IMS Tools Knowledge Base Input repository.
4. Database statistics (sensor data) that was previously collected by the DB Sensor of IMS Database Reorganization Expert are analyzed.
   Database statistics are stored as a set of sensor data records in the IMS Tools Knowledge Base sensor data repository.
   The collected statistics are evaluated against the rules that are defined in the policy to detect any exceptions and to determine appropriate actions.

Action processing (notification and reorganization)

1. The policy evaluation determines any required action.
   Actions can take the form of an exception message sent to the appropriate notification lists, an actual implementation of a process (database reorganization), or both.
   The actual notifications are sent in the Report phase.
2. If a database reorganization action (REORG) is required by the policy evaluation, the driver gets a GO signal.
The database is reorganized only when a condition for reorganization is met during policy evaluation.

3. Additional statistics (sensor data) are collected and stored during the reorganization reload.
   At this stage, the evaluation of the new data is not performed yet. So you cannot know whether any exception remains or any new exception is detected.

**Phase 2 sensor data analysis and reevaluation**

In this phase, the exceptions that remain even after the reorganization action are detected by the phase 2 evaluation and are notified to the Smart Reorg utility (the client program), but not to you (the user).

**Report phase**

1. In this phase, each of the exceptions that were detected in Phase 2 result in messages sent to the destinations in the notification lists that are related, in the policy, to the rule that generated the exception.
2. The summarized results are delivered to the appropriate notification list as a summary notification message.
3. The summarized results are also stored in the IMS Tools Knowledge Base Output repository as a diagnosis report.
   The report contains the result of policy evaluation and provides a comparison of statistics before and after the reorganization.

Refer to the *IMS Database Reorganization Expert for z/OS User’s Guide* for full details on how this IMS Tools product uses Policy Services to perform conditional database reorganization.
Chapter 5. Domains, locales, and environments

Policy Services uses a key sequence of domains, locales, and environment levels to track, retrieve, and process policies, rules, directory entries, and notification lists.

Topics:
- “Domains” on page 54
- “Locales” on page 55
- “Maintenance and operation environments” on page 57
- “Maintenance and operation connections” on page 59
- “Maintenance, operation, and history levels” on page 61
- “Special conditions and best practices for environments” on page 63
Domains

A domain is a descriptive term used by Policy Services to represent one or more IMS Tools products that share the same set of policies and rules that result in performing the same action type.

Every policy belongs to a policy domain. For example, all policies and rules that are used by the Smart Reorg utility of IMS Database Reorganization Expert belong to the REORG policy domain.

A policy domain is not specific to a particular IMS Tools product. Rather, the domain is associated with a specific system management function (such as reorganization, backup, recovery, performance). Currently the REORG and RECOVERY domains are the policy domains that are supported.
Locales

Locale is a descriptive term used to define the IMS environments in which Policy Services is used. The locale designation is used as part of the internal naming of policies, rules, and notification lists.

A Policy Services locale represents an IMSplex that contains one or more IMS systems. A Policy Services locale can also be viewed as a single IMS system that is not defined as an IMSplex.

For each IMS Tools product, the locale definition mechanism can vary. For example, the locale as used and defined by IMS Database Reorganization Expert is defined as a RECON ID, which represents the name of an IMSplex or a DBRC group in an IMSplex.

In the example of IMS Database Reorganization Expert, the RECON data sets for each IMSplex or each DBRC group in each IMSplex are defined to IMS Tools Knowledge Base through the user interface and are stored in the repository.

An internal ID is generated by IMS Tools Knowledge Base for each user-defined external ID. The external ID is the locale used by the ISPF user interfaces for the IMS Tools product and Policy Services.

The locale (external ID) can be changed using the IMS Tools Knowledge Base user interface. However, the locale's internal ID always remains the same.

Global locale

A global Policy Services locale definition (BSNGLOBL) is also automatically defined by IMS Tools Knowledge Base and becomes the default locale for Policy Services.

BSNGLOBL is the generic locale value that works for all IMSplex-specific locales if a policy that is requested does not exist for the locale the IMS Tools product is requesting.

All policies and rules are initially installed at the BSNGLOBL locale and therefore become valid for any IMSplex-specific locale with the following conditions:

- BSNGLOBL policies can only contain rules templates and notification lists from the global locale.
- Locale-specific policies can contain rule templates and notification lists from both the same locale-specific locale and the global locale.

For example, a policy for locale RECONA can reference rules and notification lists from RECONA and/or BSNGLOBL, but not from any other locale such as RECONB.

Policy evaluation and locales

The locale name is part of a key sequence (along with domain and environment level) used by Policy Services to retrieve policies, rules, directory entries, and notification lists. For example:

```
DOMAIN.ENVIRONMENT-LEVEL.LOCALE.POLICY-NAME
DOMAIN.ENVIRONMENT-LEVEL.LOCALE.RULE-NAME
DOMAIN.ENVIRONMENT-LEVEL.LOCALE.RULE-NAME/THRESHOLD
ENVIRONMENT-LEVEL.LOCALE.NOTIFICATION-LIST-NAME
ENVIRONMENT-LEVEL.LOCALE.DIRECTORY-NAME/DESTINATION-TYPE
```
When an IMS Tools product requires a policy to perform an evaluation, a request goes out for a policy template or stream (for example, POLICY1). Policy Services supplies the remaining information using the following key sequence:

- Domain (for example, REORG)
- Environment level (for example, 00000002)
- Locale (for example, MYRECON1)

For POLICY1 example, the first request occurs for the following key sequence:
REORG.00000002.MYRECON1.POLICY1

If the locale-specific policy is not found, a second attempt is made to retrieve it from the global locale:
REORG.00000002.BSNGLOBL.POLICY1

If that policy does not exist, then there is no policy (POLICY1) available (defined) to be used by IMS Database Reorganization Expert for locale MYRECON1 and operation Environment 00000002.

**Usage notes for locales**

- Policy templates are defined and maintained for specific or global locales.
  Policy templates can be copied from one locale to the other.
  Policy streams can be exported and imported into and out of the specific or global locale.
  User policy templates can be imported into the specific or global locale.
  IBM distributed policy templates (IBM.*) can only be imported into the global locale. The user can then copy the policies to other locales when required.

- Rule templates are defined and maintained in specific or global locales.
  Rule templates can be copied from one locale to the other.
  Rule templates can be imported and exported into and out of the specific or global locale.
  IBM distributed rule templates can only be imported into the global locale. The user can then copy the rules to other locales when required.

- Notification lists are defined and maintained in specific or global locales.
  Notification lists can be imported and exported into and out of specific or global locales.
  Notification lists are defined and maintained in specific or global locales.
Maintenance and operation environments

There are two type of environments supported by Policy Services: maintenance and operation.

Maintenance updates and import actions can have broad impacts on the policy environment because the environment is destabilized until all customizations are completed.

To prevent impacting the operation environment where policy evaluations take place, disruptive changes to the Policy Services configuration should be performed in a maintenance environment. Changes that are made to the maintenance environment have no impact on the current operation environment.

This approach allows you to complete the changes in an isolated environment. When the changed environment is validated, the changed maintenance environment can be promoted to become the new operation environment.

The operation environment is available to any participating IMS Tools product to perform the evaluation of sensor data for a given policy request made by the IMS Tools product.

The multi-environment approach allows some degree of deployment control, allows backing out capabilities, and allows you to regress to any past saved (history) operation environment.

Maintenance environment

The maintenance environment is available through the Policy Services ISPF user interface and provides Policy Services clients with the following service functions to manage policies and rules:

- Create:
  - Policies
  - Notification lists
- View:
  - Policies
  - Rules
  - Notification lists
- Update:
  - Policies
  - Rules
  - Notification lists
- Export Policy Services objects
- Import Policy Services objects

Operation environment

The operation environment is available through the Policy Services ISPF user interface and provides Policy Services clients with the following service functions to manage policies and rules:

- Create:
  - Policies
– Notification lists

• View:
  – Policies
  – Rules
  – Notification lists

• Update:
  – Policies
  – Rules
  – Notification lists

• Export Policy Services objects

• Import:
  – Policy streams
  – Notification lists

The operation environment is the only environment that is available to the IMS Tools product through the Policy Services API to provide policy evaluation functions.
Maintenance and operation connections

There are three types of connections that can be made between Policy Services and Policy Services clients.

**IMS Tools client to Policy Services operation environment connection**

The non-TSO operation environment connection type (from the IMS Tool Policy Services client to Policy Services itself) provides the Policy Services client with the following capabilities:

- Evaluate the rules defined in the policy name that is passed to Policy Services by the client
- Use the sensor data that is passed to Policy Services by the client

**Policy Services operation environment connection**

The TSO operation environment connection type (ISPF user interface) has the following capabilities:

- Connect a user to an existing operation environment
- Connect a new user to an existing operation environment

The TSO operation environment connection type (ISPF user interface) can perform the following functions to the operation environment level:

- View Policy Services operation environment level items in the repository
- Create policies and notification lists
- Update Policy Services operation environment level items in the repository for immediate use
- Export from the Policy Services operation environment level items from the repository
- Import into the Policy Services operation environment level policy streams into the repository for immediate use
- Import into the Policy Services operation environment level policy notification lists into the repository for immediate use
- Promote a maintenance environment to an operation environment
- Promote a history level to an operation environment

**Policy Services maintenance environment connection**

The TSO maintenance environment connection type (ISPF user interface) has the following capabilities:

- Connect a user to an existing maintenance environment
- Connect a new user to an existing maintenance environment

The TSO maintenance environment connection (ISPF user interface) type can perform the following functions to the maintenance environment level:

- Perform the initial installation of predefined IBM policies and rules
- Create and view policies and notification lists
- Apply predefined IBM policies and rule maintenance
- Update Policy Services maintenance level items in the repository
- Export from the Policy Services maintenance level items from the repository
- Import into the Policy Services maintenance level items into the repository for future use
- Promote a maintenance environment to an operation environment
Maintenance, operation, and history levels

Policy Services objects in the repository belong to one of three different levels: maintenance, operation, and history.

Maintenance level

Only one maintenance environment level can exist at any time for all domains that are supported by Policy Services. There can be multiple logons to this maintenance environment.

The purpose of the maintenance environment level is to store Policy Services objects while providing the following functions:
  • Initial installation of predefined IBM rules and policies
  • Installation of IBM service to existing rules and/or policies
  • Installation of IBM service to add new rules and/or policies
  • Deletion of rules and/or policies using the installation of IBM service
  • User updates to existing rules and/or polices
  • User addition of customer defined policies
  • User creation of notification lists
  • User updates to existing notification lists

Operation level

Only one operation environment level can exist at any time for each domain that is supported by Policy Services. There can be multiple logons to this operation environment.

The purpose of the operation environment level is to provide the following functions:
  • Evaluation function to IMS Tools
  • User updates to existing rules and/or polices
  • User creation of customer defined policies
  • User creation of notification lists
  • User updates to existing notification lists
  • User Imports of policy streams and/or notification lists

History levels

History levels are previous operation environment levels that have been archived after being replaced by a promoted maintenance environment.

0 to n history levels can exist at any time for each domain that is supported by Policy Services.

Each history level is created by the following sequence:
1. An existing maintenance environment (level 0000001) is promoted to an operation environment (level 0000002)
2. A new maintenance environment (level 0000003) is created
3. The new maintenance environment (level 0000003) is promoted to an operation environment (level 0000004)
4. The former operation environment (level 0000002) is now made to be a history level (level 0000002)

Any history level can be promoted to an operation environment for the following reasons:
- Return to some prior history level to determine how a particular policy worked
- Back up to the most recent history level (which would have been the previous operation level) because of an error occurring in the current operation level
Special conditions and best practices for environments

The following topics describe special conditions and best practices for managing maintenance and operation environments.

Only one operation environment per domain and one maintenance environment for all domains can exist at a time.

Initial conditions for a newly installed system

In an initial installation of a Policy Services system, there are no existing environments.

The following sequence describes the actions taken for an initial installation of a Policy Services system:

- From an IMS Tools connection such as IMS Reorganization Expert, all calls fail.
- From a TSO connection, the ISPF setup dialog forces you to create an initial maintenance environment:
  1. Select a policy domain from the list of supported domains.
  2. Select the option to create a new maintenance environment (which is an empty or null maintenance environment) for the selected domain.
  3. Install the policies and rules.
  4. The IBM policies are copied to SYS. policies automatically as part of the maintenance installation process.
  5. Create appropriate notification lists to receive messages of conditions met.
  6. Update the policies and rules as necessary.
  7. Add any new policies.
- This initial maintenance environment for the selected domain can now be promoted to create the first operation environment.

Selecting the operation environment

The operation environment always comes from the promotion of a maintenance environment or a history level (if no maintenance environment exists).

The following special conditions apply when you select the operation environment from the Policy Services user interface:

An operation environment does not exist, and a maintenance environment does not exist

You must create an initial maintenance environment.

This initial maintenance environment can then be promoted to create the first operation environment.

An operation environment exists, and a maintenance environment exists

Any changes that you make to Policy Services items in this operation environment is not reflected in the maintenance environment.

Because the maintenance environment can be promoted to a new operation environment, it can be advantageous for the maintenance environment to be based on the current operation environment.

Always ensure that any changes made to Policy Services items in the operation environment are also made to the maintenance environment.
An operation environment exists, and a maintenance environment does not exist

If a maintenance environment is created from this operation environment before you have completed making changes to the operation environment, the remaining changes are not reflected in the newly created maintenance environment.

Because the maintenance environment can be promoted to a new operation environment, it can be advantageous for the maintenance environment to be based on the current operation environment.

Always ensure that any changes made to Policy Services items in the operation environment are also made to the maintenance environment.

Creating a null maintenance environment

The following special conditions apply when you create a new null maintenance environment:

• A null maintenance environment contains no objects in the repository.
• You must create a null environment for the initial installation of Policy Services.
• You might want to create a null environment into which you would import a copy of a newly created operation environment from a central location.

Creating a maintenance environment from operation

The following special conditions apply when you create a new maintenance environment from an operation environment:

• If a maintenance environment is created from the operation environment, ensure that any updates being made to the operation environment are completed before creating the new maintenance environment.
• Because the maintenance environment can be promoted to a new operation environment, it can be advantageous for the maintenance environment to be based on the current operation environment.

Creating a maintenance environment from a history level

The following special conditions apply when you create a new maintenance environment from a history level:

• All updates to policies and rules that occurred between a history level and the current operation environment are not captured.
• All notification lists required by the history level and operation environment are merged to reflect the most current notification list.

Promoting a maintenance environment to operation

The Promote action converts the maintenance environment into a new operation environment, replacing the current operation environment. The operation environment being replaced becomes archived as a history level.

The Promote action can be made from either an operation environment or a maintenance environment.

The Promote action is made from the maintenance environment

Ensure that all changes to the maintenance environment are completed before you promote the maintenance environment.
When the maintenance environment (level 0000000n) is successfully promoted, your connection is changed from the maintenance environment (level 0000000n) to the new operation environment (level 0000000n+1).

**The Promote action is made from the operation environment**

Ensure that all changes to the maintenance environment are completed before you promote the maintenance environment.

When the maintenance environment (level 0000000n) is successfully promoted, your connection remains in an operation environment. However, your current operation environment level (level 0000000r) is changed to a new operation environment level (level 0000000n+1).

- Prior to the Promote action, all changes to Policy Services items are stored in the operation environment you are working in (level 0000000r).
- After the Promote action, that operation environment is archived as a history level (level 0000000r).
- If the changes made to the operation environment (level 0000000r) are not also made in the maintenance environment (level 0000000n), the new operation environment (level 0000000n+1) does not contain those changes.

Always ensure that any changes made to Policy Services items in the operation environment are also made to the maintenance environment.

**Promoting a history level environment**

The action of promoting a history level to an operation environment is only valid when the Promote action is requested from an operation environment connection, and no maintenance environment exists.

When the history environment (level 0000000n) is successfully promoted, your connection remains in an operation environment. However, your current operation environment level (level 0000000r) is changed to a new operation environment level (level 0000000n).

Prior to the Promote action, all changes to Policy Services items are stored in the operation level you are working in (level 0000000r).

After the Promote action, that operation environment is archived as a history level (level 0000000r).

Changes made to the former operation environment (level 0000000r) are not reflected in the new operation environment (level 0000000n).

Additional changes to Policy Services items are reflected only in the new current operation environment (level 0000000n).
Part 2. Configuring Policy Services

Information about configuring Policy Services and other IBM Tools Base components for IMS is provided in IBM Tools Base for z/OS Configuration for IMS.

You can also download a PDF version of this information from the IMS Tools Product Documentation page.
Part 3. Using Policy Services

The topics in this section provide detailed information on using Policy Services.

**Note:** The TSO split screen is not supported by Policy Services.

**Topics:**
- Chapter 6, “Starting the Policy Services user interface,” on page 71
- Chapter 7, “Copying rules,” on page 73
- Chapter 8, “Customizing BSNGLOBL or locale-specific rules,” on page 79
- Chapter 9, “Modifying rule thresholds,” on page 83
- Chapter 10, “Defining custom rule threshold values for individual databases,” on page 87
- Chapter 11, “Managing notification lists and directory entries,” on page 93
- Chapter 12, “Modifying policy actions,” on page 111
- Chapter 13, “Creating a new policy from executable BSNGLOBL policy and copying to a new locale,” on page 115
- Chapter 14, “Creating a new policy,” on page 119
- Chapter 15, “Promoting a maintenance environment to an operation environment,” on page 123
- Chapter 16, “Creating a new maintenance environment,” on page 127
- Chapter 17, “Guidelines for exporting and importing,” on page 133
Chapter 6. Starting the Policy Services user interface

To perform an initial installation of a domain, you must first start the Policy Services user interface.

Procedure

1. In the ISPF Primary Option Menu panel, select option 6 (Command). The ISPF Command Shell is displayed.
2. Invoke the Policy Services client interface by using one of the following methods:
   • To access Policy Services from the Tools Base for z/OS main menu, enter the following command:
     ```
     EX 'hlq.SHKTCEXE(HKTAPPL)' 'HLQ(hlq)'
     ```
     Substitute the `hlq` variable with the installation data set high level qualifier. After you submit the command, the Tools Base for z/OS main menu appears. Select option 2 Policy Services and press Enter.
   • To access Policy Services directly, enter the following command:
     ```
     EX 'hlq.SHKTCEXE(BSNZPRIM)' 'HLQ(hlq)'
     ```
     Substitute the `hlq` variable with the installation data set high level qualifier. The Policy Services user interface starts, and the Policy Services Setup: Select XCF Group Name panel is displayed.

```
Help
-------------------------------------------------------------------------------------
Command ===> Policy Services Setup: Select XCF Group Name

Type the XCF group name, and press Enter.
* XCF group name . . . .

Do you want to get the exception messages at phase 1 of policy evaluation? If not sure, contact your system administrator. In the meantime, leave it unchanged (U).
* Enter Y or N or U . . U

Do you want to perform RECON/LOCALE maintenance?
* Enter Y or N . . . . N
```

Figure 10. Policy Services Setup: Select XCF Group Name panel
Chapter 7. Copying rules

You can copy IBM. rules to your own locale.

About this task

You can copy IBM. and optionally customize the rules to apply appropriately to your environment. The copy and customize tasks can be performed as part of the initial Policy Services setup, or the tasks can be performed at a later time.

The rule threshold values can be modified.

The Manage Rules panel lists all IBM. rules and all locale-specific rules (copied from the BSNGLOBL rule template).

Because rules can be copied and modified, you must be aware of the following possible copy and modify combinations:

Scenario 1: Modify an IBM. rule now, and then copy the rule to a new locale (or locales)

In this scenario, you can modify the IBM. version of the rule threshold values.

You then copy this modified version to one or more locales.

This is generally the most logical scenario to follow.

From the Manage Rules panel, you perform the following row actions in this order:

1. S - Select rule to customize
2. C - Copy IBM.xxxxx rule (to another locale)

Scenario 2: Copy an IBM. rule to a new locale (or locales), and then modify the copied rule now

In this scenario, you copy the IBM. rule from BSNGLOBL to one or more locales and then modify the copied version of the rule threshold values.

The danger of this scenario is that the rule template remaining in the BSNGLOBL locale is now different from the modified version of the rule in the new locale.

From the Manage Rules panel, you perform the following row actions in this order:

1. C - Copy IBM.xxxxx rule (to another locale)
2. S - Select rule to customize

Scenario 3: Copy an IBM. rule to a new locale (or locales) now, and modify the copied rule later or not at all

In this scenario, you copy the IBM. rule from BSNGLOBL to one or more locales, but you modify the copied version of the rule at a later date, or not at all.

From the Manage Rules panel, you perform the following row action:

1. C - Copy IBM.xxxxx rule (to another locale)
Scenario 4: Modify the original IBM. version of the rule now, and do not copy the rule to any locale (or locales)

In this scenario, you modify the IBM. rule in the BSNGLOBL locale, but you do not copy the rule to a new locale (or locales). The rule template is now modified and ready for copying at a later time.

From the Manage Rules panel, you perform the following row action:

1. S - Select rule to customize

Scenario 5: Copy the IBM. rule to a new locale (or locales) later, and modify the copied rule later

In this scenario, you copy the IBM. rule in the BSNGLOBL locale at a later date. Additionally, you modify the copied rule at a later date.

Remember: All Policy Services user interface panels provide field-specific and panel-specific help information when you press Help (PF1).

Procedure

To modify an IBM. rule now, and then copy the rule to a new locale (scenario 1), complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 6 - Maintenance management, and press Enter.

   The Maintenance Management panel is displayed.

2. Select option 2 - Customize rule templates, and press Enter.

   The Customize Rule Template panel is displayed.

   Figure 11. Customize Rule Template panel

3. Type the S row action (Select rule to customize) on the rule that you want to modify (for example, IBM.AVG_DBREC_LEN.10), and press Enter.

   The View/Update Rule panel is displayed.
4. Type the U row action (Update) on a threshold set row (for example, LOW), and press Enter.
   The Update/Add Threshold Value Set panel is displayed.

5. Note in the Description column the valid range allowed for the threshold you want to change. Type the new threshold value, and press Enter.

6. When you have completed all modifications to this rule, press Enter.
   A Confirmation window is displayed.

7. Type Y (Yes) to commit all changes that you made to this rule, and press Enter.
   The Manage Rules panel is displayed.
8. Type the C row action (Copy IBM. rule) on the row of the first rule you want to copy (for example, IBM.AVG_DBREC_LEN.10), and press Enter. The Locales in Current Environment panel is displayed.

   **Figure 12. Locales in Current Environment panel**

   All listed locales were established during the Policy Services post-installation process using the IMS Tools Knowledge Base user/administration interface.

9. Type the S row action (Select locale) on the row of the appropriate locale (or locales), and press Enter. You can also type ALL in the command line to select all listed locales.

   The Customize Rule Template panel is displayed again.

   The Copied column is updated to indicate that the rule has been copied to your locale (COPIED).

   A message is also displayed to indicate the success of the task:

   Rule IBM.AVG_DBREC_LEN.10 copied to new locale(s)

   **Figure 13. Customize Rule Template panel**

   10. Repeat the copy procedure for each remaining rule you want to copy. You can only perform this task one rule at a time.

   11. Press End (PF3).
The Maintenance Management is displayed.

12. Press End (PF3).
   The Policy Services Main Menu: Maintenance is displayed.
Chapter 8. Customizing BSNGLOBL or locale-specific rules

You can modify and copy IBM. rules to your own locale.

About this task

You can copy IBM. rules and customize the rules to apply appropriately to your environment. The copy and customize tasks can be performed now as part of the Policy Services setup, or the tasks can be performed at a later time.

The following rule threshold values can be modified.

The Manage Rules panel lists all IBM. rules and all locale-specific rules (copied from the BSNGLOBL rule template).

Because rules can be copied and modified, you must be aware of the following copy and modify combinations:

Scenario 1: Modify an IBM. rule now, and then copy the rule to a new locale (or locales)

In this scenario, you can modify the IBM. rule threshold values in BSNGLOBL.

You then copy this modified version to one or more locales.

This is generally the most logical scenario to follow.

From the Manage Rules panel, you perform the following row actions in this order:

1. S - Select rule to customize
2. C - Copy IBM.xxxxx rule (to another locale)

Scenario 2: Copy an IBM. rule to a new locale (or locales), and then modify the copied rule now

In this scenario, you copy the IBM. rule from BSNGLOBL to one or more locales and then modify the copied version of the rule threshold values.

The danger of this scenario is that the rule template remaining in the BSNGLOBL locale is now different from the modified version of the rule in the new locale.

From the Manage Rules panel, you perform the following row actions in this order:

1. C - Copy IBM.xxxxx rule (to another locale)
2. S - Select rule to customize

Scenario 3: Copy an IBM. rule to a new locale (or locales) now, and modify the copied rule later or not at all

In this scenario, you copy the IBM. rule from BSNGLOBL to one or more locales, but you modify the copied version of the rule at a later date, or not at all.

From the Manage Rules panel, you perform the following row action:

1. C - Copy IBM.xxxxx rule (to another locale)
Scenario 4: Modify the original IBM. version of the rule now, and do not copy the rule to any locale (or locales)

In this scenario, you modify the IBM. rule in the BSNGLOBL locale, but you do not copy the rule to a new locale (or locales). The rule template is now modified and ready for copying at a later time.

From the Manage Rules panel, you perform the following row action:

1. S - Select rule to customize

Scenario 5: Copy the IBM. rule to a new locale (or locales) later, and modify the copied rule later

In this scenario, you copy the IBM. rule in the BSNGLOBL locale at a later date. Additionally, you modify the copied rule at a later date.

**Remember:** All Policy Services user interface panels provide field-specific and panel-specific help information when you press Help (PF1).

**Procedure**

To modify a BSNGLOBL or locale-specific IBM. rule now, complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 2 - Rules management, and press Enter.
   
The Manage Rules panel is displayed.

<table>
<thead>
<tr>
<th>Commands</th>
<th>View</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG/MAINTENANCE</td>
<td>Manage Rules</td>
<td>Row 1 to 17 of 21</td>
</tr>
</tbody>
</table>

   Select a row action or a command from the commands menu. End to exit.

   Resource types selected: (Active logic: OR)
   HDAM HIDAM PHDAM PHIDAM HISAM SHISAM DEDB INDEX PSINDEX

   S: Status : V - Viewed/Updated P - Listed policies referencing this rule.
   A: Row Actions: V - View rule details and optionally update them.
   P - List policies referencing this rule.
   A S Locale Rule Name Description
   BSNGLOBL IBM.AVG_DBREC_LEN.10 Average length of database records
   BSNGLOBL IBM.CICA_SPLITS.10 KSOS CI or CA splits in HISAM and SHISAM
   BSNGLOBL IBM.DBDS_EXTENTS.10 Availability of data set extents
   BSNGLOBL IBM.DBDS_GROWTH.10 Growth data set size
   BSNGLOBL IBM.DBDS_GROWTH.20 Percentage growth data set and free space
   BSNGLOBL IBM.DEDB_DBREC.10.10 Average number of I/Os per database record
   BSNGLOBL IBM.DEDB_DBREC.10.20 Maximum number of I/Os per database record
   BSNGLOBL IBM.DEDB_DBRECCNT.10 Number of database records in a DEDB area

   **Figure 14. Manage Rules panel**

   2. Type the V row action (View rule details and optionally update them) on the rule you want to modify, and press Enter.

   The View/Update Rule panel is displayed.
3. You can modify the rule thresholds, one at a time, by typing the U row action (Update) on the threshold row.

   You can exit this panel without saving changes by pressing PF3 and responding to the Confirmation prompt.

4. To save all changes made to this rule, press Enter.

   A Confirmation window is displayed.

5. Type Y (Yes) and press Enter.

   The Manage Rules panel is displayed.

6. Press PF3 to return to the Policy Services Main Menu: Maintenance panel.
Chapter 9. Modifying rule thresholds

You can modify the numerical values for the LOW, MED, HIGH threshold sets.

About this task

Policies depend on the condition and exception expressions provided by rules in order to evaluate the state of a database. The condition expression refers to one or more threshold values that indicate the boundary, or limit, for the database state.

The following rule attributes can be modified:
- Rule threshold values

Remember: All Policy Services user interface panels provide field-specific and panel-specific help information when you press Help (PF1).

Procedure

To modify threshold range settings, complete the following steps:
1. In the Policy Services Main Menu: Maintenance panel, select option 2 - Rules management, and press Enter.
   
   The Manage Rules panel is displayed.

2. Type the V row action (View rule details and optionally update them) on the rule you want to modify, and press Enter.
   
   The View/Update Rule panel is displayed.

Figure 17. Manage Rules panel
3. Type the F row action (View formula) on a threshold set row (for example, LOW) to view the condition description for this rule, and press Enter. The Evaluation Formula Description (Rule Condition Description) panel is displayed.

```
Figure 18. View/Update Rule panel
```

4. Press End (PF3) to return to the View/Update Rule panel.
5. Type the U row action (Update) on a threshold set row (for example, LOW), and press Enter. The Update/Add Threshold Value Set panel is displayed.

```
Figure 19. Evaluation Formula Description (Rule Condition Description) panel
```

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6. Note in the Description column the valid range allowed for the threshold you want to change. Type the new threshold value, and press Enter. A Confirmation window is displayed.

7. Type Y (Yes) to commit all changes made to this rule, and press Enter. The Manage Rules panel is displayed.

8. Press End (PF3).

The Policy Services Main Menu: Maintenance is displayed.
Chapter 10. Defining custom rule threshold values for individual databases

In an environment of multiple databases, you can create a separate policy for each database, and then assign unique custom threshold values for a rule that is shared by those policies.

**About this task**

To specify custom threshold values for a rule that is used by multiple database policies:

1. Create separate policies for each database.
2. Create separate unique threshold values for the rule.
3. For each policy, specify the threshold values from the shared rule that are appropriate for that database.

You can add up to 20 threshold values for each rule.

The following figure shows how policies can use different threshold values from the same rule:

![Figure 22. Specifying custom rule threshold values](image)
Procedure

To specify different threshold values for each database, complete the following steps:

1. From the Policy Services Main Menu, select option 2 (Rules management), and press Enter.
   - The Manage Rules panel is displayed.
2. Type the V (View) row action to select a rule that you want to add new thresholds to, and press Enter.
   - The View/Update Rule panel is displayed.
3. Type the A (Add) row action to add a new threshold, and press Enter.
   - The Select new threshold name window is displayed.
4. Type a new threshold name (up to 12 characters), and press Enter.
   - The Update/Add Threshold Value Set panel is displayed.
   - The valid range allowed for the threshold you want to change is shown in the Description column.
5. Type the new threshold value, and press Enter.

   You return to the View/Update Rule panel.

6. Confirm that the new threshold is added to the Threshold value set field.

7. Repeat step 3 to step 6 until all required thresholds are created.
8. When you have completed adding thresholds to this rule, press Enter. The Confirmation window is displayed.

9. Type Y (Yes) to commit all changes that you made to this rule, and press Enter.

   The Manage Rules panel is displayed.

10. Press End (PF3) to return to the Policy Services Main Menu.

11. Select option 1 - Policies management, and press Enter.
The Policies Management panel is displayed.

12. Refer to one of the following topics to create a new policy that uses the new thresholds created in the previous steps

- **Chapter 13, “Creating a new policy from executable BSNGLOBL policy and copying to a new locale,” on page 115**
  Specify the new thresholds in step 9 on page 116
- **Chapter 14, “Creating a new policy,” on page 119**
  Specify the new thresholds in step 10 on page 120

---

**Commands**
```
REORG/OPERATION  Select Thresholds And Action Row 1 to 6 of 6
```

Select a threshold and press Enter to be prompted to choose an action-level to be used when the rule condition evaluates to true. When finished press Enter to choose rule-threshold notification lists. Press End to eliminate all threshold selections.

Locale . . . : BSNGLOBL Policy name . . . : NEW.HDAM1
Locale . . . : BSNGLOBL Rule name . . . : IBM.HDAM_OVERFLOW.10
Description : Percent of segment data overflow

A: Row Actions: S - Select Threshold  U - Unselect
Status:  S - Selected  O - Part of original policy. (Update only)

```
<table>
<thead>
<tr>
<th>A</th>
<th>Threshold</th>
<th>Action</th>
<th>Level</th>
<th>Onmissing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIGH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>NEW1</td>
<td>MESSAGE</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>S</td>
<td>NEW2</td>
<td>MESSAGE</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>S</td>
<td>NEW3</td>
<td>MESSAGE</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
```

Figure 28. Select Thresholds and Actions panel

---

Chapter 10. Defining custom rule threshold values for individual databases  91
Chapter 11. Managing notification lists and directory entries

Directory entries and notification lists are used by Policy Services to define users who can receive exception notifications and summary messages that are sent out to warn or report on results of policy evaluations.

Topics:
- “Notification lists and directory entries overview” on page 94
- “Creating directory entries” on page 96
- “Modifying directory entries” on page 103
- “Creating notification lists” on page 104
- “Modifying notification lists” on page 106
- “Viewing and modifying the SMTP variables for email and texting” on page 107
- “Notifying users of phase 1 exception messages” on page 109
Notification lists and directory entries overview

Directory entries and notification lists are used by Policy Services to define users who can receive exception notifications and summary messages that are sent out to warn or report on results of policy evaluations.

About directory entries

A single directory entry defines a name of a user, the connection type (such as WTO or TSO), and all connection specifications that are required to deliver a message to that user. You use the Policy Services user interface to define directory entries.

Directory entries are used to populate one or more notification lists. Notification lists are used by a policy when a rule exception occurs and the resulting action requires that a warning message or a summary message be sent to appropriate users, as defined by the notification list mechanism.

Policy Services supports two directory entry types:

- WTO
- USER

The WTO directory entry contains the following information fields:

- Short name
- Long name
- Description
- Delivery type:
  - WTO

The USER directory entry contains the following information fields:

- Short name
- Long name
- Description
- Delivery type:
  - TSO
  - E-MAIL
  - TEXTING

About notification lists

A notification list is a mechanism for grouping users into a list that represents a unique business category, such as all DBAs, or all users who represent an installation application area or a set of databases associated with a given application or location.

The notification list is created by including the directory entry short names of the users who are appropriate for the required notification category. Notification lists can contain both directory entries and other notification lists.

The short name used in a notification list maps to the directory entry of that user. The directory entry contains the information (for example, TSO or email address)
necessary to deliver messages. You use the Policy Services user interface to define lists that include one or more directory entries.

A policy and each rule in the policy can refer to one or more notification lists. The directory entries contain the information such as user name, destination type, destination address, and description.

It is important that you follow a logical naming convention that distinguishes directory entries from notifications lists. This naming convention should allow ease of use and maintenance. All directory entry names and notification list names must be unique.
Creating directory entries

Directory entries and notification lists are used by Policy Services to define users who can receive exception notifications and summary messages that are sent out to warn or report on results of policy evaluations.

In this topic:
- “Creating a WTO directory entry”
- “Creating a USER directory entry” on page 98

Creating a WTO directory entry

You can create a WTO directory entry that defines the name of a user, the connection type (WTO), and all connection specifications that are required to deliver a message to that user.

Procedure

To create a WTO directory entry:

1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter. The Notification Lists, Directory Entries Management panel is displayed.

```
Help
---------------------------------------------------------------------
REORG/MAINTENANCE  Notification Lists, Directory Entries Management
Option ===> 

Select an option, and press Enter.
1 - Create directory entry
2 - Manage directory entries
3 - Create a new notification list
4 - Manage notification lists
5 - View/Update SMTP variables for e-mail/texting
6 - View/Update TSO JCL job card for TSO-send
```

Figure 29. Notification Lists, Directory Entries Management panel

2. Select option 1 - Create directory entry, and press Enter. The Choose Directory Entry Type panel is displayed.

```
Help
---------------------------------------------------------------------
Option ===> 

Select a Directory entry type.
1 - Create directory entry of type WTO
2 - Create directory entry of type USER
```

Figure 30. Choose Directory Entry Type panel

3. Select option 1 - Create directory entry of type WTO and press Enter. The Create a WTO Directory Entry panel is displayed.
4. Specify a short name, long name, and description (optional) and press Enter.
   The Create WTO Delivery Type panel is displayed.

5. Optional: Specify the WTO delivery type options and press Enter.

   **CONSID/CONSNAME**
   Specify the console ID (CONSID) or console name (CONSNAME) used to route messages. Console IDs must be 4 characters. Characters are alphanumeric only; no special characters allowed. Console names must be from two to eight characters and cannot start with a digit. Characters are alphanumeric and can also include the characters #, $, and @.

   **WTO delivery options**
   **Routing Codes**
   The routing codes determine which console or consoles receive the message. Each code represents a predetermined subset of the consoles that are attached to the system, and that are able to display the message.

   The installation must define to the system which routing codes are being received by each console.

   The appropriate routing codes delivery option must then be set for the defined destination entry if the WTO is to be routed to additional devices.
• Routing1: Provide location routing code (optional)
• Routing2: Provide location routing code (optional)

Descriptor code (default=5) (optional)
   Use descriptor code 5, rather than MCSFLAG, to indicate a command response.

Key (optional)
   For the convenience of the operator, you can associate messages with individual key names.

   A key name consists of one to eight alphanumeric characters, and it accompanies the message on the console.

   The key name can be used as an operand in the DISPLAY R console command, which operators can issue at the console.

WTO address type
   Specify the address type to route messages to:
   • 1. Consid - Route messages by console ID.
   • 2. Consname - Route messages by console name.

   If the CONSID or CONSNAME is specified and the routing codes are specified, the message or messages are sent to all the consoles that are specified by both sets of parameters.

6. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.

Creating a USER directory entry

You can create a USER directory entry that defines the name of a user, the connection type (email, text message, or TSO), and all connection specifications that are required to deliver a message to that user.

Procedure

To create a USER directory entry:
1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter.
   The Notification Lists, Directory Entries Management panel is displayed.

   Select an option, and press Enter.

   1 - Create directory entry
   2 - Manage directory entries
   3 - Create a new notification list
   4 - Manage notification lists
   5 - View/Update SMTP variables for e-mail/texting
   6 - View/Update TSO JCL job card for TSO-send

   Figure 33. Notification Lists, Directory Entries Management panel

2. Select option 1 - Create directory entry, and press Enter.
   The Choose Directory Entry Type panel is displayed.
3. Select option 2 - Create directory entry of type USER and press Enter.
   The Create Directory Entry panel is displayed.

Short name
The unique name that is used in a notification list to identify the directory entry for this user.

Long name
The name used to identify the user to the Policy Services system.

Description
(Optional) The description of the users responsibilities.

Active (A/N/R)
The status of the user. Values are:

A  User is active on the system, and messages are not rerouted. This is the default.
N  User is not active on the system, and messages are not rerouted.
R  User is not active on the system, but messages are rerouted to the specified delegate.

Delegate
The short name used to identify an alternate user to which a message can be rerouted. Message rerouting to a delegate is valid only when Active=R.
Delegate delivery type
(Optional) The delivery type for messages sent to the specified delegate: Values are:
- TSO
- E-MAIL
- TEXTING

Delivery type
The delivery type for messages sent to the user. Values are:
- TSO
- E-MAIL
- TEXTING

4. Specify the USER directory type information and press Enter.
   The TSO, E-MAIL, and TEXTING Delivery Type panels are shown.

Helper text:
- REORG/MAINTENANCE
  Create TSO Delivery Type
  Command ==> 
  Short name .. USER4
  Long name .. user4
  Description

Enter TSO destination address and select options. Press Enter to continue. Press End to exit.

TSO destination .. usertos
Delivery options
1. Now                      2. Wait
   2. Logon                   2. Nowait
   3. Save

Figure 36. Create TSO Delivery Type panel

TSO destination
The 1- to 7-byte TSO user ID of the recipient.

Important: Policy Services supports only 1- to 7-byte TSO user IDs.

Delivery options
Message send options:
- 1. Now - Specifies that the message is sent immediately. This is the default.
- 2. Logon - Specifies that the message is sent now (if the user is currently logged on) or saved in the broadcast data set until the specified user logs on.
- 3. Save - Specifies that the message is saved in the broadcast data set and not immediately sent.

Message receive options:
- 1. Wait - Specifies that the sender waits for logged-on users to receive the message.
- 2. Nowait - Specifies that the sender does not wait for logged-on users to receive the message. This is the default.
Enter E-mail address
The 1 - 255 byte email address of the recipient. Where
localaddress@hostaddress:

**localaddress**
The local-part of the email address. A maximum of 64 characters are allowed. Valid characters for the local part of the address are: upper and lowercase letters, numbers, and characters (! $ % & * + - / = ? _ ` { | } ~ .).

**hostaddress**
The domain part of the email address. Valid characters are: upper and lowercase letters, numbers, dash, and period.

The @ symbol is required between the local and host portions of the address.

For example:
SamSmith@us.mybank.com

---

Enter the text address where the text message is to be sent.
phononenumber@hostaddress

**phononenumber**
The phone number. Only numerical characters are allowed. Parentheses () and dashes are not allowed within the number.

**hostaddress**
The SMS-gateway. Valid characters are upper and lowercase letters, numbers, dashes, and periods. Consult your wireless carrier to determine the specific address.
The @ symbol is required between the phone number and the host portions of the address.
For example:
1234567890@messaging.phonecompany.com

5. Specify the TSO, E-MAIL, and TEXTING options as required and press Enter.
6. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Modifying directory entries

You can modify existing directory entries.

Procedure

To manage directory entries:
1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter.
   The Notification Lists, Directory Entries Management panel is displayed.

   Figure 39. Notification Lists, Directory Entries Management panel

2. Select option 2 - Manage directory entries, and press Enter.
   The Manage Directory Entry panel is displayed.

   Figure 40. Manage Directory Entry panel

3. Select the row action for the directory entry and press Enter.
4. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Creating notification lists

Notification lists are used by Policy Services to define users who can receive exception notifications and summary messages that are sent out to warn or report on results of policy evaluations.

Procedure

1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter.
   The Notification Lists, Directory Entries Management panel is displayed.

   Figure 41. Notification Lists, Directory Entries Management panel

2. From the Notification Lists, Directory Entries Management panel, select option 3 - Create a new notification list, and press Enter.
   The Create Notification List panel is displayed.

   Figure 42. Create Notification List panel

3. Enter the required information to create a new notification list, and press Enter to continue.
   The Create Notification List panel is displayed.
Tip: Column "L" indicates which locale the notification list belongs to.

G The BSNGLOBL locale.

R Same locale as the notification list being created.

4. Select the directory entries and notification lists (from the member name column) for this new notification list. Then press Enter.

The Notification Lists, Directory Entries Management panel is displayed with a message indicating the creation of the new notification list.

5. From the Notification Lists, Directory Entries Management panel, select option 4 - Manage notification lists to manage your notification lists.

The Manage Notification List panel is displayed.

6. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Modifying notification lists

You can modify existing notification list entries.

Procedure

To manage notification lists:

1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter.

   The Notification Lists, Directory Entries Management panel is displayed.

   Help
   -------------------------------------------------------------------------------------------------
   REORG/MAINTENANCE Notification Lists, Directory Entries Management
   Option ===>
   Select an option, and press Enter.
   1 - Create directory entry
   2 - Manage directory entries
   3 - Create a new notification list
   4 - Manage notification lists
   5 - View/Update SMTP variables for e-mail/texting
   6 - View/Update TSO JCL job card for TSO-send

   Figure 45. Notification Lists, Directory Entries Management panel

2. Select option 4 - Manage notification lists, and press Enter.

   The Manage Notification Lists panel is displayed.

   Sort by Help
   -------------------------------------------------------------------------------------------------
   REORG/MAINTENANCE Manage Notification Lists Row 1 to 1 of 1
   Command ===>
   Locale . . . : ALL
   Type row action(s), then press Enter. Press End to exit.
   A: Row Action: C - Copy notification list D - Delete notification list
   U - Update Notification list V - View notification list
   E - Expand notification list L - List policies using the list
   A Locale Notification List Name Description
   BSNGLOBL LISTA

   Figure 46. Manage Notification Lists panel

3. Select the row action and press Enter.

4. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Viewing and modifying the SMTP variables for email and texting

You can view and modify existing SMTP variable settings for email and texting.

Procedure

To view and update the SMTP variables for email and texting:

1. From the Policy Services Main Menu: Maintenance panel, select option 3 - Notification lists, directory entries management, and press Enter.
   The Notification Lists, Directory Entries Management panel is displayed.

2. Select option 5 - View/Update SMTP variables for e-mail/texting, and press Enter.
   The Locale Selection panel is displayed.

3. Select the Locale and press Enter.
   The View/Update EMAIL SMTP Variables panel is displayed.
4. Modify the EMAIL SMTP variables and press Enter.
   The View/Update TEXTING SMTP Variables panel is displayed.

5. Modify the TEXTING SMTP variables and press Enter.
6. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Notifying users of phase 1 exception messages

Policy Services can notify users of the exception messages that are generated during phase 1 of a policy evaluation.

About this task

During phase 1 of a policy evaluation, Policy Services determines whether a specific process action, such as a reorganization, is required. Phase 1 exception messages are available to the IMS Tools product that issues the policy evaluation, and the IMS Tools product controls whether phase 1 exception messages appear in any report.

By default, phase 1 exception messages are not sent to the notification directory entries of the specified notification list.

Important: The default is different for Autonomics Director. Phase 1 exception messages from policy evaluations issued by Autonomics Director are always sent to the users in the specified notification list.

If there is a phase 2 of a policy evaluation, the phase 2 exception messages are always sent to the notification directory entries of the specified notification list.

If you want Policy Services to send the phase 1 exception messages to the users that you have identified in a specified notification list, you can enable these notifications with the following procedure.

Procedure

To notify users of phase 1 exception messages:

1. Access the Policy Services user interface.
   The Policy Services Setup: Select XCF Group Name panel is displayed.

   ![Figure 51. Policy Services Setup: Select XCF Group Name panel](image)

   Do you want to get the exception messages at phase 1 of policy evaluation?
   If not sure, contact your system administrator. In the meantime, leave it unchanged (U).
   * Enter Y or N or U . . . U

   Do you want to perform RECON/LOCALE maintenance?
   * Enter Y or N . . . . N

2. Enter Y in response to the question, "Do you want to get the exception messages at phase 1 of policy evaluation?"
   The following values are possible responses to this question:
Y Exception messages generated during phase 1 of a policy evaluation are sent to the notification directory entries that are defined in the notification list.

N Exception messages generated during phase 1 of a policy evaluation are not sent to the notification directory entries that are defined in the notification list. N is the default.

U The current setting remains unchanged. If the option has not been set, it defaults to N.
Chapter 12. Modifying policy actions

You can modify the actions implemented by policies.

**About this task**

Policies define the mapping of both a rule exception and a severity level to a resulting action. For more information about actions, see "What is an action?"

The resulting action for each rule exception can be modified. Different actions are acceptable for different rules.

**Remember:** All Policy Services user interface panels provide field-specific and panel-specific help information when you press Help (PF1).

**Procedure**

To modify actions related to rules, complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.
   The Policies Management panel is displayed.
2. In the Policies Management panel, select option 1 - Manage policies, and press Enter.
   The Manage Policies panel is displayed.
3. Type the U row action (Update) to select a policy that you want to modify actions for, and press Enter.
   The Policy Resource Types Selection panel is displayed.
4. Press Enter.
   If you have already created notification lists, the Policy Notification Lists Selection panel is displayed.
   Otherwise, the Policy Rules Selection panel is displayed; go to step 6.
5. Press Enter.
   The Policy Rules Selection panel is displayed.
6. Type the S row action (Select) on a rule that is related to the actions you want to modify, and press Enter.
   The Select Thresholds And Actions panel is displayed, as shown in the following example.
Select a threshold and press Enter to be prompted to choose an action-level to be used when the rule condition evaluates to true. When finished press Enter to choose rule-threshold notification lists. Press End to eliminate all threshold selections.

Locale . . . : BSNGLOBAL Policy name . . . : SYS.DBDTYPE.FFDBALL
Locale . . . : BSNGLOBAL Rule name . . . : IBM.IX.CICA_SPLIT.I0
Description : CI or CA splits in an index primary data set

A: Row Actions: S - Select Threshold \ U - Unselect
   Status: \ S - Selected \ O - Part of original policy. (Update only)

<table>
<thead>
<tr>
<th>A</th>
<th>S</th>
<th>Threshold</th>
<th>Action</th>
<th>Level</th>
<th>Omitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOW</td>
<td>MESSAGE</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MED</td>
<td>MESSAGE</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HIGH</td>
<td>INDEXBLD</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

******************************************************************************

Figure 52. Select Thresholds And Actions panel

In this example, the action for LOW threshold and the action for MED threshold are the same: MESSAGE.

The action for HIGH threshold is INDEXBLD.

The following steps describe the procedure to modify the action for HIGH threshold from INDEXBLD to REORG.

7. Type the S row action (Select Threshold) on a threshold that you want to modify actions for, and press Enter.

   The Action-Level Pairs Selection pop-up window is displayed.

8. Type the S row action (Select) on a threshold that you want to modify actions for, and type a new action name in the Action field. Acceptable actions depend on the rule.
To display a list of acceptable actions, press Help (PF1) on the Action field.

   The Select Thresholds And Actions panel is displayed.
   Confirm that the action for the selected threshold has been updated.

10. Press Enter.
    The Select Rule Notification Lists panel is displayed.
11. Press Enter.
    The Policy Rules Selection panel is displayed.
12. When you have completed all modifications to rules, press Enter.
    The Confirmation pop-up window is displayed.
13. To commit all changes, type Y (Yes) and press Enter.
   The Policies Management panel is displayed.

14. Press PF3 to return to the Policy Services Main Menu: Maintenance panel.

What to do next

Each rule has an exception class, and some rules have the same exception class. For example, rule IBM.IX_CICA_SPLIT.10 and rule IBM.IX_CICA_SPLIT.11 have the same exception class of EXCESSIVE_INDEX_CI_OR_CA_SPLITS.

If a policy selects rules that have the same exception class, these rules must have the same actions defined for each exception level. Therefore, if you modify an action for a rule, all other selected rules that have the same exception class must be modified similarly to synchronize the action.

Otherwise, when committing the changes (step 13), an error message is issued and the commit is suspended until the rules of the same exception class have the same actions defined.

For more information about rules and their exception classes, see the following pages:

For REORG domain: "Domain REORG exceptions"

For RECOVERY domain: "Domain RECOVERY exceptions"
Chapter 13. Creating a new policy from executable BSNGLOBL policy and copying to a new locale

You can create and customize a new policy modeled after an executable SYS. policy, and copy the policy from the generic global locale (BSNGLOBL) to a new locale.

About this task

To provide policies for your own locale, you must create policies modeled after the SYS policy templates that were created from the IBM. policy templates provided by IBM.

To customize a policy for your own locale, you must copy the SYS policy template to the new locale and rename the policy.

Procedure

To create and customize a new policy modeled after an executable SYS. policy, and copy the policy from the generic global locale (BSNGLOBL) to a new locale, complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.

   The Policies Management panel is displayed.

2. In the Policies Management panel, select option 1 (Manage policies), and press Enter.

   The Manage Policies panel is displayed.

3. Type the N row action (Create new policy modeled after policy in selected row) in the row of an executable SYS. policy (for this example, SYS.DBDTYPE.FFDB), and press Enter.
The Policy Resource Types Selection panel is displayed.

4. In the **Policy name** field, type in the new policy name (for example, LOC1.DBDTYPE.FFDB).

5. In the **Description** field, type in the description for the new policy.

6. Change the Resource Type selection if necessary.

7. Clear the **Locale name** field, and press Enter.
   The Locale Selection panel is displayed.

8. Type the **S** row action (Select) to select a locale (for example, MYRECON2), and press Enter.
   The Policy Notification Lists Selection panel is displayed.

9. Type the **S** row action (Select) to select one or more notification lists for this policy, and press Enter.
   The Policy Rules Selection panel is displayed.
   Rules that have been associated with the original template policy are marked with an O status (Pre-selected from original policy).
   You can select (S row action) one of these pre-selected rules, press Enter, and change the association of threshold sets to severity levels. Press Enter again to associate notification lists to each threshold set.
   You can also select (S row action) a new rule that you want to add to the new policy. When you press Enter, you can then change the association of threshold sets to severity levels. Press Enter again to associate notification lists to each threshold set.

10. After all modifications to rules have been made, press Enter.
    The Confirmation window is displayed.
11. To commit all changes, type Y (Yes) and press Enter. The Manage Policies panel is displayed.

12. Press PF3 until you return to the Policy Services Main Menu: Maintenance panel.
Chapter 14. Creating a new policy

You can create new policies not based on an existing template.

About this task

The following summary outlines the sequence of steps required to build a new policy:
1. Enter new policy name.
2. Enter policy description.
3. Select supported resource types.
4. Select locales where this policy applies.
5. Select notification lists that represent the destinations that the summary and exception messages are sent to.

**Important:** If you select notification lists for a rule in step 6, the exception messages are sent to those destinations instead.

6. Select rules that apply to this policy.
   - Associate threshold sets with action-level pairs.
   - If the notification lists for the exception messages are different than the notification lists for the policy summary messages defined in step 5, select notification lists at the action-level-threshold set that represent the destinations that the exception messages are sent to.

**Important:** If you specify lists at the action-level-threshold sets, you must provide all required lists, including the notification list specified for the summary notification, if applicable.

For example, if notification LIST01 contains BOB, LARRY, and MARY; and notification LIST06 contains SAM, BETTY, LADBA, SFDBA and GUS:

- If you define LIST01 in step 5 and you only want that list to apply to all rules, do not specify any notification lists in step 6. The resulting summary message is sent to BOB, LARRY and MARY.
- If you define LIST06 for a given rule and do not include LIST01, the entries in LIST01 are not included when sending the rule exception message for that rule. The resulting exception message is sent to SAM, BETTY, LADBA, SFDBA and GUS.
- If you want to include the entries in LIST01 along with LIST06 for a given rule, include LIST01 along with LIST06 in step 6. If one or more lists are specified on the rule, the rule exception message is sent to the entries in these lists only. The resulting exception message is sent to BOB, LARRY, MARY, SAM, BETTY, LADBA, SFDBA and GUS.
- If no lists are specified or if LIST01 is specified in step 6 for the rule, the rule exception message is sent to the entries in the notification list specified in step 5. The resulting exception message is sent to BOB, LARRY, and MARY.

7. Optionally view/update selected rules to change the rule threshold values
8. Confirm all changes for this new policy
Procedure

To create a new policy, complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.
   The Policies Management panel is displayed.
2. In the Policies Management panel, select option 2 (Create a new policy), and press Enter.
   The Policy Resource Types Selection panel is displayed.
3. In the Policy name field, type in the new policy name (for example, LOC1.DBDTYPE.FFDB).
4. In the Description field, type in the description for the new policy.
5. Change the Resource Type selection if necessary.
6. Clear the Locale name field, and press Enter.
   The Locale Selection panel is displayed.
7. Type the S row action (Select) to select a locale (for example, MYRECON1), and press Enter.
   The Policy Notification Lists Selection panel is displayed.
8. Type the $ row action (Select) to select one or more notification lists for this policy and all rule thresholds, and press Enter.
   The Policy Rules Selection panel is displayed.
   For a new policy, there are no rules that have been preselected from an existing template.
9. Type the $ row action (Select) on a rule that you want to add to this new policy, and press Enter.
   The Select Thresholds And Actions panel is displayed.
10. Associate specific threshold sets with action-level pairs.
11. After associating threshold sets with action-level pairs, press Enter. The Select Rule Notification Lists panel is displayed. Associate notification lists with the rule if notifications other than those specified in step 8 are required.
   The Select Rule Notification Lists panel is displayed.
12. Associate notification lists with the action-level-threshold sets.
   For example:

   ```
   13. Press Enter when complete with the notification list task.
       The Policy Rules Selection panel is displayed.
   14. Continue with the same sequence of steps to add more rules to the new
       policy.
   15. Optionally view/update selected rules to change rule exception message text
       and/or threshold values.
   16. After all modifications to rules have been made, press Enter.
       The Confirmation window is displayed.
   ```

   ![Figure 62. Select Rule Notification Lists panel]

   ```
   17. To commit all changes, type Y (Yes) and press Enter.
       The Policies Management panel is displayed.
   18. Press PF3 to return to the Policy Services Main Menu: Maintenance panel.
   ```
Chapter 15. Promoting a maintenance environment to an operation environment

In this task, you promote the selected Repository Level (Maintenance or History) to become the active Operation Level for all new connections by Policy Services clients.

About this task

By using the Promote function, you can:

- Promote a maintenance environment level to an operation level, where you might have done one or more of the following items:
  - Applied IBM maintenance service (APARs) and/or
  - Imported Policy Services items that had been previously exported, and/or
  - Applied custom updates or additions
- Promote a history level to an operation level.
  This type of promote action allows you to return to a previous operation level if the current operation level is faulty or experiencing problems

Procedure

To promote a maintenance environment to an operation environment, complete the following steps:

1. In the Policy Services Main Menu: Maintenance panel, select option 7 - Domain and environment management, and press Enter.
   The Domain and Environment Management panel is displayed.

   Help
   *********************************************************
   REORG/MAINTENANCE  Domain and Environment Management  Row 1 to 1 of 1
   Command ===>
   You are in environment . : INSTALL1
   Type a row action, then press Enter.
   A: Row Actions: A - View audit information
   C - Create new Maintenance environment
   L - List domain environments
   P - Promote Maintenance environment to Operation
   T - Validate all policies in Maintenance environment
   A  Domain Name  Oper-name  Maint-name
   REORG  INSTALL1
   *********************************************************

   Figure 64. Domain and Environment Management panel

2. Type the P row action (Promote Maintenance environment to Operation) in the REORG row, and press Enter.
   The Promote Environment window is displayed.
3. Type Y (Yes) and press Enter.
   The Promote Maintenance to Operation panel is displayed.

4. Enter a description for the new operation environment, and press Enter.
   The Domain and Environment Management panel is displayed.

The initial maintenance environment (000000001) is now promoted to an initial operation environment (000000002).
There is no longer an existing maintenance environment.
Because there was no existing operation environment, no history level was created.
5. You can type the \texttt{L} row action (List domain environments) on the domain row, and press Enter. The List Domain Environments panel is displayed.

6. In the List Domain Environments panel, type the \texttt{V} row action (View environment), and press Enter. The View Environment Information panel is displayed.

7. Press End (PF3) until you return to the Policy Services Main Menu. The Policy Services Main Menu has now become the main menu for the operation environment (Policy Services Main Menu: Operation).
Chapter 16. Creating a new maintenance environment

If a new maintenance package that contains new policies and rules is provided by an APAR, you need to install the new package from a maintenance environment.

You can create a new maintenance environment after promoting the former maintenance environment to the current operation environment.

There are two methods to create a maintenance environment. Whichever method you use, you can create one of the following three types of maintenance environment:

- Null maintenance environment
- Maintenance environment created from the current operation environment
- Maintenance environment created from a history level

Topics:

- “Method 1: Creating a maintenance environment by using the Select Environment panel” on page 128
- “Method 2: Creating a maintenance environment by using the Domain and Environment Management panel” on page 130
Method 1: Creating a maintenance environment by using the Select Environment panel

You can create a new maintenance environment from the Select Environment panel.

Procedure

1. Invoke the Policy Services client interface.
2. Type the XCF group name, select a domain, and press Enter. For details, see Chapter 6, “Starting the Policy Services user interface,” on page 71.
3. In the Policy Services Setup: Select Environment panel, select option 1 - Maintenance, and press Enter.

   The Create Maintenance Environment panel is displayed.

   Help
   ---------------------------------------------------------------
   REORG/MAINTENANCE Create Maintenance Environment Row 1 to 2 of 2
   Type an environment description, and an environment name and either (a) select an existing environment to be copied into the new maintenance environment and press Enter, or (b) press Enter without a row action to create a new empty maintenance environment.

   Enter a name and description for the new maintenance environment:

   Environment name _______
   Description . . . ________________________________________________

   A: Row Action: S - Select environment to be copied

   A Env-name Status Created Last Update Description
   ENV1 HISTORY 2019/01/10 2019/01/10 TEST
   ENV2 OPERATION 2019/01/10 2019/01/10 TEST
   *************************************************** Bottom of data ***************************************************

4. Type the environment name and the description for the new maintenance environment. The environment name must be unique in a domain.

5. Take one of the following actions:
   - If you want to create a new maintenance environment from the current operation environment, type the $ row action (Select environment to be copied) on the environment whose status is OPERATION, and press Enter.
   - If you want to create a new maintenance environment from a history level, type the $ row action (Select environment to be copied) on the environment whose status is HISTORY, and press Enter.
   - If you want to create a null maintenance environment, just press Enter. Then, when a confirmation window is displayed, type Y (Yes) and press Enter.
If you selected to create a new maintenance environment from the current operation environment or a history level, the following message is displayed:

Environment env_name successfully created.

If you selected to create a null maintenance environment, the following message is displayed:

Environment env_name successfully created. This environment is empty.

6. Press Enter to go to the Policy Services main menu.

You are in the new maintenance environment.
Method 2: Creating a maintenance environment by using the Domain and Environment Management panel

You can create a new maintenance environment from the Domain and Environment Management panel.

Procedure
1. Invoke the Policy Services client interface.
2. Type the XCF group name, select a domain, and press Enter. For details, see Chapter 6, “Starting the Policy Services user interface,” on page 71.
3. In the Policy Services Setup: Select Environment panel, select option 2 - Operation, and press Enter.
4. In the Locale Selection panel, type the row action (Select) on the row of the appropriate locale, and press Enter.
5. In the Policy Services Main Menu, select option 7 - Domain and environment management, and press Enter.

   The Domain and Environment Management panel is displayed.

6. Type the C row action (Create new Maintenance environment) on the row of the operation environment.

   A confirmation window is displayed.

7. Press Enter to continue.

   The Create Maintenance Environment panel is displayed.
8. Type the environment name and the description for the new maintenance environment. The environment name must be unique in a domain.

9. Take one of the following actions:
   - If you want to create a new maintenance environment from the current operation environment, type the $ row action (Select environment to be copied) on the environment whose status is OPERATION, and press Enter.
   - If you want to create a new maintenance environment from a history level, type the $ row action (Select environment to be copied) on the environment whose status is HISTORY, and press Enter.
   - If you want to create a null maintenance environment, just press Enter.

   Then, when a confirmation window is displayed, type Y (Yes) and press Enter.

If you selected to create a new maintenance environment from the current operation environment or a history level, the following message is displayed:

Environment env_name successfully created.

If you selected to create a null maintenance environment, the following message is displayed:

Environment env_name successfully created. This environment is empty.

10. Press Enter to go back to the Domain and Environment Management panel.
11. Press End (PF3).

The Confirm Maintenance Environment window is displayed.
12. Select option 1 - Continue with current Maintenance environment, and press Enter to go to Policy Services main menu.
   You are in the new maintenance environment.
Chapter 17. Guidelines for exporting and importing

The following guidelines are important to understand before you perform export and import tasks.

**Exporting BSNGLOBL policies**

If the policies being exported contain only BSNGLOBL policies, only BSNGLOBL rules and notification lists ever apply to these BSNGLOBL policies (that is, BSNGLOBL policies can only reference BSNGLOBL rules and notification lists).

If the import of a BSNGLOBL member is selectable, you can perform the following tasks:

- Import all the BSNGLOBL rules as BSNGLOBL rules
- Import all the BSNGLOBL policies as BSNGLOBL policies
- Import all the BSNGLOBL notification lists as BSNGLOBL notification lists
- Import all directory entries
- Re-import the BSNGLOBL rules, policies and notification lists from BSNGLOBL to locale-specific policies, rules, and notification lists

BSNGLOBL rules must be exported:

- With the BSNGLOBL policy package, or
- Must be in another package that is to be imported at the same time, or
- Must exist in the locale that you import the BSNGLOBL policies to.

BSNGLOBL notification lists must be exported:

- With the BSNGLOBL policy package, or
- Must be in another package that is to be imported at the same time, or
- Must exist in the locale that you import the BSNGLOBL policies to.

The directory entries that are included in a notification list are not automatically exported with the policy. It is recommended that all directory entries be exported if you are exporting all or selected notification lists.

Even though directory entries are not locale-specific, the notification lists are only valid if you export the directory entries:

- With the BSNGLOBL policy package, or
- Must be in another package that is to be imported at the same time, or
- Must exist in the locale that you import the BSNGLOBL policies to.

**Exporting locale-specific policies**

If the policies being exported contain locale-specific policies, both BSNGLOBL and the same locale-specific rules and notification lists can apply to these locale-specific policies (that is, locale-specific policies can reference BSNGLOBL and/or the same locale-specific rules and notification lists).

Locale-specific and/or BSNGLOBL rules must be exported:

- With the locale-specific policy package, or
• Must be in another package that is to be imported at the same time, or
• Must exist in the locale that you import the locale-specific policies to.

Locale-specific and/or BSNGLOBL notification lists must be exported:
• With the locale-specific policy package, or
• Must be in another package that is to be imported at the same time, or
• Must exist in the locale that you import the locale-specific policies to.

The directory entries that are included in a notification list are not automatically exported with the policy. It is recommended that all directory entries be exported if you are exporting all or selected notification lists.

Even though the directory entries are not locale-specific, the notification lists are only valid if you export the directory entries:
• With the locale-specific policy package, or
• Must be in another package that is to be imported at the same time, or
• Must exist in the locale that you import the locale-specific policies to.

**Notes about the selectable option**

Another consideration at export time is to decide if the selective option should be set or not:
• If the changes for all policy templates, rules templates, rule thresholds, notification lists, and directory entries have been made for each locale (locale-specific and/or BSNGLOBL) and the export package is a single locale package, then set the selectable option to NO to force the complete package to be imported at the importing locale.
• If the changes for all policy templates, rules templates, rule thresholds, notification lists, and directory entries have been made for all locales (locale-specific and/or BSNGLOBL) and the export package is to be used at all locales, then set the selectable option to YES to allow the locations the ability to select non-locale-specific (BSNGLOBL and directory entries) items as well as locale-specific items from the package to be imported at each of the unique importing locales.

When exporting, you might want to export with the selectable option set until you are familiar with the export and import process. This option allows you to selectively import the items.
Part 4. Using Policy Services utilities

Policy Services provides a useful utility called Sensor Data Extractor.

Topics:

- Chapter 18, “Sensor Data Extractor,” on page 137
Chapter 18. Sensor Data Extractor

The Sensor Data Extractor extracts sensor data from the IMS Tools Knowledge Base (IMS Tools KB) Sensor Data repository and generates various types of reports.

Topics:

- “Sensor Data Extractor overview” on page 138
- “Running the Sensor Data Extractor” on page 139
- “EXEC and DD statements for the Sensor Data Extractor” on page 140
- “Control statements for the Sensor Data Extractor” on page 142
- “Output from the Sensor Data Extractor” on page 148
- “JCL examples for the Sensor Data Extractor” on page 158
Sensor Data Extractor overview

The Sensor Data Extractor extracts sensor data from the IMS Tools KB Sensor Data repository and generates various types of reports.

The Sensor Data Extractor can read not only the latest sensor data but also old sensor data for the specified database, partition, or area, from the IMS Tools KB Sensor Data repository. It then generates the Sensor Data History report in three formats: long, short, and CSV.

The Sensor Data Extractor supports sensor data of both REORG and RECOVERY domains and of all database types.

Figure 69. Extracting sensor data and generating Sensor Data History reports by using the Sensor Data Extractor
Running the Sensor Data Extractor

The Sensor Data Extractor runs as a standard z/OS batch job. To extract sensor data from the IMS Tools KB Sensor Data repository and to report the extracted sensor data, code the Sensor Data Extractor JCL and run the job.

Procedure

1. Write the EXEC and DD statements.

   For the format of the EXEC statement and the list of DD statements, see “EXEC and DD statements for the Sensor Data Extractor” on page 140.

2. Code the control statements in the BSNSYSIN data set.

   For the syntax of the control statements, see “Control statements for the Sensor Data Extractor” on page 142.

   The following figure shows a JCL example for the Sensor Data Extractor:

```
//BSNUTIL0 JOB CLASS=A
//PGM1 EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'
//STEPLIB DD DISP=SHR,DSN=ITB.SHKTLOAD
//BSNUJRNL DD SYSOUT=*  
//BSNURPRT DD SYSOUT=* 
//BSNSYSIN DD *
   ITKBSRVR(FPQSRV01)
   RECONID(RECON1)
   DOMAIN(REORG)
   DBDNAME(HDAMDB1)
   HISTORY(YES)
/*
Figure 70. JCL example for the Sensor Data Extractor
```

3. Run the Sensor Data Extractor job step to generate a report. Ensure that the return code is 0.

   For examples of the Sensor Data History report, see “Sensor Data History report (Short type)” on page 148, “Sensor Data History report (Long type)” on page 152, and “Sensor Data History report (CSV type)” on page 155.
EXEC and DD statements for the Sensor Data Extractor

You must specify an EXEC statement and DD statements that define the input and output data sets in your JCL.

Topics:
- "EXEC statement"
- "Summary of DD statements"
- "DD statements for input"
- "DD statements for output" on page 141

EXEC statement

The EXEC statement must be in the following format:

//STEP EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'

The EXEC statement in the batch JCL contains one keyword specification in the PARM field: FUNC=.

FUNC

Identifies which Policy Services utility is to be invoked.

To invoke the Sensor Data Extractor, specify 'FUNC=EXTS'.

Summary of DD statements

DD statements of the Sensor Data Extractor determine the input and output data sets and specify how to run the Sensor Data Extractor.

The following table summarizes the DD statements for the Sensor Data Extractor.

<table>
<thead>
<tr>
<th>DD name</th>
<th>Use</th>
<th>Format</th>
<th>Can be dynamically allocated?</th>
<th>Required or optional?</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td>Input</td>
<td>RECFM=U</td>
<td>No</td>
<td>Required</td>
</tr>
<tr>
<td>BSNSYSIN</td>
<td>Input</td>
<td>RECFM=FB,LRECL=80</td>
<td>No</td>
<td>Required</td>
</tr>
<tr>
<td>BSNUJRNLS</td>
<td>Output</td>
<td>RECFM=FB,LRECL=133</td>
<td>Yes</td>
<td>Optional</td>
</tr>
<tr>
<td>BSNURPR</td>
<td>Output</td>
<td>RECFM=FB,LRECL=133</td>
<td>Yes</td>
<td>Optional</td>
</tr>
</tbody>
</table>

DD statements for input

The following input DD statements are used for the Sensor Data Extractor.

STEPLIB

This DD statement is required. It specifies the load module library of IMS Tools Base (SHKTLOAD).

BSNSYSIN

This DD statement is required. It specifies the input control statement that controls the Sensor Data Extractor functions.

The BSNSYSIN DD statement can be coded as a standard SYSIN file, a sequential data set, or a PDS member. LRECL=80 is required for the DCB of this data set.
For details about coding the BSNSYSIN DD statement, see “Control statements for the Sensor Data Extractor” on page 142.

**DD statements for output**

The following output DD statements are used for the Sensor Data Extractor.

**BSNUJRNL**

This DD statement is optional. It specifies the processing log output data set, which stores processing messages that are issued by the Sensor Data Extractor.

If you do not specify this DD statement, the Sensor Data Extractor dynamically allocates the data set by using SYSOUT=*.

**BSNRPRTP**

This DD statement is required if you specify REPORT_TYPE(SHORT) in the control statement. This DD statement specifies the Sensor Data History report for REPORT_TYPE(SHORT).

If you specify REPORT_TYPE(SHORT) and do not specify this DD statement, the Sensor Data Extractor dynamically allocates the data set by using SYSOUT=*.
Control statements for the Sensor Data Extractor

The control statement for the Sensor Data Extractor controls the functions of the Sensor Data Extractor.

The control statement must be specified in the BSNSYSIN data set. This control statement data set generally resides in the input stream. However, it can also be defined as a sequential data set or as a member of a partitioned data set. It must contain 80-byte, fixed-length records. The block size, if coded, must be a multiple of 80.

Topics:
- “Format of the control statement”
- “Summary of keywords”
- “Description of keywords” on page 143

Format of the control statement

The control statement includes a set of keywords, parameters, and comments that are specified in the BSNSYSIN data set.

Keywords
A keyword defines an option for the Sensor Data Extractor. Keywords can be specified in any order, and any two adjacent keywords must be separated by a blank or a comma. Each keyword has one or more associated parameters.

Parameters
A parameter defines a value for the associated keyword. Some keywords require only one parameter and others require one or more parameters. Parameters must be character or numeric values.

A keyword and the associated parameters are separated by parentheses. If two or more parameters are specified, any two adjacent parameters must be separated by a blank or a comma. For example,

\[ \text{keyword}(\text{parameter}) \]

\[ \text{keyword}(\text{parameter1}, \text{parameter2}, \text{parameter3}) \]

\[ \text{keyword}(\text{parameter1} \ \text{parameter2} \ \text{parameter3}) \]

Comments
You can include comments in the BSNSYSIN data set by marking a line with an asterisk (*) in column 1.

The Sensor Data Extractor ignores the comment line when analyzing the control statement in the BSNSYSIN data set.

Summary of keywords

The following table summarizes the keywords of the control statement for the Sensor Data Extractor.

\[ \text{Table 8. Keywords for the Sensor Data Extractor} \]

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Required or optional?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREANAME</td>
<td>Required if the database is a DEDB</td>
<td>n/a</td>
<td>Specifies an area name if the database is a DEDB.</td>
</tr>
</tbody>
</table>
### Table 8. Keywords for the Sensor Data Extractor (continued)

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Required or optional?</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGRP</td>
<td>Required if the DBDNAME keyword is not specified</td>
<td>n/a</td>
<td>Specifies a change accumulation (CA) group name.</td>
</tr>
<tr>
<td>DBDNAME</td>
<td>Required if the CAGRP keyword is not specified</td>
<td>n/a</td>
<td>Specifies a database name.</td>
</tr>
<tr>
<td>DOMAIN</td>
<td>Required</td>
<td>n/a</td>
<td>Specifies a policy domain.</td>
</tr>
<tr>
<td>DSN_CSV</td>
<td>Required if REPORT_TYPE(CSV) is specified</td>
<td>n/a</td>
<td>Specifies a data set name for a CSV report.</td>
</tr>
<tr>
<td>DSN_LONG</td>
<td>Required if REPORT_TYPE(LONG) is specified</td>
<td>n/a</td>
<td>Specifies a data set name for a LONG report.</td>
</tr>
<tr>
<td>GENERATION</td>
<td>Optional</td>
<td>5</td>
<td>Specifies how many generations of sensor data are to be extracted.</td>
</tr>
<tr>
<td>HISTORY</td>
<td>Optional</td>
<td>YES</td>
<td>Specifies whether to extract historical sensor data.</td>
</tr>
<tr>
<td>ITKBSRVR</td>
<td>Required</td>
<td>n/a</td>
<td>Specifies a name of the IMS Tools KB server.</td>
</tr>
<tr>
<td>LASTDATE</td>
<td>Optional</td>
<td>n/a</td>
<td>Specifies the last date of historical sensor data to be extracted.</td>
</tr>
<tr>
<td>PARTNAME</td>
<td>Required if the database is a HALDB</td>
<td>n/a</td>
<td>Specifies a partition name if the database is a HALDB.</td>
</tr>
<tr>
<td>RECONID</td>
<td>Required</td>
<td>n/a</td>
<td>Specifies a RECON ID.</td>
</tr>
<tr>
<td>REPORT_TYPE</td>
<td>Optional</td>
<td>SHORT</td>
<td>Specifies report types to be generated.</td>
</tr>
</tbody>
</table>

### Description of keywords

The following keywords are available for the control statement.

**AREANAME**

This keyword specifies a DEDB area name. The sensor data of the specified DEDB area is extracted.

AREANAME is a required keyword if the database specified by the DBDNAME keyword is a DEDB.

Format:

\[\text{AREANAME}(\text{area\_name})\]

*area\_name*

Specify a 1- to 8-character DEDB area name. There is no default.

**CAGRP**

This keyword specifies a CA group name. The sensor data of the specified CA group is extracted.

CAGRP is a required keyword if you do not specify the DBDNAME keyword.
The CAGRP keyword can be specified only if you specify
DOMAIN(RECOVERY) and do not specify the DBDNAME keyword.

Format:

>>>CAGRP(\textit{CA\_group\_name})

\textit{CA\_group\_name}

Specify a 1- to 8-character CA group name. There is no default.

**DBDNAME**

This keyword specifies a database name. The sensor data of the specified
database is extracted.

DBDNAME is a required keyword if you do not specify the CAGRP keyword.
The DBDNAME keyword cannot be specified with the CAGRP keyword.

Format:

>>>DBDNAME(\textit{dbd\_name})

\textit{dbd\_name}

Specify a 1- to 8-character DBD name. There is no default.

**DOMAIN**

This keyword specifies a policy domain. It represents which type of sensor
data is to be extracted.

DOMAIN is a required keyword.

Format:

>>>DOMAIN(\{\textit{REORG}, \textit{RECOVERY}\})

**REORG**

Extracts sensor data that is associated with the REORG domain. The sensor
data is collected by the DB Sensor of IMS Database Solution Pack for z/OS
or IMS Fast Path Solution Pack for z/OS.

**RECOVERY**

Extracts sensor data that is associated with the RECOVERY domain. The
sensor data is collected by the DB Sensor of IMS Recovery Solution Pack
for z/OS.

**ALL**

Extracts sensor data that is associated with all policy domains.

There is no default.

**DSN\_CSV**

This keyword specifies the name of the data set in which the Sensor Data
History Report of CSV type is to be generated.

The data set is dynamically allocated with DISP=NEW, RECFM=VB,
LRECL=32756, and BLKSIZE=32760. You cannot specify an existing data set.

DSN\_CSV is a required keyword if you specify REPORT\_TYPE(CSV).
DSN_CSV

\[ \text{data\_set\_name} \]
Specify a 1- to 44-character data set name. There is no default.

**DSN_LONG**
This keyword specifies the name of the data set in which a Sensor Data History report of Long type is to be generated.
The data set is dynamically allocated with DISP=NEW, RECFM=VBA, LRECL=32756, and BLKSIZE=32760. You cannot specify an existing data set.
DSN_LONG is a required keyword if you specify REPORT_TYPE(LONG).

Format:

\[ \text{DSN\_LONG(data\_set\_name)} \]

\[ \text{data\_set\_name} \]
Specify a 1- to 44-character data set name. There is no default.

**GENERATION**
This keyword specifies how many generations of sensor data are to be extracted.
This keyword is optional. The GENERATION keyword cannot be specified with the LASTDATE keyword.

Format:

\[ \text{GENERATION(value)} \]

\[ \text{value} \]
Specify a value in the range of 1 to 999. If you specify GENERATION(3), sensor data of the three most recent generations is to be extracted and reported. The default is GENERATION(5).

**HISTORY**
This keyword specifies whether to extract not only the latest sensor data but also history sensor data.
This keyword is optional.

Format:

\[ \text{HISTORY(YES)} \]

\[ \text{YES} \]
Extracts history sensor data. This is the default.

\[ \text{HISTORY(NO)} \]

\[ \text{NO} \]
Extracts the latest sensor data only. If you specify HISTORY(NO), GENERATION and LASTDATE keywords will be ignored.
**ITKBSRVR**

This keyword specifies the name of the IMS Tools KB server. The sensor data is extracted from the IMS Tools KB sensor data repository, which is managed by the IMS Tools KB server.

This keyword is required.

Format:

```plaintext
►► ITKBSRVR(server_name)◄◄
```

*server_name*

Specify a 1- to 8-character IMS Tools KB server name. There is no default.

**LASTDATE**

This keyword specifies the last date of sensor data that is to be extracted and reported by the Sensor Data Extractor.

This keyword is optional.

The LASTDATE keyword cannot be specified with the GENERATION keyword.

Format:

```plaintext
►► LASTDATE(yyyymmddhhmms)◄◄
```

*yyyymmddhhmms*

Specify a value that represents the last date.

If you specify LASTDATE(20180401123000), the last date will be April 1, 2018, 12:30:00.

If you specify LASTDATE(20171231), the last date will be December 31, 2017, 00:00:00.

There is no default.

**PARTNAME**

This keyword specifies a HALDB partition name. The sensor data of the specified HALDB partition is extracted.

PARTNAME is a required keyword if the database specified by the DBDNAME keyword is a HALDB.

Format:

```plaintext
►► PARTNAME(partition_name)◄◄
```

*partition_name*

Specify a 1- to 7-character HALDB partition name. There is no default.

**RECONID**

This keyword specifies a RECON ID that is associated with the RECON1 data set name in the IMS Tools KB repository.

RECONID is a required keyword.

Format:
**RECONID**(recon_id)

**recon_id**
Specify a 1- to 8-character RECON ID. There is no default.

**REPORT_TYPE**
This keyword specifies which formats of reports you want to generate.
This keyword can specify up to three parameters. If you specify multiple parameters for this keyword, the Sensor Data Extractor generates multiple formats of reports.
REPORT_TYPE is an optional keyword.

Format:

```
REPORT_TYPE(SHORT, LONG, CSV)
```

**SHORT**
Generates a Sensor Data History report of up to five generations of sensor data. The report is written in the BSNURPRT data set or the SYSOUT stream. This is the default.

**LONG**
Generates a Sensor Data History report of up to 999 generations of sensor data. The report is written in the data set specified by the DSN_LONG keyword.

**CSV**
Generates a Sensor Data History Report of up to 999 generations of sensor data. The report is written in CSV format in the data set specified by the DSN_CSV keyword.

If you specify the CSV parameter, DOMAIN(ALL) or multiple parameters for the DOMAIN keyword cannot be specified.
Output from the Sensor Data Extractor

The Sensor Data Extractor generates a Journal Messages report and three types of Sensor Data History reports.

Topics:
- “Journal Messages report”
- “Sensor Data History report (Short type)”
- “Sensor Data History report (Long type)” on page 152
- “Sensor Data History report (CSV type)” on page 155

Journal Messages report

The Journal Messages report contains processing messages about the Sensor Data Extractor job. This report is generated in the BSNUJRNL data set.

Sample report

The following figure shows an example of the Journal Messages report:

Figure 71. Journal Messages report

Sensor Data History report (Short type)

The Sensor Data History Report of Short type contains data element values of sensor data with their collected dates. This report is generated in the BSNURFRT data set.

This report contains the data element names, their values, and their collected dates. For the definitions of these data elements, see Chapter 19, “Data elements,” on page 163. The URL in the report header indicates the link to this topic on the web.

This report can contain up to five generations of sensor data. If more than five generations are extracted, only the five most recent generations are shown.

Sample report

The following figure shows an example of the Sensor Data History report of Short type. In this example, four generations of sensor data are reported.
Description of each data element can be referred to from the following URL:
https://www.ibm.com/support/knowledgecenter/SSS8US_1.6.0/aiips/topics/aiips_policy-dataelement.htm

Database Statistics (DBD: HDAMSAM, DB Type: HDAM)

Data elements related to root segments

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_ROOT</td>
<td>212,242</td>
<td>208,080</td>
<td>204,000</td>
<td>200,000</td>
</tr>
<tr>
<td>DB_NUM_SYNONYM</td>
<td>87,755</td>
<td>83,576</td>
<td>79,596</td>
<td>75,805</td>
</tr>
<tr>
<td>DB_PCT_NUM_SYNONYM</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
<td>37%</td>
</tr>
<tr>
<td>DB_NUM_ROOT_NOHOME</td>
<td>15,573</td>
<td>14,831</td>
<td>14,124</td>
<td>13,451</td>
</tr>
<tr>
<td>DB_FLAG_SENSOR_HOME</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>DB_FLAG_SENSOR_DBINFO</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>DB_AVG_LEN_SYNONYM_CHAIN</td>
<td>2.73</td>
<td>2.70</td>
<td>2.65</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Data elements related to randomizing parameter

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_BYTES_SEG_RAA</td>
<td>73,624,950</td>
<td>70,119,000</td>
<td>66,780,000</td>
<td>63,600,000</td>
</tr>
<tr>
<td>DB_NUM_RAP</td>
<td>192,000</td>
<td>192,000</td>
<td>192,000</td>
<td>192,000</td>
</tr>
<tr>
<td>DB_NUM_UNUSED_RAP</td>
<td>58,136</td>
<td>61,195</td>
<td>64,415</td>
<td>67,805</td>
</tr>
<tr>
<td>DB_PCT_NUM_UNUSED_RAP</td>
<td>30%</td>
<td>31%</td>
<td>33%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Data elements related to database records

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVG_DBREC_LENGTH</td>
<td>1,751.78</td>
<td>1,701.20</td>
<td>1,650.78</td>
<td>1,600.28</td>
</tr>
<tr>
<td>DB_ESTIMATED_DBREC IO</td>
<td>4.57</td>
<td>4.48</td>
<td>4.39</td>
<td>4.30</td>
</tr>
<tr>
<td>DB_ESTIMATED_ROOT IO</td>
<td>1.16</td>
<td>1.14</td>
<td>1.12</td>
<td>1.10</td>
</tr>
</tbody>
</table>

Data elements related to event dates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DAYS_SINCE_LAST_REORG</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Figure 72. Sensor Data History report (Short type) - Part 1 of 2
**Figure 73. Sensor Data History report (Short type) - Part 2 of 2**
Report field descriptions

The Sensor Data History report (Short type) shows the following fields:

**Description of each data element can be referred to from the following URL:**

This URL links to the web version of the topic in Chapter 19, “Data elements,” on page 163. You can refer to the description of each data element from the subtopics of this page.

**Database Statistics | Partition Statistics | Area Statistics**

This part shows a list of sensor data elements of the non-HALDB database level, HALDB partition level, or DEDB area level.

- **DBD** Shows the name of the database.
- **Partition** Shows the name of the HALDB partition. This field is displayed only for HALDB.
- **Area** Shows the name of the DEDB area. This field is displayed only for DEDB.
- **DB type** Shows the type of the database.

**Data Set Statistics**

This part shows a list of sensor data elements of the data set group level.

- **DBD** Shows the name of the database.
- **Partition** Shows the name of the HALDB partition. This field is displayed only for HALDB.
- **Area** Shows the name of the DEDB area. This field is displayed only for DEDB.
- **DB type** Shows the type of the database.
- **DSG** Shows the ID of the data set group.
- **DD name** Shows the DD name of the data set.

**Data elements related to ...**

This title is enclosed by double lines and shows a classification of the listed data elements. The title corresponds to the reference topic title of this guide.

**Data Element Name**

This column shows the names of data elements.

**yyyy-mm-dd hh:mm:ss**

The date and time indicates when the data elements were stored in the IMS Tools KB Sensor Data repository by DB Sensor. The date and time is shown in local time.

This column shows the value of each data element at the indicated point of time. If a certain data element is not stored in the repository, 'n/a' is shown.
Sensor Data History report (Long type)

The Sensor Data History report of Long type contains data element values of sensor data with their collected dates. This report is generated in the data set that is specified by the DSN_LONG keyword.

This report contains the data element names, their values, and their collected dates. For the definitions of these data elements, see Chapter 19, “Data elements,” on page 163. The URL in the report header indicates the link to this topic on the web.

This report can contain up to 999 generations of sensor data. If more than 999 generations are extracted, only the 999 most recent generations are shown.

Sample report

The following figure shows an example of the Sensor Data History report of Long type. In this example, six generations of sensor data are reported.
### Area Statistics (DB: DDBJN04, Area: DB2AH70, DB Type: DE06)

Data elements related to AREA definition

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AREDEF_CISIZE</td>
<td>2,048</td>
<td>2,048</td>
<td>2,048</td>
<td>2,048</td>
<td>2,048</td>
</tr>
<tr>
<td>DB_AREDEF_UOW</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>DB_AREDEF_ROOT1</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td>DB_AREDEF_ROOT2</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
</tr>
<tr>
<td>DB_AREDEF_RAMDEP_CIS</td>
<td>8,974</td>
<td>8,974</td>
<td>8,974</td>
<td>8,974</td>
<td>8,974</td>
</tr>
</tbody>
</table>

Data elements related to Free space in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_PCT_BYTES_FS_RAW</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_DOVF</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_DOF</td>
<td>87%</td>
<td>87%</td>
<td>87%</td>
<td>87%</td>
<td>87%</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_DOFV</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
</tr>
</tbody>
</table>

Data elements related to to overflow in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVG_ROOT_IOVFCI_BY_UOW</td>
<td>1.24</td>
<td>1.24</td>
<td>1.24</td>
<td>1.24</td>
<td>1.24</td>
</tr>
<tr>
<td>DB_MAX_NUM_DOVFCI_BY_UOW</td>
<td>24%</td>
<td>24%</td>
<td>24%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>DB_AVG_NUM_DOVFCI_BY_UOW</td>
<td>0.60</td>
<td>0.55</td>
<td>0.50</td>
<td>0.45</td>
<td>0.40</td>
</tr>
<tr>
<td>DB_PCT_NUM_UOW_USE_DOVF</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
<td>64%</td>
</tr>
</tbody>
</table>

Data elements related to segment occurrences in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_SEG</td>
<td>1,795,862</td>
<td>1,710,344</td>
<td>1,628,899</td>
<td>1,551,532</td>
<td>1,477,459</td>
</tr>
</tbody>
</table>

Data elements related to database records in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_ROOT</td>
<td>142,681</td>
<td>134,396</td>
<td>126,401</td>
<td>126,401</td>
<td>126,401</td>
</tr>
<tr>
<td>DB_MAX_DREC_LENGTH</td>
<td>3,825</td>
<td>4,477</td>
<td>5,700</td>
<td>3,383</td>
<td>3,383</td>
</tr>
<tr>
<td>DB_MAX_DREC_DOFV</td>
<td>666,666</td>
<td>444,444</td>
<td>444,444</td>
<td>444,444</td>
<td>444,444</td>
</tr>
</tbody>
</table>

Data elements related to synonym in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVG_LEN_SYNONYM_CHAIN</td>
<td>0.24</td>
<td>0.22</td>
<td>0.20</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td>DB_MAX_LEN_SYNONYM_CHAIN</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

Data elements related to physical I/O in an area

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-30 00:00:00</th>
<th>2013-03-03 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_MAX_DREC_DOF</td>
<td>1.48</td>
<td>1.44</td>
<td>1.40</td>
<td>1.36</td>
<td>1.32</td>
</tr>
<tr>
<td>DB_MAX_DREC_DOFV</td>
<td>1.60</td>
<td>1.60</td>
<td>1.55</td>
<td>1.55</td>
<td>1.55</td>
</tr>
<tr>
<td>DB_MAX_DREC_DOFV</td>
<td>2.04</td>
<td>2.04</td>
<td>2.04</td>
<td>2.04</td>
<td>2.04</td>
</tr>
</tbody>
</table>

---

**Figure 74. Sensor Data History report (Long type) - Part 1 of 2**
The Sensor Data History report (Long type) shows the following fields:

**Data elements related to UOW statistics information**

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-10 00:00:00</th>
<th>2013-03-03 00:00:00</th>
<th>Data Element Name</th>
<th>2013-03-24 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_FLAG_UOW_DATA</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>DB_FLAG_UOW_DATA</td>
<td>N</td>
</tr>
<tr>
<td>DB_FLAG_UOW_GROUP_DATA</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>DB_FLAG_UOW_GROUP_DATA</td>
<td>N</td>
</tr>
<tr>
<td>DB_NUM_UOW_GROUPS</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>DB_NUM_UOW_GROUPS</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Data elements related to repository group information**

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-10 00:00:00</th>
<th>2013-03-03 00:00:00</th>
<th>Data Element Name</th>
<th>2013-03-24 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_SENSOR_DATA_GROUP_ID</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>DB_SENSOR_DATA_GROUP_ID</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Data elements related to event dates**

<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>2013-03-31 00:00:00</th>
<th>2013-03-24 00:00:00</th>
<th>2013-03-17 00:00:00</th>
<th>2013-03-10 00:00:00</th>
<th>2013-03-03 00:00:00</th>
<th>Data Element Name</th>
<th>2013-03-24 00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DAYS_SINCE_LAST_REORG</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>DB_DAYS_SINCE_LAST_REORG</td>
<td>n/a</td>
</tr>
</tbody>
</table>

---

**Report field descriptions**

The Sensor Data History report (Long type) shows the following fields:

- **DBD**: Shows the name of the database.
- **Partition**: Shows the name of the HALDB partition. This field is displayed only for HALDB.
- **Area**: Shows the name of the DEDB area. This field is displayed only for DEDB.
- **DB type**: Shows the type of the database.
- **Data Set Statistics**: This part shows a list of sensor data elements of the database.
- **Partition**: Shows the name of the HALDB partition. This field is displayed only for HALDB.
- **Area**: Shows the name of the DEDB area. This field is displayed only for DEDB.
- **DB type**: Shows the type of the database.
- **DSG**: Shows the ID of the data set group.
- **DD name**: Shows the DD name of the data set.

**Description of each data element can be referred to from the following URL:**

This URL links to the web version of the topic in Chapter 19, “Data elements,” on page 163. You can refer to the description of each data element from the subtopics of this page.
Data elements related to ...

This title is enclosed by double lines and shows a classification of the listed data elements. The title corresponds to the reference topic title of this guide.

Data element name

This column shows the names of data elements. For readability, this column is repeated after every five generations (every five yyyy-mm-dd hh:mm:ss columns) of sensor data.

yyyy-mm-dd hh:mm:ss

The date and time indicates when the data elements were stored in the IMS Tools KB Sensor Data repository by DB Sensor. The date and time is shown in local time.

This column shows the value of each data element at the indicated point of time. If a certain data element is not stored in the repository, 'n/a' is shown.

Sensor Data History report (CSV type)

The Sensor Data History report of CSV type contains a list of data element values of sensor data with their collected dates. This report is in CSV (comma-separated values) format and generated in the data set that is specified by the DSN_CSV keyword.

This report contains data element names, their values, and their collected dates. For the definitions of these data elements, see Chapter 19, “Data elements,” on page 163.

This report can contain up to 999 generations of sensor data. If more than 999 generations are extracted, only the 999 most recent generations are shown.

Sample report

The following figure shows an example of the Sensor Data History report of CSV type. In this example, four generations of sensor data are reported.
The Sensor Data History report (CSV type) shows the following fields:

#number=data_element_name

This record indicates an ID that is assigned to each data element name in this report.

number

Shows the ID of the data element. This four-digit ID is used in the header record of the data records table to identify each data element.

data_element_name

Shows the name of the data element associated with the ID.

#Timestamp,DBD,PARTAREA,DSG,number_1,number_2,number_3,...

This record is the header record of the data records list. This record shows the meaning of each field in the data records.

number_n

Shows the ID of the data element that is associated with the data element name.

yyyy-mm-ddTh:mm:ss±hh:mm,dbname,partarea,dsg_number,value_1,value_2,value_3,...

This record is a data record for each sensor data record of a specific generation.

yyyy-mm-ddTh:mm:ss±hh:mm

Shows the date and time that the sensor data was collected and stored in the IMS Tools KB repository. The format is shown in the ISO 8601 format.

dbname

Shows the name of the database.

partarea

If the database is a HALDB, partarea shows the name of the HALDB partition.

Figure 76. Sensor Data History report (CSV type)
If the database is a DEDB, *partarea* shows the name of the DEDB area.

*dsg_number*

If the data record is for sensor data of a database or an area level, *dsg_number* shows '0'.

If the data record is for sensor data of a data set group level, *dsg_number* shows the DSG number.

*value_n*

Shows the data element value of *number_n* that is indicated in the header record. If *value_n* shows nothing, it means that the data element *number_n* is not applicable for the sensor data record or that the data element for the sensor data record is not stored in the IMS Tools KB repository.
JCL examples for the Sensor Data Extractor

Use these JCL examples to code JCL statements for the Sensor Data Extractor.

Topics:
- “Example 1: Extracting latest sensor data from all domains to generate a Short type report”
- “Example 2: Extracting sensor data of multiple generations to generate a Short type report”
- “Example 3: Extracting sensor data of a specific date and later to generate a Long type report” on page 159
- “Example 4: Generating all types of reports” on page 160

Example 1: Extracting latest sensor data from all domains to generate a Short type report

The following figure shows example JCL for extracting the latest non-HALDB sensor data from all policy domains.

```
//PGM1
EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'
//STEPLIB
DD DISP=SHR,DSN=ITB.SHKTLOAD
//BSNUJRNL DD SYSOUT=
//BSNURPRT DD SYSOUT=
//BSNSYSIN DD *
  ITKBSRVR(FPQSRV01)
  RECONID(RECON1)
  DOMAIN(ALL)
  DBDNAME(HDAMVSAM)
  HISTORY(NO)
/*
```

*Figure 77. Example 1: Extracting latest sensor data from all domains*

In this example, sensor data of both REORG and RECOVERY domains are extracted and reported because DOMAIN(ALL) is specified.

The latest sensor data is extracted and reported because HISTORY(NO) is specified.

The Sensor Data History report of Short type is generated in the BSNURPRT data set because REPORT_TYPE(SHORT) (default value) is assumed.

Example 2: Extracting sensor data of multiple generations to generate a Short type report

The following figure shows example JCL for extracting three generations of HALDB sensor data.
In this example, sensor data of REORG domain is extracted and reported because \texttt{DOMAIN(REORG)} is specified.

The sensor data of three most recent generations is extracted and reported because \texttt{HISTORY(YES)} (default) is assumed and \texttt{GENERATION(3)} is specified.

The Sensor Data History report of Short type is generated in the BSNURPRT data set because \texttt{REPORT_TYPE(SHORT)} (default value) is assumed.

\textbf{Example 3: Extracting sensor data of a specific date and later to generate a Long type report}

The following figure shows example JCL for extracting DEDB sensor data of a specific date and later to generate a Sensor Data History Report of Long type.

```
//PGM1   EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'
//STEPLIB DD DISP=SHR,DSN=ITB.SHKTLOAD
//BSNUJRNL DD SYSOUT**
//BSNURPRT DD SYSOUT**
//BSNSYSIN DD *
   ITKBSRVR(FPQSRV01)
   RECONID(RECON1)
   DOMAIN(REORG)
   DBDNAME(PHIO0100)
   PARTNAME(PHIO01A)
   GENERATION(3)
/*
```

\textit{Figure 78. Example 2: Extracting multiple generations of sensor data}

In this example, sensor data of REORG domain is extracted and reported because \texttt{DOMAIN(REORG)} is specified.

The sensor data of three most recent generations is extracted and reported because \texttt{HISTORY(YES)} (default) is assumed and \texttt{GENERATION(3)} is specified.

The Sensor Data History report of Short type is generated in the BSNURPRT data set because \texttt{REPORT_TYPE(SHORT)} (default value) is assumed.

\textbf{Example 3: Extracting sensor data of a specific date and later to generate a Long type report}

The following figure shows example JCL for extracting DEDB sensor data of a specific date and later to generate a Sensor Data History Report of Long type.

```
//PGM1   EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'
//STEPLIB DD DISP=SHR,DSN=ITB.SHKTLOAD
//BSNUJRNL DD SYSOUT**
//BSNURPRT DD SYSOUT**
//BSNSYSIN DD *
   ITKBSRVR(FPQSRV01)
   RECONID(RECON1)
   DOMAIN(REORG)
   DBDNAME(DEDBJN24)
   AREANAME(DB24AR0)
   LASTDATE(20180101)
   REPORT_TYPE(LONG)
   DSN_LONG(ITB.REPORT.LONG)
/*
```

\textit{Figure 79. Example 3: Extracting sensor data of a specific date and later to generate a Long type report}

In this example, sensor data of REORG domain is extracted and reported because \texttt{DOMAIN(REORG)} is specified.

Sensor data of all generations, which was collected on January 1st, 2018 and later, is extracted and reported because \texttt{HISTORY(YES)} (default) is assumed and \texttt{LASTDATE(20180101)} is specified.

A Sensor Data History report of Long type is generated in the data set named \texttt{ITB.REPORT.LONG} because \texttt{REPORT_TYPE(LONG)} and \texttt{DSN_LONG(ITB.REPORT.LONG)} are specified.
Example 4: Generating all types of reports

The following figure shows example JCL for extracting non-HALDB sensor data and generating all types of Sensor Data History reports.

//PGM1 EXEC PGM=BSNUTIL0,PARM='FUNC=EXTS'
//STEPLIB DD DISP=SHR,DSN=ITB.SHKTLOAD
//BSNURJNL DD SYSOUT**
//BSNURPRT DD SYSOUT**
//BSNUSYSIN DD *
    ITKBSRVR(FPQSRV01)
    RECONID(RECON1)
    DOMAIN(REORG)
    DBDNAME(HDAMVSAM)
    GENERATION(999)
    REPORT_TYPE(SHORT,LONG,CSV)
    DSN_LONG(ITB.REPORT.LONG)
    DSN_CSV(ITB_REPORT.CSV)
*/

Figure 80. Example 4: Generating all types of reports

In this example, sensor data of REORG domain is extracted and reported because DOMAIN(REORG) is specified.

Sensor data of 999 generations (or all generations if less than 999 generations are stored in the repository) is extracted and reported because HISTORY(YES) (default) is assumed and GENERATION(999) is specified.

Short, Long, and CSV types of Sensor Data History reports are generated because REPORT_TYPE(SHORT,LONG,CSV) is specified.

A Sensor Data History Report of Long type is generated in the data set named ITB.REPORT.LONG because DSN_LONG(ITB.REPORT.LONG) is specified.

A Sensor Data History Report of CSV type is generated in the data set named ITB.REPORT.CSV because DSN_LONG(ITB.REPORT.CSV) is specified.
Part 5. Reference: Policy Services

The topics in this section provide you with supplemental technical references for Policy Services.

Topics:
• Chapter 19, “Data elements,” on page 163
• Chapter 20, “Journal reports,” on page 209
Chapter 19. Data elements

The data element information provided in the following reference topics can help you analyze the state of a database.

Topics:
- “Data elements related to database attribute” on page 164
- “Data elements related to root segments” on page 165
- “Data elements related to randomizing parameter” on page 167
- “Data element related to database records” on page 168
- “Data elements related to index” on page 169
- “Data elements related to database data set space” on page 170
- “Data elements related to data set CI/CA splits” on page 177
- “Data elements related to segments in a data set group” on page 178
- “Data elements related to pointers in a data set group” on page 180
- “Data elements related to free space in a data set group” on page 181
- “Data elements related to free space in an area” on page 183
- “Data elements related to overflow in an area” on page 184
- “Data element related to segment occurrences in an area” on page 185
- “Data elements related to database records in an area” on page 186
- “Data elements related to synonym in an area” on page 187
- “Data elements related to physical I/O in an area” on page 188
- “Data elements related to AREA definition” on page 189
- “Data elements related to UOW statistics information” on page 190
- “Data element related to repository group information” on page 191
- “Data elements related to free space in a UOW” on page 192
- “Data elements related to free space in a UOW group” on page 193
- “Data elements related to overflow in a UOW” on page 194
- “Data elements related to overflow in a UOW group” on page 195
- “Data elements related to database records in a UOW” on page 196
- “Data elements related to database records in a UOW group” on page 197
- “Data elements related to synonym in a UOW” on page 198
- “Data elements related to synonym in a UOW group” on page 199
- “Data elements related to physical I/O in a UOW” on page 200
- “Data elements related to physical I/O in a UOW group” on page 201
- “Data elements related to RBASEFS or RDOVFFS conditions” on page 202
- “Data elements related to event dates” on page 203
- “Data elements related to data set backup status” on page 204
- “Data elements related to database recovery” on page 205
- “Data elements related to database backout” on page 206
- “Data elements related to change accumulation groups” on page 207
Data elements related to database attribute

This reference topic provides information about data elements that are related to database attribute.

The following table summarizes the data element that is related to attribute.

Table 9. Data elements related to database attribute

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DATABASE_TYPE</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DB</td>
<td>The type of database organization.</td>
</tr>
</tbody>
</table>
Data elements related to root segments

This reference topic provides information about data elements that are related to root segments.

The following table summarizes the data elements that are related to root segments.

**Table 10. Data elements related to root segments**

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_ROOT</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DB</td>
<td>The number of root segment occurrences in the database or the partition.</td>
</tr>
<tr>
<td>DB_NUM_SYNONYM</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td></td>
<td>The number of synonyms that are root segment occurrences not assigned to a unique root anchor point (RAP).</td>
</tr>
<tr>
<td>DB_PCT_NUM_SYNONYM</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td></td>
<td>The percentage of synonyms compared to the total number of root segment occurrences.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DB_PCT_NUM_SYNONYM (%) = (DB_NUM_SYNONYM / DB_NUM_ROOT) * 100</td>
</tr>
<tr>
<td>DB_NUM_ROOT_NOHOME</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td></td>
<td>The number of root segment occurrences that are not in the home block or CI.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A home block refers to a block or CI that is selected by a randomizer. IMS attempts to put root segment occurrences in the home block. If there is not enough free space to store the root segment occurrence, IMS puts the root segment occurrence in a different block. However, in accessing the segment occurrence, IMS attempts to read the home block before reading the block in which the segment occurrence exists, thus I/O overhead is increased as the DB_NUM_ROOT_NOHOME increases.</td>
</tr>
<tr>
<td>DB_PCT_NUM_ROOT_NOHOME</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td></td>
<td>The percentage of root segment occurrences that are not in the home block compared to the total number of root segment occurrences.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DB_PCT_NUM_ROOT_NOHOME (%) = (DB_NUM_ROOT_NOHOME / DB_NUM_ROOT) * 100</td>
</tr>
<tr>
<td>DB_NUM_ROOT_OVFL</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td></td>
<td>The number of root segment occurrences that are found in an overflow area.</td>
</tr>
</tbody>
</table>
Table 10. Data elements related to root segments  (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_PCT_NUM_ROOT_OVFL</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DB</td>
<td>The percentage of root segment occurrences found in the overflow area compared to the total number of root segment occurrences. The value is calculated by the following formula: $DB_{PCT_NUM_ROOT_OVFL} (%) = \frac{DB_{NUM_ROOT_OVFL}}{DB_{NUM_ROOT}} \times 100$</td>
</tr>
<tr>
<td>DB_FLAG_SENSOR_HOME</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DB</td>
<td>The indicator that shows whether the SENSOR_HOME option of Database Sensor is specified or not.</td>
</tr>
<tr>
<td>DB_FLAG_SENSOR_DBINFO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td>The indicator that shows whether the SENSOR_DBINFO option of Database Sensor is specified or not.</td>
</tr>
<tr>
<td>DB_AVG_LEN_SYNONYM_CHAIN</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DB</td>
<td>The average length of all the synonym chains that have a length greater than or equal to 2.</td>
</tr>
</tbody>
</table>
Data elements related to randomizing parameter

This reference topic provides information about data elements that are related to the randomizing parameter.

The following table summarizes the data elements that are related to the randomizing parameter.

Table 11. Data elements related to the randomizing parameter

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_BYTES_SEG_RAA</td>
<td>Y</td>
<td>The total bytes of segment occurrences that are found in a root addressable area (RAA).</td>
</tr>
<tr>
<td>DB_PCT_BYTES_OVFL</td>
<td>Y</td>
<td>The percentage of the total bytes of segment occurrences that are found in an overflow area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\text{DB_PCT_BYTES_OVFL}\ = \frac{\text{Total bytes of segment occurrences in an overflow area}}{\text{Total bytes of segment occurrences in DSG1}} \times 100$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Set Group 1 (DSG1) refers to the database data set that contains root segment occurrences.</td>
</tr>
<tr>
<td>DB_NUM_RAP</td>
<td>Y</td>
<td>The total number of root anchor points (RAPs) in the database.</td>
</tr>
<tr>
<td>DB_NUM_UNUSED_RAP</td>
<td>Y</td>
<td>The number of unused root anchor points.</td>
</tr>
<tr>
<td>DB_PCT_NUM_UNUSED_RAP</td>
<td>Y</td>
<td>The usage rate of RAPs. This value shows the percentage of &quot;unused root anchor points&quot; compared to &quot;the total root anchor points&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\text{DB_PCT_NUM_UNUSED_RAP}\ = \frac{\text{DB_NUM_UNUSED_RAP}}{\text{DB_NUM_RAP}} \times 100$</td>
</tr>
</tbody>
</table>
Data element related to database records

This reference topic provides information about data element that is related to database records.

The following table summarizes the data element that is related to database records.

Table 12. Data elements related to database records

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVERAGE_DBREC_LENGTH</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DB</td>
<td>The average length of database records. This value is calculated by &quot;the total bytes of segment occurrences in the database&quot; divided by &quot;the number of root segment occurrences&quot;. This value is calculated by the following formula: DB_AVERAGE_DBREC_LENGTH= Total bytes of segment occurrences / DB_NUM_ROOT</td>
</tr>
<tr>
<td>DB_ESTIMATED_DBREC_IO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>DB</td>
<td>The estimated number of I/Os that are required to retrieve an entire database record.</td>
</tr>
<tr>
<td>DB_ESTIMATED_ROOT_IO</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>DB</td>
<td>The estimated number of I/Os that are required to reach a root segment from RAP by following the synonym chain.</td>
</tr>
</tbody>
</table>
Data elements related to index

This reference topic provides information about data element that is related to index.

The following table summarizes the data element that is related to index.

Table 13. Data elements related to index

| Data element name | P | I | N | D | E | X | S | I | N | D | E | X | P | P | S | T | Y | E | X | Type | Description |
| DBX_NUM_IPS       | Y | Y | Y | Y |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | DB | The number of index pointer segments (IPS) in the index database. |
| DBX_NUM_IPS_OVFL  | - | Y | - | - |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | DB | The number of index pointer segments (IPS) in the overflow data set. The number is the same as the number of duplicated keys. |
| DBX_PCT_IPS_OVFL  | - | Y | - | - |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | DB | The percentage of index pointer segments (IPS) in the overflow data set compared to the total number of IPS segments. |
Data elements related to database data set space

This reference topic provides information about data elements that are related to database data set space.

The following table summarizes the data elements that are related to database data set space. These data elements are collected for each database data set.

Table 14. Data elements related to database data set space

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>D</th>
<th>I</th>
<th>S</th>
<th>P</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_FLAG_SMS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>DS</td>
<td></td>
<td>The indicator that shows whether DFSMSdss was active or not when collecting the statistics for data elements. The value is either Y or N. Y DFSMSdss is active. N DFSMSdss is not active.</td>
</tr>
<tr>
<td>DB_MAX_EXT_DS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>DS</td>
<td></td>
<td>The maximum number of extents for the data set which is limited by an access method. This number is as follows: • VSAM data set: 251 • OSAM data set: – 62 for IMS V13 or earlier – 120 for IMS V14 or later Notes: 1. Whether VSAM extent constraint removal is specified or not is not taken into consideration when this value is calculated. Even if a VSAM file has extent constraint removal specified, DB Sensor ignores the feature and regards the file as extent constraint removal not specified. For detail about VSAM extent constraint removal, see z/OS DFSMS Using Data Sets. 2. A multivolume VSAM file has 255-extent limit due to its access method. However, DB Sensor assumes the extent limit as 251 because four extents might be used by the access method.</td>
</tr>
<tr>
<td>DB_MAX_EXT_VOL</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>DS</td>
<td></td>
<td>The maximum number of extents that can be allocated on one DASD volume. VSAM data set 123 extents per volume OSAM data set 16 extents per volume</td>
</tr>
</tbody>
</table>
Table 14. Data elements related to database data set space  (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>I</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>S</th>
<th>P</th>
<th>H</th>
<th>S</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| DB_AVAI__EXT_LESS_100 | Y | Y | Y | Y | Y | DS | The indicator that shows whether the number of remaining extents to be allocated for the data set is less than 100 or not. The value is either Y or N. Y The remaining extents is less than 100. N The remaining extents is equal to or greater than 100.
<table>
<thead>
<tr>
<th>Data element name</th>
<th>H D I I S A M</th>
<th>H I I N S A M</th>
<th>S P I N D A M</th>
<th>P H I I D A M</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVAIL_EXT_LIMIT</td>
<td>Y Y Y Y - -</td>
<td>Y Y - -</td>
<td></td>
<td></td>
<td>DS</td>
<td>The reason the remaining extents are less than 100. Use this information to determine an action for expanding space.</td>
</tr>
</tbody>
</table>

The reason is shown when DB_AVAIL_EXT_LESS_100 is “Y”. The reason shows one of the following texts:

- **OSAM_MAXIMUM** or **VSAM_MAXIMUM**
  The number of remaining extents that is displayed in DB_NUM_AVAIL_EXT shows the allowable number of remaining extents that is calculated based on the OSAM or VSAM extent limit.
  If the number of remaining extents is low, you must increase the primary and secondary allocation size of the data set definition and re-create the OSAM data set.

- **VOL_FREE_EXTENTS**
  The number of remaining extents that is displayed in DB_NUM_AVAIL_EXT shows the allowable number for extending the data set on the DASD volume. This value is calculated based on the free space that is available on the DASD volume.
  If the number of remaining extents is low, you must increase the free space on the DASD volume for allocation, increase the number of DASD volumes for allocation, or re-create the data set on a DASD volume that has a larger free space.

The number of remaining extents is calculated for the volumes that have volume serial numbers assigned. For candidate volumes without volume serial numbers, the number of remaining extents cannot be estimated. For those candidate volumes, DB Sensor assumes that the number of remaining extents is zero.

The number of remaining extents is calculated based on the space utilization of the DASD volume at the time when DB Sensor is run. After this value is calculated, the size of free space on the volume might change due to some file operations, such as files being created or deleted. For this reason, the number of remaining extents might be different from the actual number of remaining extents.
Table 14. Data elements related to database data set space (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_AVAIL_EXT</td>
<td>The estimated number of remaining extents for the data set. This value is collected when DB_AVAIL_EXT_LESS_100 is &quot;Y&quot;.</td>
</tr>
<tr>
<td>Notes:</td>
<td>1. This value is estimated from the amount of free space left on the DASD volume at the time when the statistics were collected. Because other files are created or deleted, the estimated value might not be the same as the actual number of remaining extents.</td>
</tr>
<tr>
<td></td>
<td>2. In estimating this value, VSAM extent constraint removal and guaranteed space attributes defined in SMS are not taken into consideration. Thus, this value might be smaller than the actual number of remaining extent operations.</td>
</tr>
<tr>
<td></td>
<td>3. In estimating this value, VSAM extent consolidation is not taken into consideration. Thus, this value might be smaller than the actual number of extent operations.</td>
</tr>
<tr>
<td>DB_NUM_EXT</td>
<td>The number of extents that currently exist in the data set.</td>
</tr>
<tr>
<td>DB_RBA_HIGH_USED</td>
<td>The highest value of the relative byte address that is used by the data set. This value is shown in decimal format.</td>
</tr>
<tr>
<td>DB_RBA_HIGH_ALLOC</td>
<td>The highest value of the relative byte address that is allocated for the data set. This value is shown in decimal format.</td>
</tr>
<tr>
<td>DB_NUM_VOL</td>
<td>The number of DASD volumes that are used by the data set.</td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL</td>
<td>The number of unused DASD volumes.</td>
</tr>
<tr>
<td>This value is calculated by the following formula:</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL =</td>
<td>The number of volumes defined to data set</td>
</tr>
<tr>
<td>- DB_NUM_VOL</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL_SER</td>
<td>The number of unused DASD volumes whose volume serial numbers are already assigned.</td>
</tr>
<tr>
<td>This value is calculated by the following formula:</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL_SER =</td>
<td>DB_NUM_UNUSED_VOL - DB_NUM_UNUSED_VOL_CAND</td>
</tr>
</tbody>
</table>
Table 14. Data elements related to database data set space (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>D</th>
<th>I</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| DB_NUM_UNUSED_VOL_CAND                   | Y | Y | Y | Y | - | - | Y | Y | DS   | The number of unused DASD volumes whose volume serial numbers are not assigned. These are the candidate volumes.  
  
  This value is calculated by the following formula:  
  \[
  \text{DB\_NUM\_UNUSED\_VOL\_CAND} = \text{DB\_NUM\_UNUSED\_VOL} - \text{DB\_NUM\_UNUSED\_VOL\_SER}
  \]                                                                                           |
| DB_FLAG_SPACE_TYPE                       | Y | Y | Y | Y | - | - | Y | Y | DS   | The primary and secondary space unit type for allocating the data set. The value is Cylinder, Track, or Bytes. |
| DB_NUM_PRI_SPACE                         | Y | Y | Y | Y | - | - | Y | Y | DS   | The size of the primary allocation.                                                                                                              |
| DB_NUM_SEC_SPACE                         | Y | Y | Y | Y | - | - | Y | Y | DS   | The size of the secondary allocation.                                                                                                             |
| DB_UNUSED_BYTES                          | Y | Y | Y | Y | - | - | Y | Y | DS   | The size of free space in the database data set. Free space refers to areas that are not used by IMS.                                               |
| DB_PCT_UNUSED_BYTES                      | Y | Y | Y | Y | - | - | Y | Y | DS   | The percentage of free space in the database data set. Free space refers to areas that are not used by IMS.                                               |
| DB_MAX_DS_SIZE                           | Y | Y | Y | Y | - | - | Y | Y | DS   | The maximum size of the data set. 4 GB or 8 GB.                                                                                                      |
  
  For HDAM and HIDAM databases:  
  • If the data set is VSAM, the maximum size is 4 GB.  
  • If the data set is OSAM and block size is even, the maximum size is 8 GB.  
  • If the data set is OSAM and block size is odd, the maximum size is 4 GB.  
  
  For HISAM and SHISAM databases, the maximum size is 4 GB.  
  
  For PHDAM and PHIDAM databases:  
  • If the data set is OSAM and OSAM8G is specified in the RECON data sets, the maximum size is 8 GB.  
  • Otherwise, the maximum size is 4 GB.                                                                                                               |
| DB_PCT_OF_MAX_DS_SIZE                    | Y | Y | Y | Y | - | - | Y | Y | DS   | The percentage of allocated bytes (bytes for High Allocated RBA) compared to the maximum size (4 GB or 8 GB).  
  
  This value is calculated by the following formula:  
  \[
  \text{DB\_PCT\_OF\_MAX\_DS\_SIZE} (%) = \frac{\text{DB\_MAX\_DS\_SIZE} - \text{DB\_RA\_HIGH\_ALLOC}}{\text{DB\_MAX\_DS\_SIZE}} \times 100
  \]                                                                                           |
| DB_NUM_DBDS_BLOCKS                       | Y | Y | Y | Y | - | - | Y | Y | DS   | The number of blocks or CIs that are used for the data set. High Used RBA is on the highest block or CI.  
  
  DB_BLOCK_SIZE                            | Y | Y | Y | Y | - | - | Y | Y | DS   | The CI size of VSAM or the block size of OSAM.                                                                                                     |
Table 14. Data elements related to database data set space (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_LRECL_SIZE</td>
<td>DS</td>
<td>The logical record length of VSAM. This data is collected only for VSAM.</td>
</tr>
<tr>
<td>DBX_FLAG_SMS</td>
<td>DS</td>
<td>The indicator that shows whether SMS is active in the system in which the index database data set exists.</td>
</tr>
<tr>
<td>DBX_MAX_EXT_DS</td>
<td>DS</td>
<td>The maximum number of extents that can be allocated for the index database data set due to the VSAM file limitation.</td>
</tr>
<tr>
<td>DBX_MAX_EXT_VOL</td>
<td>DS</td>
<td>The maximum number of extents that can be allocated on each DASD volume for the index database data set.</td>
</tr>
<tr>
<td>DBX_AVAIL_EXT_LESS_100</td>
<td>DS</td>
<td>The indicator that shows whether the remaining extents to be allocated for the index data set are less than 100.</td>
</tr>
<tr>
<td>DBX_AVAIL_EXT_LIMIT</td>
<td>DS</td>
<td>The reason the remaining extents are less than 100 for the index database data set. Use this to determine how to expand space.</td>
</tr>
<tr>
<td>DBX_NUM_AVAIL_EXT</td>
<td>DS</td>
<td>The estimated number of remaining extents for the index database data set. This is collected when DBX_AVAIL_EXT_LESS_100 is Y.</td>
</tr>
<tr>
<td>DBX_NUM_EXT</td>
<td>DS</td>
<td>The number of extents of the index database data set.</td>
</tr>
<tr>
<td>DBX_RBA_HIGH_USED</td>
<td>DS</td>
<td>The highest value of relative byte address that is used by the index database data set. This value is in decimal format.</td>
</tr>
<tr>
<td>DBX_RBA_HIGH_ALLOC</td>
<td>DS</td>
<td>The highest value of relative byte address that is allocated for the index database data set. This value is in decimal format.</td>
</tr>
<tr>
<td>DBX_NUM_VOL</td>
<td>DS</td>
<td>The number of DASD volumes that are used by the index database data set.</td>
</tr>
<tr>
<td>DBX_NUM_UNUSED_VOL</td>
<td>DS</td>
<td>The number of unused DASD volumes that are defined for use by the index database data set, but have not been used.</td>
</tr>
<tr>
<td>DBX_NUM_UNUSED_VOL_SER</td>
<td>DS</td>
<td>The number of unused DASD volumes for the index database data set that have volume serial numbers assigned.</td>
</tr>
<tr>
<td>DBX_NUM_UNUSED_VOL_CAND</td>
<td>DS</td>
<td>The number of candidate DASD volumes for the index database data set that do not have volume serial numbers assigned.</td>
</tr>
<tr>
<td>DBX_FLAG_SPACE_TYPE</td>
<td>DS</td>
<td>The space unit type for allocating the index database data set. The value is Cylinder, Track, or Bytes.</td>
</tr>
<tr>
<td>DBX_NUM_PRI_SPACE</td>
<td>DS</td>
<td>The size of the primary allocation that is defined for the index database data set.</td>
</tr>
<tr>
<td>DBX_NUM_SEC_SPACE</td>
<td>DS</td>
<td>The size of the secondary allocation that is defined for the index database data set.</td>
</tr>
<tr>
<td>DBXUNUSED_BYTES</td>
<td>DS</td>
<td>The size of free space in the index database data set. Free space refers to areas that are not used (not formatted) by IMS.</td>
</tr>
<tr>
<td>Data element name</td>
<td>H</td>
<td>D</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DBX_PCT_UNUSED_BYTES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_MAX_DS_SIZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_PCT_OF_MAX_DS_SIZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_NUM_DBDS_BLOCKS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_BLOCK_SIZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_LRECL_SIZE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Data elements related to data set CI/CA splits

This reference topic provides information about data elements that are related to data set CI/CA splits.

The following table summarizes the data elements that are related to data set CI/CA splits.

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H D A M</th>
<th>H I S A M</th>
<th>P S I H D A M</th>
<th>P H S A M</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_CI_SPLIT</td>
<td>- - Y Y</td>
<td>- - - - -</td>
<td>- - - - - -</td>
<td>DS</td>
<td>The number of control interval splits that have occurred for VSAM KSDS.</td>
<td></td>
</tr>
<tr>
<td>DB_PCT_NUM_CI_SPLIT</td>
<td>- - Y Y</td>
<td>- - - - -</td>
<td>- - - - - -</td>
<td>DS</td>
<td>The percentage of split CIs compared to the total number of CIs.</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_CA_SPLIT</td>
<td>- - Y Y</td>
<td>- - - - -</td>
<td>- - - - - -</td>
<td>DS</td>
<td>The number of control area splits that have occurred for VSAM KSDS.</td>
<td></td>
</tr>
<tr>
<td>DB_PCT_NUM_CA_SPLIT</td>
<td>- - Y Y</td>
<td>- - - - -</td>
<td>- - - - - -</td>
<td>DS</td>
<td>The percentage of split CAs compared to the total number of CAs.</td>
<td></td>
</tr>
<tr>
<td>DBX_NUM_CI_SPLIT</td>
<td>- - - - Y Y</td>
<td>- Y Y</td>
<td>DS</td>
<td>The number of split CIs (VSAM control interval) in the index database data set.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_PCT_NUM_CI_SPLIT</td>
<td>- - - - Y Y</td>
<td>- Y Y</td>
<td>DS</td>
<td>The percentage of split CIs compared to the total number of CIs in the index database data set.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_NUM_CA_SPLIT</td>
<td>- - - - Y Y</td>
<td>- Y Y</td>
<td>DS</td>
<td>The number of split CAs (VSAM control area) in the index database data set.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBX_PCT_NUM_CA_SPLIT</td>
<td>- - - - Y Y</td>
<td>- Y Y</td>
<td>DS</td>
<td>The percentage of split CAs compared to the total number of CAs in the index database data set.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data elements related to segments in a data set group

This reference topic provides information about data elements that are related to segments in a data set group.

The following table summarizes the data elements that are related to segments in a data set group.

Table 16. Data elements related to segments in a data set group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>D</th>
<th>A</th>
<th>M</th>
<th>H</th>
<th>D</th>
<th>A</th>
<th>M</th>
<th>P</th>
<th>H</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_SEG</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The number of segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_VLSEG</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The number of variable-length segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td>DB_NUM_VLSEG_SPLIT</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The number of split segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The split segments are split into a prefix portion and a data portion. A variable length segment can be in this status if the segment length is made longer and there is not enough space to store the changed segment in the block or CI.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB_PCT_NUM_VLSEG_SPLIT</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The percentage of the split variable-segment occurrences compared to the total number of variable-segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DB_PCT_NUM_VLSEG_SPLIT (%) = (DB_NUM_VLSEG_SPLIT / DB_NUM_VLSEG) * 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB_NUM_DELSEG</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The number of deleted segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A deleted segment occurrence refers to a segment occurrence whose delete byte is marked as deleted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB_BYTES_SEG</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The total bytes of segment occurrences in the data set.</td>
<td></td>
</tr>
<tr>
<td>DB_PCT_BYTES_SEG</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td></td>
<td></td>
<td>The percentage of segment occurrences compared to the total bytes of used blocks in the data set.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DB_PCT_BYTES_SEG (%) = (DB_BYTES_SEG / (DB_NUM_DBDS_BLOCKS * DB_BLOCK_SIZE)) * 100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16. Data elements related to segments in a data set group (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_PCT_NUM_DELSEG</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DS</td>
<td>The percentage of deleted segment occurrences compared to the total bytes of used blocks in the data set. The value is calculated by the following formula:</td>
</tr>
</tbody>
</table>
|                       |   |   |   |   |   |      | \[
|                       |   |   |   |   |   |      | DB_PCT_NUM_DELSEG (\%) = \frac{DB_NUM_DELSEG}{(DB_NUM_DBDS_BLOCKS \times DB_BLOCK_SIZE)} \times 100 \] |

Chapter 19. Data elements 179
Data elements related to pointers in a data set group

This reference topic provides information about data elements that are related to pointers in a data set group.

The following table summarizes the data elements that are related to pointers in a data set group.

Table 17. Data elements related to pointers in a data set group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>H</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_PTR</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td>The number of used physical pointers that point to target segments within the data set. A used physical pointer indicates a physical pointer with nonzero value. Physical pointers are PTF, PTB, PCF, PCB, HF, HB, and VLS pointers. VLS pointer refers to a pointer that points from the prefix portion of split segment to the data portion.</td>
</tr>
<tr>
<td>DB_NUM_PTR_DIFF_BLK</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td>The number of physical pointers that point to the target segments on a different block or CI within the data set.</td>
</tr>
</tbody>
</table>
| DB_PCT_NUM_PTR_DIFF_BLK    | Y | Y | - | Y | Y | DS   | The percentage of physical pointers that point to a different block or CI compared to the used physical pointers. This value is calculated by the following formula: 
\[
DB\_PCT\_NUM\_PTR\_DIFF\_BLK\% = \frac{DB\_NUM\_PTR\_DIFF\_BLK}{DB\_NUM\_PTR} \times 100
\] |
Data elements related to free space in a data set group

This reference topic provides information about data elements that are related to free space in a data set group.

The following table summarizes the data elements that are related to free space in a data set group.

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H H H H D A M A M</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_FSE</td>
<td>Y Y Y Y Y Y Y DS</td>
<td>The number of free space elements in the data set. For HISAM and SHISAM databases, the number of unused areas in logical records.</td>
</tr>
<tr>
<td>DB_NUM_FSE_MIN</td>
<td>Y Y Y Y Y Y DS</td>
<td>The number of free space elements that can hold the smallest segment in the data set.</td>
</tr>
<tr>
<td>DB_NUM_FSE_MAX</td>
<td>Y Y Y Y Y DS</td>
<td>The number of free space elements that can hold the largest segment in the data set.</td>
</tr>
<tr>
<td>DB_AVG_NUM_FSE</td>
<td>Y Y - - Y Y DS</td>
<td>The average number of free space elements, per block or CI, in the data set. This value is calculated by the following formula: $DB_{AVG_NUM_FSE} = \frac{DB_{NUM_FSE}}{DB_{NUM_DBDS_BLOCKS}}$</td>
</tr>
<tr>
<td>DB_AVG_NUM_NOREUSE_FSE</td>
<td>Y Y - - Y Y DS</td>
<td>The average number, per block or CI, of free space elements whose lengths are less than the smallest segment in the data set. This value is calculated by the following formula: $DB_{AVG_NUM_NOREUSE_FSE} = \frac{(DB_{NUM_FSE} - DB_{NUM_FSE_MIN})}{DB_{NUM_DBDS_BLOCKS}}$</td>
</tr>
<tr>
<td>DB_PCT_NUM_NOREUSE_FSE</td>
<td>Y Y Y Y Y DS</td>
<td>The percentage of free space elements that cannot hold the smallest segment in the data set.</td>
</tr>
<tr>
<td>DB_BYTES_FREE_SPACE</td>
<td>Y Y Y Y Y DS</td>
<td>The total bytes of free spaces.</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FREE_SPACE</td>
<td>Y Y Y Y Y DS</td>
<td>The percentage of bytes of total free spaces to the total used bytes for the data set. This value is calculated by the following formula: $DB_{PCT_BYTES_FREE_SPACE} (%) = \frac{(DB_{BYTES_FREE_SPACE} / (DB_{NUM_DBDS_BLOCKS} * DB_{BLOCK_SIZE})) * 100}{100}$</td>
</tr>
<tr>
<td>DB_BYTES_UNIDENTIFIED</td>
<td>Y Y Y Y Y DS</td>
<td>The number of slack byte areas in the data set. These areas consist of 7 or fewer slack bytes and cannot hold IMS data.</td>
</tr>
<tr>
<td>Data element name</td>
<td>H</td>
<td>I</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DB_NUM_UNIDENTIFIED</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>DB_AVG_NUM_UNIDENTIFIED</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>DB_PCT_NUM_FRAGD_FSE</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>DB_AVG_NUM_FRAGD_FSE</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
Data elements related to free space in an area

This reference topic provides information about data elements that are related to free space in an area.

The following list summarizes the data elements that are related to free space in an area.

Table 19. Data elements related to free space in an area

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_PCT_BYTES_FS_RAA</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the data set (in bytes).</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_DOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the data set (in bytes).</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_IOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of free space in the IOVF (in bytes) compared to the total IOVF in the data set (in bytes).</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FS_SDEP</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of free space in the SDEP (in bytes) compared to the total SDEP in the data set (in bytes).</td>
</tr>
</tbody>
</table>
Data elements related to overflow in an area

This reference topic provides information about data elements that are related to overflow in an area.

The following list summarizes the data elements that are related to overflow in an area.

Table 20. Data elements related to overflow in an area

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_PCT_NUM_UOW_USE_DOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of UOWs that use DOVF CIs compared to the total number of UOWs in the data set.</td>
</tr>
<tr>
<td>DB_AVG_NUM_DOVFCI_BY_UOW</td>
<td>Y</td>
<td>AREA</td>
<td>The average number of DOVF CIs that are used by a UOW in the data set. UOWs that do not use DOVF CIs are excluded.</td>
</tr>
<tr>
<td>DB_MAX_NUM_DOVFCI_BY_UOW</td>
<td>Y</td>
<td>AREA</td>
<td>The maximum number of DOVF CIs that are used by a UOW in the data set.</td>
</tr>
<tr>
<td>DB_PCT_NUM_UOW_USE_IOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of UOWs that use IOVF CIs compared to the total number of UOWs in the data set.</td>
</tr>
<tr>
<td>DB_NUM_UOW_USE_IOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The number of UOWs that use IOVF CIs in the data set.</td>
</tr>
<tr>
<td>DB_AVG_NUM_IOVFCI_BY_UOW</td>
<td>Y</td>
<td>AREA</td>
<td>The average number of IOVF CIs that are used by a UOW in the data set. UOWs that do not use IOVF CIs are excluded.</td>
</tr>
<tr>
<td>DB_MIN_NUM_IOVFCI_BY_UOW</td>
<td>Y</td>
<td>AREA</td>
<td>The minimum number of IOVF CIs that are used by a UOW in the data set.</td>
</tr>
<tr>
<td>DB_PCT_NUM_IOVFCI_USED</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of used IOVF CIs compared to the total IOVF CIs (bitmaps excluded) in the data set.</td>
</tr>
<tr>
<td>DB_PCT_NUM_RAPCI_OVFL</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the data set.</td>
</tr>
</tbody>
</table>
Data element related to segment occurrences in an area

This reference topic provides information about data elements that are related to segment occurrences in an area.

The following list summarizes the data elements that are related to segment occurrences in an area.

Table 21. Data element related to segment occurrences in an area

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEEB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_SEG</td>
<td>Y</td>
<td>AREA</td>
<td>The number of segment occurrences in the data set.</td>
</tr>
</tbody>
</table>
Data elements related to database records in an area

This reference topic provides information about data elements that are related to database records in an area.

The following list summarizes the data elements that are related to database records in an area.

Table 22. Data elements related to database records in an area

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_ROOT</td>
<td>Y</td>
<td>AREA</td>
<td>The number of root segment occurrences in the database, the partition, or the area.</td>
</tr>
<tr>
<td>DB_AVG_DBREC_LENGTH</td>
<td>Y</td>
<td>AREA</td>
<td>The average length of database records in the database, the partition, or the area.</td>
</tr>
<tr>
<td>DB_MAX_DBREC_LENGTH</td>
<td>Y</td>
<td>AREA</td>
<td>The length of the longest database record in the data set.</td>
</tr>
<tr>
<td>DB_MIN_DBREC_LENGTH</td>
<td>Y</td>
<td>AREA</td>
<td>The length of the shortest database record in the data set.</td>
</tr>
<tr>
<td>DB_PCT_NUM_DBREC_IOVF</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of DB records using IOVF CIs compared to the total DB records in the data set.</td>
</tr>
</tbody>
</table>
Data elements related to synonym in an area

This reference topic provides information about data elements that are related to synonym in an area.

The following list summarizes the data elements that are related to synonym in an area.

*Table 23. Data elements related to synonym in an area*

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DE DB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVG_LEN_SYNONYM_CHAIN</td>
<td>Y</td>
<td>AREA</td>
<td>The average length of all synonym chains in the data set that have a length greater than or equal to 2.</td>
</tr>
<tr>
<td>DB_MAX_LEN_SYNONYM_CHAIN</td>
<td>Y</td>
<td>AREA</td>
<td>The length of the longest synonym chain in the data set.</td>
</tr>
</tbody>
</table>
Data elements related to physical I/O in an area

This reference topic provides information about data elements that are related to physical I/O in an area.

The following list summarizes the data elements that are related to physical I/O in an area.

Table 24. Data elements related to physical I/O in an area

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DE_DB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AVG_DBREC_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The average number of physical I/Os required to retrieve an entire DB record in the data set.</td>
</tr>
<tr>
<td>DB_ESTIMATED_DBREC_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The estimated number of I/Os that are required to retrieve an entire database record.</td>
</tr>
<tr>
<td>DB_MAX_DBREC_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The maximum number of physical I/Os required to retrieve an entire DB record in the data set.</td>
</tr>
<tr>
<td>DB_AVG_ROOT_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The average number of physical I/Os required to retrieve a root segment in the data set.</td>
</tr>
<tr>
<td>DB_ESTIMATED_ROOT_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The estimated number of I/Os that are required to reach a root segment from RAP by following the synonym chain.</td>
</tr>
<tr>
<td>DB_MAX_ROOT_IO</td>
<td>Y</td>
<td>AREA</td>
<td>The maximum number of physical I/Os required to retrieve a root segment in the data set.</td>
</tr>
</tbody>
</table>
Data elements related to AREA definition

This reference topic provides information about data elements that are related to AREA definition.

The following list summarizes the data elements that are related to AREA definition.

**Table 25. Data elements related to AREA definition**

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEEB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_AREADEF_CISIZE</td>
<td>Y</td>
<td>AREA</td>
<td>The size of the VSAM CI for the area.</td>
</tr>
<tr>
<td>DB_AREADEF_UOW1</td>
<td>Y</td>
<td>AREA</td>
<td>The number of VSAM CIs in a UOW for the area.</td>
</tr>
<tr>
<td>DB_AREADEF_UOW2</td>
<td>Y</td>
<td>AREA</td>
<td>The number of VSAM CIs in the overflow section of a UOW for the area.</td>
</tr>
<tr>
<td>DB_AREADEF_ROOT1</td>
<td>Y</td>
<td>AREA</td>
<td>The total space allocated to the root addressable part of the area and to the area reserved for the IOVF part.</td>
</tr>
<tr>
<td>DB_AREADEF_ROOT2</td>
<td>Y</td>
<td>AREA</td>
<td>The space reserved for the IOVF part in terms of UOWs.</td>
</tr>
<tr>
<td>DB_AREADEF_NUM_SDEP_CIS</td>
<td>Y</td>
<td>AREA</td>
<td>The total number of CIs that are allocated for the SDEP part.</td>
</tr>
</tbody>
</table>
Data elements related to UOW statistics information

This reference topic provides information about data elements that are related to UOW statistics information.

The following list summarizes the data elements that are related to UOW statistics information.

Table 26. Data elements related to UOW statistics information

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_FLAG_UOW_DATA</td>
<td>Y</td>
<td>AREA</td>
<td>The indicator that shows whether the data elements are collected for each UOW.</td>
</tr>
<tr>
<td>DB_FLAG_UOW_GROUP_DATA</td>
<td>Y</td>
<td>AREA</td>
<td>The indicator that shows whether the data elements are collected for each group of UOWs.</td>
</tr>
<tr>
<td>DB_NUM_UOW_GROUPS</td>
<td>Y</td>
<td>AREA</td>
<td>The number of UOW groups that are defined.</td>
</tr>
</tbody>
</table>
Data element related to repository group information

This reference topic provides information about data elements that are related to repository group information.

The following list summarizes the data elements that are related to repository group information.

Table 27. Data element related to repository group information

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEEB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_SENSOR_DATA_GROUP_ID</td>
<td>Y</td>
<td>AREA</td>
<td>The name of the repository group.</td>
</tr>
</tbody>
</table>
Data elements related to free space in a UOW

This reference topic provides information about data elements that are related to free space in a UOW.

The following list summarizes the data elements that are related to free space in a UOW.

Table 28. Data elements related to free space in a UOW

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU_PCT_BYTES_FS_RAA</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the UOW (in bytes).</td>
</tr>
<tr>
<td>DBU_PCT_BYTES_FS_DOVF</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the UOW (in bytes).</td>
</tr>
<tr>
<td>DBU_PCT_BYTES_FS_IOVF</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of free space in the IOVFs that are used by the UOW compared to the total bytes of those IOVFs.</td>
</tr>
<tr>
<td>DBU_PCT_USABLE_RAAFS</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of usable free space in the RAA BASE (in bytes) compared to the total RAA BASE in the UOW (in bytes).</td>
</tr>
<tr>
<td>DBU_PCT_USABLE_DOVFFS</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of usable free space in the DOVF (in bytes) compared to the total DOVF in the UOW (in bytes).</td>
</tr>
<tr>
<td>DBU_PCT_USABLE_IOVFFS</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of usable free space in the IOVFs that are used by the UOW compared to the total bytes of those IOVFs.</td>
</tr>
<tr>
<td>DBU_PCT_RAP_ROOTSZFS</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of RAP CIs that have free space to insert a root segment compared to the total used RAP CIs in the UOW.</td>
</tr>
<tr>
<td>DBU_MAX_PCT_BYTES_RAPFS</td>
<td>Y</td>
<td>UOW</td>
<td>The maximum percentage of free space in a RAP CI that uses overflow CIs (bytes) compared to a RAP CI in the UOW (bytes).</td>
</tr>
<tr>
<td>DBU_FLAG_UOW_USING_OVFL</td>
<td>Y</td>
<td>UOW</td>
<td>The indicator that shows whether at least one overflow CI is used by the UOW.</td>
</tr>
<tr>
<td>DBU_FLAG_UOW_USING_IOVF</td>
<td>Y</td>
<td>UOW</td>
<td>The indicator that shows whether at least one IOVF CI is used by the UOW.</td>
</tr>
</tbody>
</table>
Data elements related to free space in a UOW group

This reference topic provides information about data elements that are related to free space in a UOW group.

The following list summarizes the data elements that are related to free space in a UOW group.

Table 29. Data elements related to free space in a UOW group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DE DB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUG_PCT_BYTES_FS_RAA</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the group of UOWs (in bytes).</td>
</tr>
<tr>
<td>DBUG_PCT_BYTES_FS_DOVF</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the group of UOWs (in bytes).</td>
</tr>
<tr>
<td>DBUG_PCT_BYTES_FS_IOVF</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of free space in the IOVFs that are used by the UOW group compared to the total bytes of those IOVFs.</td>
</tr>
<tr>
<td>DBUG_PCT_USABLE_RAAFS</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of usable free space in the RAA BASE compared to the total RAA BASE in the group of UOWs (in bytes).</td>
</tr>
<tr>
<td>DBUG_PCT_USABLE_DOVFFS</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of usable free space in the DOVF (in bytes) compared to the total DOVF in the group of UOWs (in bytes).</td>
</tr>
<tr>
<td>DBUG_PCT_USABLE_IOVFFS</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of usable free space in the IOVFs that are used by the UOW group compared to the total bytes of the IOVFs.</td>
</tr>
<tr>
<td>DBUG_PCT_RAP_ROOTSZFS</td>
<td>Y</td>
<td>UOGW</td>
<td>The percentage of RAP CIs that have free space to insert a root segment compared to the total used RAP CIs in UOW group.</td>
</tr>
</tbody>
</table>
## Data elements related to overflow in a UOW

This reference topic provides information about data elements that are related to overflow in a UOW.

The following list summarizes the data elements that are related to overflow in a UOW.

**Table 30. Data elements related to overflow in a UOW**

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU_NUM_DOVFCI_BY_UOW</td>
<td>Y</td>
<td>UOW</td>
<td>The number of DOVF CIs that are used by the UOW.</td>
</tr>
<tr>
<td>DBU_NUM_IOVFCL_BY_UOW</td>
<td>Y</td>
<td>UOW</td>
<td>The number of IOVF CIs that are used by the UOW.</td>
</tr>
<tr>
<td>DBU_PCT_NUM_RAPCI_OVFL</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the UOW.</td>
</tr>
</tbody>
</table>
Data elements related to overflow in a UOW group

This reference topic provides information about data elements that are related to overflow in a UOW group.

The following list summarizes the data elements that are related to overflow in a UOW group.

Table 31. Data elements related to overflow in a UOW group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUG_PCT_NUM_UOW_DOVF</td>
<td>Y</td>
<td>UOWG</td>
<td>The percentage of UOWs that use DOVF CIs compared to the total number of UOWs in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_AVG_NUM_DOVFCI</td>
<td>Y</td>
<td>UOWG</td>
<td>The average number of DOVF CIs that are used by a UOW in the group of UOWs. UOWs that do not use DOVF CIs are excluded.</td>
</tr>
<tr>
<td>DBUG_MAX_NUM_DOVFCI</td>
<td>Y</td>
<td>UOWG</td>
<td>The maximum number of DOVF CIs that are used by a UOW in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_PCT_NUM_UOW_IOVF</td>
<td>Y</td>
<td>UOWG</td>
<td>The percentage of UOWs that use IOVF CIs compared to the total number of UOWs in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_AVG_NUM_IOVFCI</td>
<td>Y</td>
<td>UOWG</td>
<td>The average number of IOVF CIs that are used by a UOW in the group of UOWs. UOWs that do not use IOVF CIs are excluded.</td>
</tr>
<tr>
<td>DBUG_MAX_NUM_IOVFCI</td>
<td>Y</td>
<td>UOWG</td>
<td>The maximum number of IOVF CIs that are used by a UOW in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_PCT_NUM_RAPCI_OVFL</td>
<td>Y</td>
<td>UOWG</td>
<td>The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the group of UOWs.</td>
</tr>
</tbody>
</table>
Data elements related to database records in a UOW

This reference topic provides information about data elements that are related to database records in a UOW.

The following list summarizes the data elements that are related to database records in a UOW.

Table 32. Data elements related to database records in a UOW

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU_NUM_ROOT</td>
<td>Y</td>
<td>UOW</td>
<td>The number of root segment occurrences in the UOW.</td>
</tr>
<tr>
<td>DBU_AVG_DBREC_LENGTH</td>
<td>Y</td>
<td>UOW</td>
<td>The average length of database records in the UOW.</td>
</tr>
<tr>
<td>DBU_MAX_DBREC_LENGTH</td>
<td>Y</td>
<td>UOW</td>
<td>The length of the longest database record in the UOW.</td>
</tr>
<tr>
<td>DBU_MIN_DBREC_LENGTH</td>
<td>Y</td>
<td>UOW</td>
<td>The length of the shortest database record in the UOW.</td>
</tr>
<tr>
<td>DBU_PCT_NUM_DBREC_IOVF</td>
<td>Y</td>
<td>UOW</td>
<td>The percentage of DB records using IOVF CIs compared to the total DB records in the UOW.</td>
</tr>
</tbody>
</table>
Data elements related to database records in a UOW group

This reference topic provides information about data elements that are related to database records in a UOW group.

The following list summarizes the data elements that are related to database records in a UOW group.

Table 33. Data elements related to database records in a UOW group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUG_NUM_ROOT</td>
<td>Y</td>
<td>UOWG</td>
<td>The number of root segment occurrences in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_AVG_DBREC_LENGTH</td>
<td>Y</td>
<td>UOWG</td>
<td>The average length of database records in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_MAX_DBREC_LENGTH</td>
<td>Y</td>
<td>UOWG</td>
<td>The length of the longest database record in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_MIN_DBREC_LENGTH</td>
<td>Y</td>
<td>UOWG</td>
<td>The length of the shortest database record in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_PCT_NUM_DBREC_IOVF</td>
<td></td>
<td></td>
<td>The percentage of DB records using IOVF CIs compared to the total DB records in the group of UOWs.</td>
</tr>
</tbody>
</table>
Data elements related to synonym in a UOW

This reference topic provides information about data elements that are related to synonym in a UOW.

The following list summarizes the data elements that are related to synonym in a UOW.

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEBD</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU_AVG_LEN_SYN_CHAIN</td>
<td>Y</td>
<td>UOW</td>
<td>The average length of all synonym chains in the UOW that have a length greater than or equal to 2.</td>
</tr>
<tr>
<td>DBU_MAX_LEN_SYN_CHAIN</td>
<td>Y</td>
<td>UOW</td>
<td>The length of the longest synonym chain in the UOW.</td>
</tr>
</tbody>
</table>
Data elements related to synonym in a UOW group

This reference topic provides information about data elements that are related to synonym in a UOW group.

The following list summarizes the data elements that are related to synonym in a UOW group.

Table 35. Data elements related to synonym in a UOW group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEEB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUG_AVG_LEN_SYN_CHAIN</td>
<td>Y</td>
<td>UOWG</td>
<td>The average length of all synonym chains in the group of UOWs that have a length greater than or equal to 2.</td>
</tr>
<tr>
<td>DBUG_MAX_LEN_SYN_CHAIN</td>
<td>Y</td>
<td>UOWG</td>
<td>The length of the longest synonym chain in the group of UOWs.</td>
</tr>
</tbody>
</table>
Data elements related to physical I/O in a UOW

This reference topic provides information about data elements that are related to physical I/O in a UOW.

The following list summarizes the data elements that are related to physical I/O in a UOW.

Table 36. Data elements related to physical I/O in a UOW

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBU_AVG_DBREC_IO</td>
<td>Y</td>
<td>UOW</td>
<td>The average number of physical I/Os required to retrieve an entire DB record in the UOW.</td>
</tr>
<tr>
<td>DBU_MAX_DBREC_IO</td>
<td>Y</td>
<td>UOW</td>
<td>The maximum number of physical I/Os required to retrieve an entire DB record in the UOW.</td>
</tr>
<tr>
<td>DBU_AVG_ROOT_IO</td>
<td>Y</td>
<td>UOW</td>
<td>The average number of physical I/Os required to retrieve a root segment in the UOW.</td>
</tr>
<tr>
<td>DBU_MAX_ROOT_IO</td>
<td>Y</td>
<td>UOW</td>
<td>The maximum number of physical I/Os required to retrieve a root segment in the UOW.</td>
</tr>
</tbody>
</table>
Data elements related to physical I/O in a UOW group

This reference topic provides information about data elements that are related to physical I/O in a UOW group.

The following list summarizes the data elements that are related to physical I/O in a UOW group.

**Table 37. Data elements related to physical I/O in a UOW group**

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DE DB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBUG_AVG_DBREC_IO</td>
<td>Y</td>
<td>UOWG</td>
<td>The average number of physical I/Os required to retrieve an entire DB record in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_MAX_DBREC_IO</td>
<td>Y</td>
<td>UOWG</td>
<td>The maximum number of physical I/Os required to retrieve an entire DB record in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_AVG_ROOT_IO</td>
<td>Y</td>
<td>UOWG</td>
<td>The average number of physical I/Os required to retrieve a root segment in the group of UOWs.</td>
</tr>
<tr>
<td>DBUG_MAX_ROOT_IO</td>
<td>Y</td>
<td>UOWG</td>
<td>The maximum number of physical I/Os required to retrieve a root segment in the group of UOWs.</td>
</tr>
</tbody>
</table>
Data elements related to RBASEFS or RDOVFFS conditions

This reference topic provides information about data elements that are related to the RBASEFS or RDOVFFS conditions.

The following list summarizes the data elements that are related to RBASEFS or RDOVFFS conditions.

Table 38. Data elements related to RBASEFS or RDOVFFS conditions

<table>
<thead>
<tr>
<th>Data element name</th>
<th>DEDB</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_UOW_RFS_COND</td>
<td>Y</td>
<td>AREA</td>
<td>The number of UOWs that match the RBASEFS condition or the RDOVFFS condition.</td>
</tr>
<tr>
<td>DB_PCT_NUM_UOW_RFS_COND</td>
<td>Y</td>
<td>AREA</td>
<td>The percentage of UOWs that match the RBASEFS condition or the RDOVFFS condition compared to the total number of UOWs.</td>
</tr>
<tr>
<td>DB_THRESHOLD_RBASEFS</td>
<td>Y</td>
<td>AREA</td>
<td>The threshold value that is specified by the RBASEFS or the EXC_RBASEFS keyword for selecting UOWs to reorganize.</td>
</tr>
<tr>
<td>DB_THRESHOLD_RDOVFFS</td>
<td>Y</td>
<td>AREA</td>
<td>The threshold value that is specified by the RDOVFFS or the EXC_RDOVFFS keyword for selecting UOWs to reorganize.</td>
</tr>
</tbody>
</table>
Data elements related to event dates

This reference topic provides information about data elements that are related to the date that an event occurred.

The following table summarizes the data elements that are related to event dates.

Table 39. Data elements related to event dates

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>I</th>
<th>N</th>
<th>P</th>
<th>S</th>
<th>E</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DAYS_SINCE_LAST_REORG</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DB</td>
<td>The number of days that elapsed since the last reorganization. Elapsed days are calculated based on the number of 24-hour periods since the last reorganization (rather than the number of calendar days).</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>AREA</td>
<td></td>
</tr>
</tbody>
</table>
Data elements related to data set backup status

This reference topic provides information about data elements that are related to the status of data set backup.

The following table summarizes the data elements that are related to the status of data set backup.

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DBRC_IC_NEEDED</td>
<td>DS</td>
<td>The image copy needed flag from RECON for a database data set or a DEDB area.</td>
</tr>
<tr>
<td>DB_DBRC_IC_RECOMMENDED</td>
<td>DS</td>
<td>The image copy recommended flag from RECON for a database data set or a DEDB area.</td>
</tr>
<tr>
<td>DB_HOURS_SINCE_LASTIC</td>
<td>DS</td>
<td>The number of hours since the last image copy was taken for a database data set or a DEDB area.</td>
</tr>
<tr>
<td>DB_IS_IN_A_DBRC_CAGRP</td>
<td>DS</td>
<td>The flag indicating whether a database data set or a DEDB area belongs to a RECON change accumulation group.</td>
</tr>
</tbody>
</table>
Data elements related to database recovery

This reference topic provides information about data elements that are related to database recovery.

The following table summarizes the data elements that are related to database recovery.

Table 41. Data elements related to database recovery

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DBRC_EEQE_COUNT</td>
<td>DS</td>
<td>The number of Extended Error Queue Elements created for write errors for a data set or a DEDB area.</td>
</tr>
<tr>
<td>DB_DBRC_RECOV_NEEDED</td>
<td>DS</td>
<td>The recovery needed flag from the RECON for a database data set.</td>
</tr>
<tr>
<td>DB_DBRC_RECOVERABLE</td>
<td>DB</td>
<td>An indication of whether a database, a HALDB partition, or a DEDB area is recoverable or nonrecoverable.</td>
</tr>
</tbody>
</table>
Data elements related to database backout

This reference topic provides information about data elements that are related to database backout.

The following table summarizes the data elements that are related to database backout.

Table 42. Data elements related to database backout

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_DBRC_BACKOUT_NEEDED</td>
<td>DB</td>
<td>The database backout needed flag from RECON for a database, a HALDB partition, or a DEDB area.</td>
</tr>
</tbody>
</table>
Data elements related to change accumulation groups

This reference topic provides information about data elements that are related to change accumulation groups.

The following table summarizes the data elements that are related to change accumulation groups.

Table 43. Data elements related to change accumulation groups

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Sensor data record type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_HOURS_SINCE_LASTCA</td>
<td>CAGR</td>
<td>The number of hours since the last change accumulation occurred for a RECON CAGRP.</td>
</tr>
</tbody>
</table>
Chapter 20. Journal reports

Policy Services writes journal records that are useful to IBM Software Support for problem resolution.

Topics:
- “Journal report overview” on page 210
- “Notification List and Directory Entry List report” on page 212
- “Notification List Delete report” on page 213
- “Notification List and Directory Entry Import report” on page 214
- “Notification List Update report” on page 216
- “Directory Entry Update report” on page 217
- “Policy Decision Making report” on page 218
- “Policy Environment Service Environment Create report” on page 221
- “Policy Environment Service Environment Delete report” on page 222
- “Policy Environment Service Environment Select and Validate report” on page 223
- “Policy Environment Service Worklist Maintenance Process report” on page 226
- “Policy Rule Template and Stream List report” on page 227
- “Policy Stream Delete report” on page 229
- “Policy Stream Import report” on page 230
- “Policy Template Delete report” on page 232
- “Policy Template Import report” on page 233
- “Policy Template Update report” on page 236
- “Rule Template Import report” on page 239
Journal report overview

Journal records are written to reflect the status of policy template, policy streams, rule templates, notification list, and directory entry processing, the creating and promoting of environments, policy validation, and evaluation of policy and sensor data during certain processing.

The data set that is used for journaling is a GDG, to allow for copies to be retained, or can specify that the journal output be sent to a SYSOUT device.

You can copy the sample job BSNGDG in the hlq.SHKTSAMP library to one of your own libraries. Modify the job as shown in the documentation within the BSNGDG job.

The following reports are written to the journal:
- Notification List List report
- Notification List Delete report
- Notification List Import report
- Notification List Update report
- Policy Decision Making report
- Policy Environment Service Environment Create report
- Policy Environment Service Environment Delete report
- Policy Environment Service Environment Select and Validate report
- Policy Environment Service Worklist Maintenance Process report
- Policy Environment Service Worklist Maintenance Process report
- Policy Rule Template and Stream List report
- Policy Stream Delete report
- Policy Stream Import report
- Policy Template Delete report
- Policy Template Import report
- Policy Template Update report
- Rule Template Import report

You can review these records to determine the following information:
- Policy templates, and rule templates were installed during a maintenance install
- Policy templates, and rule thresholds that have been modified
- Policy templates that have been created, using an existing policy template as a model
- Policy templates that have been created, without using an existing policy template as a model
- Creating notification lists and/or directory entries
- Importing of policy templates, policy streams, rule templates, notification lists and directory entries
- Creation of a maintenance environment
- Promoting a maintenance environment
- Other
IBM Software Support can also use these journal records to assist in problem
determination. If a problem is reported, you should send these Journal records to
IBM Software Support to be used in the assistance in problem resolution.

Policy Services requires that a journal data set DD statement be included in the
JCL of the IMS tool that is using Policy Services. For example:

```
//BSNJM01 DD DSN=BSNJM01.BSN(+1),
// SPACE=(TRK,(50,50)),UNIT=3390,
// VOL=SER=222222,
// DCB=(LRECL=134,BLKSIZ=134,RECFM=FBA),
// DISP=(NEW,CATLG)
```

You can also specify the following statement, which allows the journal output to
be sent to a SYSOUT device.

```
//BSNJM01 DD SYSOUT=A
```
The Notification List and Directory Entry List report lists all notification lists or directory entries of a specific environment that are in the repository.

The following example shows a list of notification lists from a sample Notification List and Directory Entry List report:

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>RECONID</th>
<th>NOTIFICATION LIST</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST01</td>
<td>NOTIFICATION LIST DESCRIPTION01</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST02</td>
<td>NOTIFICATION LIST DESCRIPTION02</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST03</td>
<td>NOTIFICATION LIST DESCRIPTION03</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST04</td>
<td>NOTIFICATION LIST DESCRIPTION04</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST05</td>
<td>NOTIFICATION LIST DESCRIPTION05</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST06</td>
<td>NOTIFICATION LIST DESCRIPTION06</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST07</td>
<td>NOTIFICATION LIST DESCRIPTION07</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST08</td>
<td>NOTIFICATION LIST DESCRIPTION08</td>
<td></td>
</tr>
<tr>
<td>00000001</td>
<td>MYRECON1 LIST09</td>
<td>NOTIFICATION LIST DESCRIPTION09</td>
<td></td>
</tr>
</tbody>
</table>

Figure 81. Example: List of notification lists

The following example shows a directory entry list from a sample Notification List and Directory Entry List report:

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>NAME</th>
<th>OPTIONS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000001</td>
<td>DIR1</td>
<td>TSO</td>
<td>Directory Entry</td>
</tr>
<tr>
<td>00000001</td>
<td>DIR2</td>
<td>WTO</td>
<td>Directory Entry</td>
</tr>
<tr>
<td>00000001</td>
<td>DIR3</td>
<td>TSO</td>
<td>Directory Entry</td>
</tr>
</tbody>
</table>

Figure 82. Example: Directory entry list
The Notification List Delete report shows you the notification list that was deleted from the repository.

All policies of the specific environment in the repository are scanned to ensure that the notification list to be deleted is not being referenced by any one of the policies. If a referencing policy exists, the report shows that the delete notification list request is rejected.

The following example shows the summary notification lists and threshold notification lists being referenced by a policy:

```
09-04-21 23:55:077@PDS
```

```
Figure 83. Example of Policy summary notification lists and threshold notification lists
```
Notification List and Directory Entry Import report

The Notification List and Directory Entry Import report shows the notification list or directory entry template that was imported into the repository during installation or maintenance.

The following example shows the notification list template from a sample Notification List and Directory Entry Import report:

```
@BEGIN{NL_VERSION}
1
@END
@BEGIN{NL_NAME}
LIST23
@END
@BEGIN{NL_DESC}
Notification list description
@END
@BEGIN{NL_CREATED}
2008-09-08 07:15:30
@END
@BEGIN{NL_LAST_UPDATE}
2008-09-11 12:20:31
@END
@BEGIN{NL_LAST_UPDATER}
SHIOMIT
@END
@BEGIN{NL_DESTINATIONS}
USER1; 1; STLMVS1.USER1; Primary DBA; NOWAIT;
USER2; 1; STLMVS1.USER2; Secondary DBA; NOWAIT;
USER3; 1; STLMVS1.USER3; Secondary DBA; NOWAIT; AGTMOD11
SHIOMIT; 2; STLMVS1.SHIOMIT; Backup DBA; 3 11 13 KEY001 1;
DEST_01; 1; Other destinations;
@END
```

Figure 84. Example of notification list template

The following example shows the directory entry template from a sample Notification List and Directory Entry Import report:
Figure 85. Example of directory entry template
Notification List Update report

The Notification List Update report shows the notification list that was updated.

A notification list can contain both directory entries and nested notification lists. You can see the final valid directory entries expanded from the notification list in this report.

The following example shows the expanded valid directory entries and updated notification list definition from a sample Notification List Update report:

```
NOTIFICATION LIST  BSMGLOBL LIST02  INCLUDES G:LIST01
```

**Figure 86. Example of notification lists nesting information**

```
BOUND NOTIFICATION DIRECTORY ENTRIES

DIR3   TSO
DIR1   TSO
DIR2   WTO
```

**Figure 87. Example of notification list expanded valid directory entries**

```
NOTIFICATION LIST ENTRY  DESCRIPTION: LIST02 Description

DIR3   TSO
G:LIST01  NESTED NOTIFICATION LIST
DIR1   TSO
```

**Figure 88. Example of notification list definition**
Directory Entry Update report

The Directory Entry Update report shows the directory entry that was updated.

The following example shows an updated directory entry definition:

```
-----------------------------------------------------------------------
NOTIFICATION DIRECTORY ENTRY
-----------------------------------------------------------------------

DIRECTORY ENTRY NAME: DIR1       LONG NAME: directory entry 1
STATUS: A     DELEGATE:          OPTION:
DESCRIPTION: Directory Entry 1 Description
TSO DESTINATION
ADDRESS:USER02
PARAMETER: NOW    NOWAIT

Figure 89. Example of directory entry definition
```
Policy Decision Making report

The Policy Decision Making report includes the policy stream and the rule streams that are in the repository. The report also lists all the conditions and exceptions that were met for each rule.

The report provides a detailed summary of how IMS Policy Services is configured. You can use the decision making report to see the specified variables for rule streams and policy streams. Also, the end of the report shows any exceptions that were generated and the actions that were completed for each exception.

The following example shows the resource type that was defined:

```plaintext
*************** POLICY TEMPLATE GET CLAUSE RAW DATA
***************
HDAM

Figure 90. An example clause from a Policy Decision Making report.
```

The Policy Decision Making report shows each rule stream for each threshold. The following example shows the high threshold for one rule stream.

```plaintext
********************************************************************************
**** RULE STREAM READ FROM REPOSITORY
********************************************************************************
RULE
  RULE EXP(
    VERSION(1)
    NAME(G:IBM_NUM_DBRECORDS.10/HIGH)
    ANNOTATION(Simple rule on the number of database records)
    RESOURCE_REF(HDAM)
    RESOURCE_REF(HIDAM)
    RESOURCE_REF(PHDAM)
    RESOURCE_REF(PHIDAM)
    CONDITION(
      OR(
        IF(DB_NUM_ROOT,GE,4294967295)
      )
    )
  )
  EXCEPTION(
    EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
    EXCEPTION_LEVEL(WARNING)
    EXCEPTION_MESSAGE(
      Threshold on the number of DB records is reached/exceeded in RESOURCE%
    )
  )
  EXCEPTION_LEVEL(CRITICAL)
  NTFLIST_REF(G:LIST03)
  NTFLIST_REF(G:LIST02)
  ONMISSING(*,SKIPVALUE)
)

Figure 91. An example of the high threshold for one rule stream in a Policy Decision Making report.
```

In the example, the rule stream is defined to monitor the number of database records. The high threshold has been set to 4294967295. When the number of database records reaches this threshold, an exception is generated that generates a warning message.

The policy stream build includes the specified policy actions, the policy stream, and all the exceptions that were generated. The policy stream repeat all the rule streams. The exceptions are listed as BSN messages, and you can find more information about these messages in the reference part of this user's guide.

The following example shows the actions that are taken when rules with the specified exception class reach a specified exception level. For example, if rules that
contain the exception class DATA_SET_SIZE_GROWTH reach an exception level of CRITICAL, IMS Policy Services initiates a reorganization of the database.

********************************************************************************
**** POLICY STREAM BUILD FROM RULE STREAM
********************************************************************************

ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(DATA_SET_SIZE_GROWTH)
  EXCEPTION_LEVEL(CRITICAL))

ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(FRAGMENTED_FREE_SPACES)
  EXCEPTION_LEVEL(CRITICAL))

ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(EXCESSIVE_SLACK_BYTES)
  EXCEPTION_LEVEL(CRITICAL))

ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(EXCESSIVE_VL_SPLIT_SEGMENTS)
  EXCEPTION_LEVEL(CRITICAL))

ACTION(ACTION_REF(MESSAGE)
  EXCEPTION_CLASS(*))
  EXCEPTION_LEVEL(*))

NTFYLIST_REF(G:LIST03)
NTFYLIST_REF(G:LIST05)
RESOURCE_REF(HDAM)

Figure 92. An example of the policy stream build from a sample Policy Decision Making report

The following example show a rule from the policy stream build.
POLICY STREAM BUILD FROM RULE STREAM

Figure 93. An example of the policy stream build from a sample Policy Decision Making report
Policy Environment Service Environment Create report

The Policy Environment Service Create report shows you the policy domain and level of a maintenance environment that was created.

The origin environment level is valid only when the created environment is copied from an existing one.

The following example shows an example of creating an empty maintenance environment report:

```
```

Figure 94. Example of creating an empty maintenance environment report
The following example shows an example of deleting environment report:

```
2009-04-19 19:18:0290PES : BSN1511I DOMAIN=REORG, ORIGIN ENVIRON LEVEL=00000001
2009-04-19 19:18:0290PES : BSN1511I PES ENVIRONMENT DELETE PROCESS STARTED

2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY
2009-04-19 19:18:0290PES : BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_ENOE RC=00000000,RSN=ENTRY

```

Figure 95. Example of deleting environment report
Policy Environment Service Environment Select and Validate report

The Policy Environment Service Environment Select and Validation report shows the process of promoting a history environment to an operational environment, or the information for validating a maintenance environment.

Any policy that failed to pass the validation would show in the report with the cause of the failure.

The following example shows the policy environment select process:
Figure 96. Example of the policy environment select process
Figure 97. Example of the policy environment validation process
Policy Environment Service Worklist Maintenance Process report

The Policy Environment Service Worklist Maintenance Process report shows the status of the policy objects in an installation or maintenance process.

The report includes maintenance activities conducted towards each policy objects, and related APAR and package information.

The Policy Environment Service Worklist Maintenance Process report contains worklist objects information and related APAR and package information as shown in the following example:

```
*** IMPORTED WORKLIST OBJECTS

<table>
<thead>
<tr>
<th>LOCALE</th>
<th>TYPE</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STRM</td>
<td>OBJECT004</td>
</tr>
<tr>
<td></td>
<td>RULE</td>
<td>OBJECT006</td>
</tr>
<tr>
<td></td>
<td>STRM</td>
<td>OBJECT003</td>
</tr>
</tbody>
</table>

2009-04-27 19:43:38 @PES: BSN1512I PES IMPORT WORKLIST SERVICE ENDED RC=00000000, RSN=00000000
2009-04-27 19:43:38 @PES: BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_DEQE RC=00000000, RSN=ENTRY
2009-04-27 19:43:38 @PES: BSN1501I PES BSNPESQ0 GET CONTROL WITH FUNCTION PES_DEQE RC=00000000, RSN=EXIT
```

Figure 98. Example of imported worklist objects in the sample Policy Environment Service Worklist Maintenance Process report

```
*** ADD APAR LIST

<table>
<thead>
<tr>
<th>APARID</th>
<th>APAR DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>APAR001</td>
<td>DESC11111111111111111</td>
</tr>
<tr>
<td>APAR007</td>
<td>DESCRIPTION 2222222222</td>
</tr>
<tr>
<td>APAR008</td>
<td>MY DESCRIPTION</td>
</tr>
<tr>
<td>APAR009</td>
<td>DESC11111111111111111</td>
</tr>
<tr>
<td>APAR006</td>
<td>DESCRIPTION 2222222222</td>
</tr>
</tbody>
</table>

2009-04-27 19:43:38 @PES: BSN1512I PES ADD APARS SERVICE ENDED RC=00000000, RSN=00000000
```

Figure 99. Example of APAR and package installation process in the sample Policy Environment Service Worklist Maintenance Process report
Policy Rule Template and Stream List report

The Policy Rule Template and Stream List report lists all rule templates, rule streams, and policy templates that are in the repository.

Use the Policy Rule Template and Rule Stream List report to quickly scan through all the templates and stream that are currently in the repository. By reading the descriptions, you can also understand the function of each template or stream.

The following example shows a rule template list from a sample Policy Rule Template and Rule Stream List report.

```
RECONID  RULE NAME            DESCRIPTION
00000002 MYRECON1 CI_CA_SPLITS_HISAM  DLIDB - OUT OF SPACE CONDITION
00000002 MYRECON1 IBM.AVG_DBREC_LEN.10 Low  Simple rule on the average database record length
```

Figure 100. Example rule template list

The following example shows a rule stream list from a sample Policy Rule Template and Rule Stream List report.

```
RECONID  RULE NAME            DESCRIPTION
00000002 MYRECON1 CI_CA_SPLITS_HISAM/HIGH  DLIDB - OUT OF SPACE CONDITION
00000002 MYRECON1 CI_CA_SPLITS_HISAM/LOW   DLIDB - OUT OF SPACE CONDITION
00000002 MYRECON1 CI_CA_SPLITS_HISAM/MED   DLIDB - OUT OF SPACE CONDITION
00000002 MYRECON1 IBM.AVG_DBREC_LEN.10/HIGH  Simple rule on the average database record length
00000002 MYRECON1 IBM.AVG_DBREC_LEN.10/LOW   Simple rule on the average database record length
00000002 MYRECON1 IBM.AVG_DBREC_LEN.10/MED   Simple rule on the average database record length
```

Figure 101. Example rule stream list

The following table describes the different fields in the rule template and stream list.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECONID</td>
<td>The RECONID in which the rule template or stream is located.</td>
</tr>
<tr>
<td>RULE NAME</td>
<td>The name of the rule template or stream.</td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>A description of the rule.</td>
</tr>
</tbody>
</table>

The following example shows a policy template list from a sample Policy Rule Template and Rule Stream List report.
The following table describes the different fields in the policy template and stream list.

Table 45. Policy Rule Template Import report field descriptions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMAIN NAME</td>
<td>The name of the policy domain to which the template or stream belongs</td>
</tr>
<tr>
<td>LEVEL</td>
<td>Domain environment level</td>
</tr>
<tr>
<td>RECONID</td>
<td>The RECONID in which the policy template or stream is located</td>
</tr>
<tr>
<td>POLICY NAME</td>
<td>The name of the policy template or stream</td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>A description of the policy</td>
</tr>
</tbody>
</table>

Figure 102. Example policy template list
Policy Stream Delete report

The Policy Stream Delete report shows you the policy stream that was deleted from the repository.

The following example shows a sample Policy Stream Delete report:

```

********************************************************************************
*** POLICY STREAM DELETE PROCESS STARTED
********************************************************************************

2009-04-28 01:12:46 9@PDS:

BSN7011I: POLICY STREAM DELETE PROCESS STARTED

********************************************************************************

2009-04-28 01:12:46 9@PDS:

BSN7012I: POLICY STREAM DELETE PROCESS ENDED

2009-04-28 01:12:46 9@PDS:

BSN7012I: POLICY STREAM IMPORT PROCESS ENDED RC=00000000, RSN=00000000

Figure 103. Example of Policy Stream Delete report
The Policy Stream Import report shows the policy stream that was imported into the repository during installation or maintenance. Because a policy stream contains all the rules streams that are active in the repository, you can use this report to view a list of all the rule streams comprising a policy stream.

The Policy Stream Import report contains detailed information such as the policy version, the policy name, rule names, and rule conditions as shown in the following example.

---
POLICY STREAM FOR IMPORT
---

POLICY
- VERSION(1)
- DOMAIN_REF(REORG)
- NAME(BAD_STREAM_POLIC)
- ORIGINAL_NAME(IBM.DBDTYPE.HDAM)
- ANNOTATION(IBM basic policy for HDAM databases)

  ACTION
  - ACTION_REF(REORG)
  - EXCEPTION_CLASS(DATA_SET_SIZE_GROWTH)
  - EXCEPTION_LEVEL(CRITICAL)
  - ACTION_REF(REORG)
  - EXCEPTION_CLASS(FRAGMENTED_FREE_SPACES)
  - EXCEPTION_LEVEL(CRITICAL)
  - ACTION_REF(REORG)
  - EXCEPTION_CLASS(EXCESSIVE_SLACK_BYTES)
  - EXCEPTION_LEVEL(CRITICAL)
  - ACTION_REF(REORG)
  - EXCEPTION_CLASS(EXCESSIVE_VL_SPLIT_SEGMENTS)
  - EXCEPTION_LEVEL(CRITICAL)

  ACTION
  - ACTION_REF(MESSAGE)
  - EXCEPTION_CLASS(*)
  - EXCEPTION_LEVEL(*)

  NTFLYST_REF(G:LIST03)
  - NTFLYST_REF(G:LIST05)
  - RESOURCE_REF(HDAM)
  - RULE
    - RULE_EXP
      - VERSION(1)
      - NAME(G:IBM.NUM_DBRECORDS.10/HIGH)
      - ANNOTATION(Simple rule on the number of database records)
      - RESOURCE_REF(HDAM)
      - RESOURCE_REF(HIDAM)
      - RESOURCE_REF(PHIDAM)
      - RESOURCE_REF(HISAM)
      - CONDITION
        - OR
          - IF(DB_NUM_ROOT,GE,4294967295)
      - EXCEPTION
        - EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
        - EXCEPTION_LEVEL(WARNING)
        - EXCEPTION_MESSAGE
          - Threshold on the number of DB records is reached/exceeded in %RESOURC
      - EXCEPTION_LEVEL(CRITICAL)
      - NTFLYST_REF(G:LIST03)
      - NTFLYST_REF(G:LIST02)
      - ONMISSING(*,SKIP)
      - ENDS
    - ENDS
  - ENDS
  - ENDS

--- Figure 104. An example of the Policy Stream Import report ---

The example shows the actions that are taken when rules with the specified exception class reach a specified exception level. For example, if rules that contain the exception class DATA_SET_SIZE_GROWTH reach an exception level of CRITICAL, IMS Policy Services initiates a reorganization of the database.

The example also shows a rule that is defined to monitor the number of database records. The high threshold has been set to 4294967295. When the number of database records reaches this threshold, an exception is generated that generates a
warning message.
Policy Template Delete report

The Policy Template Delete report shows you the policy template that was deleted from the repository.

The following example shows a sample Policy Template Delete report:

********************************************************************************
***  POLICY TEMPLATE DELETE PROCESS STARTED  ***
********************************************************************************

2009-04-27 22:54:19 PDS: BSN7011I  DOMAIN=REORG, LEVEL=00000011, RECON=BBBRECON,
POLICY=DEFAULT_BASIC_POLICY


********************************************************************************
***  POLICY TEMPLATE DELETE PROCESSENDED  ***
********************************************************************************

2009-04-27 22:54:19 PDS: BSN7012I  DOMAIN=REORG, LEVEL=00000011, RECON=BBBRECON,
POLICY=DEFAULT_BASIC_POLICY


Figure 105. Example of Policy Template Delete report
Policy Template Import report

The Policy Template Import report shows you the policy template, the rule streams that are read from the repository, and the policy stream that is built from the rule streams. You can use this report to ensure that the policy templates has been imported and built correctly.

The following example shows information about a policy template that was imported. For example, the template shows the policy name, conditions for a database reorganization, and a list of rules that are imported.

```
4655-S35
5655-S5
5665-S3
COPYRIGHT IBM CORP. 2009 ALL RIGHTS RESERVED.
US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT WITH IBM CORP.

@BEGIN{POLICY_TEMPLATE_VERSION} 1 END
@BEGIN{MAINTENANCE_MESSAGES} END
@BEGIN{TEMPLATE_ORIGINAL_NAME} IBM.DBDTYPE.HDAM END
@BEGIN{POLICY_DOMAIN} REORG END
@BEGIN{POLICY_TEMPLATE_TYPE} BASIC END
@BEGIN{POLICY_NAME} IBM.DBDTYPE.HDAM END
@BEGIN{POLICY_DESC} IBM basic policy for HDAM databases END
@BEGIN{ACTION_DESC} REORG DATA_SET_SIZE_GROWTH CRITICAL REORG FRAGMENTED_FREE_SPACES CRITICAL REORG EXCESSIVE_SLACK_BYTES CRITICAL REORG EXCESSIVE_VL_SPLIT_SEGMENTS CRITICAL MESSAGE * *
@BEGIN{NOTIFY_REF_LIST} G:LIST03 G:LIST05 END
@BEGIN{RESOURCE_TYPE_LIST} HDAM END
@BEGIN{RULE_LIST} G:IBM.NUM_DBRECORDS.10; HIGH CRITICAL; SKIPENVAL; G:LIST03; G:LIST05; END
```

Figure 106. Example policy template from the Policy Template Import report

The following example shows that the rule for the high threshold for the number of database records was read from the repository. Only the rules listed in the policy template rule list are read.
Once all rules have been read, the policy stream is built. The policy stream build reflects all conditions specified in the policy template, as shown in the following example.

Figure 107. Example of a rule stream for the number of database records

```plaintext
RULE(
    RULE_EXP(
        VERSION(1)
        NAME(G:IBM.NUM_DBRECORDS.10/HIGH)
        ANNOTATION(Simple rule on the number of database records)
        RESOURCE_REF(HDAM)
        RESOURCE_REF(HIDAM)
        RESOURCE_REF(PHIDAM)
        RESOURCE_REF(HISAM)
        CONDITION(
            OR(
                IF(DB_NUM_ROOT,GE, 4294967295
            )
        )
        EXCEPTION(
            EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
            EXCEPTION_LEVEL(WARNING)
            EXCEPTION_MESSAGE(
                Threshold on the number of DB records is reached/exceeded in \%RESOURC
            )
        )
    )
)
```
POLICY STREAM BUILD FROM RULE STREAM

POLICY

VERSION(1)
DOMAIN_REF(REORG)
NAME(IBM.DBDTYPE.HDAM)
ORIGINAL_NAME(IBM.DBDTYPE.HDAM)
ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(DATA_SET_SIZE_GROWTH)
  EXCEPTION_LEVEL(CRITICAL))
ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(FRAGMENTED_FREE_SPACES)
  EXCEPTION_LEVEL(CRITICAL))
ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(EXCESSIVE_SLACK_BYTES)
  EXCEPTION_LEVEL(CRITICAL))
ACTION(ACTION_REF(REORG)
  EXCEPTION_CLASS(EXCESSIVE_VL_SPLIT_SEGMENTS)
  EXCEPTION_LEVEL(CRITICAL))
ACTION(ACTION_REF(MESSAGE)
  EXCEPTION_CLASS(*)
  EXCEPTION_LEVEL(*))
NTFYLIST_REF(G:LIST03)
NTFYLIST_REF(G:LIST05)
RESOURCE_REF(HDAM)

RULE

RULE_EXP

VERSION(1)
NAME(G:IBM_NUM_DBRECORDS.10/HIGH)
ANNOTATION(Simple rule on the number of database records)
RESOURCE_REF(HDAM)
RESOURCE_REF(HIDAM)
RESOURCE_REF(PHDAM)
RESOURCE_REF(PHIDAM)
RESOURCE_REF(HISAM)
CONDITION
  OR
  IF(DB_NUM_ROOT,GE,4294967295)
} )
)
EXCEPTION
  EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
  EXCEPTION_LEVEL(WARNING)
  EXCEPTION_MESSAGE('Threshold on the number of DB records is reached/exceeded in %RESOURCE
Ès)
}
}
EXCEPTION_LEVEL(CRITICAL)
NTFYLIST_REF(G:LIST03)
NTFYLIST_REF(G:LIST02)
ONMISSING(*,SKIP_EVAL)

Figure 108. Example of a policy stream build
The Policy Template Update report shows updates made to a rule, policy, or notification list.

The following example shows all the clause data in an updated policy:

```
***** POLICY TEMPLATE NOTIFICATION LIST CLAUSE

NOTIFICATION LIST NAME
LIST01
LIST02

***** POLICY TEMPLATE RESOURCE TYPE LIST CLAUSE

RESOURCE TYPE LIST NAME
HDAM
HIDAM
PHDAM
PHIDAM
HISAM

***** POLICY TEMPLATE ACTION DESCRIPTION CLAUSE

ACTION NAME  EXCEPTION CLASS
REORG HD_DB_SPACE_UTILIZATION CRITICAL
MESSAGE HD_DB_SPACE_UTILIZATION *
REORG HISAM_CI_CA_SPLITS CRITICAL
MESSAGE HISAM_CI_CA_SPLITS *
MESSAGE DLIDB_OUT_OF_SPACE *
MESSAGE RAP_OVERLOAD *

***** POLICY TEMPLATE RULE LIST CLAUSE

RULE TEMPLATE NAME  THRESHOLD  EXCEPTION  MISSING DATA  NOTIFICATION LIST
CI_CA_SPLITS_HISAM  HIGH  CRITICAL  SKIPEVAL  LIST01  LIST02
CI_CA_SPLITS_HISAM  MED  SEVERE  SKIPEVAL  LIST07  LIST01
CI_CA_SPLITS_HISAM  LOW  WARNING  SKIPEVAL  LIST03  LIST03
```

Figure 109. Example clause list

The following table describes the different fields for each clause list.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTIFICATION LIST NAME</td>
<td>The name of a policy-level and rule-level notification list</td>
</tr>
<tr>
<td>RESOURCE TYPE LIST NAME</td>
<td>The name of the resource type list</td>
</tr>
<tr>
<td>ACTION NAME</td>
<td>The name of the action that is carried out if the conditions are met</td>
</tr>
<tr>
<td>EXCEPTION CLASS</td>
<td>The name of an exception class</td>
</tr>
<tr>
<td>EXCEPTION LEVEL</td>
<td>The name of an exception level</td>
</tr>
<tr>
<td>RULE TEMPLATE NAME</td>
<td>The name of the rule template</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>The name of the threshold set in the rule template</td>
</tr>
</tbody>
</table>

Table 46. Clause list field descriptions
Table 46. Clause list field descriptions (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCEPTION</td>
<td>An exception level</td>
</tr>
<tr>
<td></td>
<td>Allowed values are WARNING, SEVERE, and CRITICAL</td>
</tr>
<tr>
<td>MISSING DATA</td>
<td>Rule evaluation behavior on missing data</td>
</tr>
<tr>
<td></td>
<td>Optional, allowed values are EVALUATE, SKIPEVAL, and EXCEPTION</td>
</tr>
<tr>
<td>NOTIFICATION LIST</td>
<td>The name of a rule-level notification list, if specified</td>
</tr>
</tbody>
</table>

The maintenance message indicates the policy template that will be updated by the current maintenance, as shown in the following example:

```
*********************************************************************************************
* POLICY TEMPLATE UPDATE MAINTENANCE MESSAGE *
* THE POLICY TEMPLATE 'DEFAULT_BASIC_POLICY' WILL BE UPDATED BY THIS MAINTENANCE. *
* PLEASE BE CAUTIONS IF YOU HAVE UPDATED THE TEMPLATE *

Figure 110. Example maintenance message
```

Following example shows the updated policy template saved in the repository:
THE POLICY TEMPLATE 'DEFAULT_BASIC_POLICY' WILL BE UPDATED BY THIS MAINTENANCE.
* PLEASE BE CAUTIONS IF YOU HAVE UPDATED THE TEMPLATE *

SYSTEM DEFAULT BASIC POLICY FOR FULL-FUNCTION DATABASES

REORG HD_DB_SPACE_UTILIZATION CRITICAL
MESSAGE HD_DB_SPACE_UTILIZATION *
REORG HISAM_CI_CA_SPLITS CRITICAL
MESSAGE HISAM_CI_CA_SPLITS *
MESSAGE DLIDB_OUT_OF_SPACE *
MESSAGE RAP_OVERLOAD *

CI_CA_SPLITS_HISAM; HIGH; CRITICAL; !
SKIPEVAL; !
R:LIST01 G:LIST02
CI_CA_SPLITS_HISAM; MED; SEVERE; !
SKIPEVAL; !
R:LIST07 G:LIST01
CI_CA_SPLITS_HISAM; LOW; WARNING; !
SKIPEVAL; !
R:LIST03 G:LIST03

Figure 111. Example policy template
Rule Template Import report

The Rule Template Import report shows you the rule templates and the corresponding rule threshold streams that were imported into the repository. You can use this report to ensure that all rule templates have been imported with the specified thresholds and the specified descriptions.

The following example shows you a rule template for monitoring the number of database records with the low, medium, and high thresholds set to 4294967295.
From the rule template, three rule streams are generated and imported into the repository. In the following example, a rule stream for the low threshold is shown that was generated from the number of database records rule template.

**Figure 112. Example rule template from the Rule Template Import report**

```plaintext
**** RULE TEMPLATE FOR IMPORT
**********************************************************************
#*****************************************************************************
#  LICENSED MATERIALS - PROPERTY OF IBM  
#  5655-535  
#  COPYRIGHT IBM CORP. 2009 ALL RIGHTS RESERVED.  
#  US GOVERNMENT USERS RESTRICTED RIGHTS - USE,  
#  DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP  
#  SCHEDULE CONTRACT WITH IBM CORP.  
#*****************************************************************************
@BEGIN{RULE_TEMPLATE_NAME}
IBM.NUM_DBRECORDS.10
@END
@BEGIN{RULE_DESC}
Simple rule on the number of database records
@END
@BEGIN{RESOURCE_TYPE_LIST}
HDAM
HIDAM
PHDAM
PHIDAM
HIHISAM
@END
@BEGIN{EXCEPTION_CLASS}
NUMBER_OF_DB_RECORDS
@END
@BEGIN{RULE_CONDITION_EXPRESSION}
OR(
   IF(DB_NUM_ROOT, GE, &1
}
) @END
@BEGIN{RULE_EXCEPTION_EXPRESSION}
EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
EXCEPTION_LEVEL(WARNING)
EXCEPTION_MESSAGE(
   $msg$
)
@END
@BEGIN{RULE_CONDITION_DESC}
Total number of database records is reached or exceeded the threshold &1
@END
@BEGIN{RULE_MESSAGE_TEMPLATE}
Threshold on the number of DB records is reached/exceeded in %RESOURCE%
@END
@BEGIN{DATA_ELEMENT_LIST}
DB_NUM_ROOT &1
@END
@BEGIN{ORIGINAL_THRESHOLD_SETS}
LOW; &1 = 24294967295
MED; &1 = 4294967295
HIGH; &1 = 4294967295
@END
@BEGIN{THRESHOLD_SETS}
LOW; &1 = 24294967295
MED; &1 = 4294967295
HIGH; &1 = 4294967295
@END
```

From the rule template, three rule streams are generated and imported into the repository. In the following example, a rule stream for the low threshold is shown that was generated from the number of database records rule template.
RULE(  
RULE_EXP(  
   VERSION(1)  
   NAME(G:IBM.NUM_DBRECORDS.10/LOW)  
   ANNOTATION(Simple rule on the number of database records)  
   RESOURCE_REF(HDAM)  
   RESOURCE_REF(HIDAM)  
   RESOURCE_REF(PHDAM)  
   RESOURCE_REF(PHIDAM)  
   RESOURCE_REF(HISAM)  
   CONDITION(  
      OR(  
         IF(DB_NUM_ROOT,GE,  
            4294967295  
         )  
      )  
   )  
   EXCEPTION(  
      EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)  
      EXCEPTION_LEVEL(WARNING)  
      EXCEPTION_MESSAGE(  
         Threshold on the number of DB records is reached/exceeded in %RESOURCE  
      )  
   )  
)  
)

Figure 113. Example rule stream from the Rule Template Import report
Part 6. Reference: Domain REORG

The topics in this section provide you with supplemental technical references for the Policy Services REORG domain.

Topics:
- Chapter 21, “Domain REORG rules,” on page 245
- Chapter 22, “Domain REORG policies,” on page 389
- Chapter 23, “Domain REORG exceptions,” on page 433
Chapter 21. Domain REORG rules

The domain REORG rules are used to compare the stored data element values against the predefined threshold values that specify the limits for a set of data element values.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

A descriptive message within the rule that describes the maintenance history information for this rule.

The initial maintenance message is blank because at initial product installation no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

Defines the domain for which this rule is intended to be used.

For IMS Database Reorganization Expert, the domain name is REORG.

**Rule template type**

Defines the rule template type.

Currently, there is only one type: Standard

**Rule template name**

The name of this rule template.

**Rule description**

Defines in words what database functionality this rule evaluates.

**Resource types supported**

The resource types are all IMS-supported Hierarchical Direct Access Methods.

**Exception class**

The exception class represents the type of exception that can be raised by this rule.

**Rule condition expression**

The actual condition expression that is applied to the list of data elements for this rule.

**Rule condition description**

Describes in words what the rule condition expression is doing.

**Rule exception expression**

The rule exception expression consists of the following items:

- Exception class
- Exception level
- Exception message
These lines in the rule template file are used only as the template for building rule definition streams that are included in various policy definition streams. The actual exception severity level for a rule is determined by the enclosing individual policy stream. The EXCEPTION_LEVEL(WARNING) statement is then overridden by the actual exception severity level that the policy creator (IBM or a user) assigned for a threshold level.

**Rule message template**

Defines the actual message that is sent to the notification list when the condition is met.

The following condition applies to the default exception messages that are shown in the rule message template section of each rule topic:

%RESOURCE% is the IMS database that encountered the exception.

**Data elements being evaluated for this rule**

The data element is the smallest named unit of information having predefined attributes.

**Rule threshold sets**

The set of threshold values that are initially set by IBM. There are two sets of threshold values:

- Original values set by IBM that cannot be changed
- Original values initially set by IBM that can be modified
Rule: IBM.AVG_DBREC_LEN.10

IBM.AVG_DBREC_LEN.10 is a simple rule for evaluating the average length of database records.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.AVG_DBREC_LEN.10

Rule description

Average length of database records.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

AVERAGE_DB_RECORD_LENGTH

Rule condition expression

\[ \text{OR(} \text{IF(DB_AVG_DBREC_LENGTH,GE,} \& 1 \text{))} \]
**Rule condition description**

Specify a threshold on the average database record length.

\[ DB\_AVG\_DBREC\_LENGTH: \&1 \]

An exception is issued if the threshold is reached or exceeded.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

**Rule exception expression**

- EXCEPTION_CLASS(AVERAGE_DB_RECORD_LENGTH)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The average length of database records in %RESOURCE% has reached or exceeded a threshold

**Data elements being evaluated for this rule**

\[ DB\_AVG\_DBREC\_LENGTH \&1 \]

The variable \&1 specifies a threshold for the data element value DB_AVG_DBREC_LENGTH of the database or the HALDB partition.

**Rule condition description**

The average database record length has reached or exceeded the following threshold:

\&1

**Rule threshold sets**

*Table 47. Rule threshold sets for IBM.AVG_DBREC_LEN.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 8589345920</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 8589345920</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 8589345920</td>
</tr>
</tbody>
</table>

Each of the default threshold values is never reached nor exceeded.

It is expected that you change these threshold values to suite your environment only if you want to activate this rule.
Rule: IBM.CICA_SPLITS.10

IBM.CICA_SPLITS.10 is a simple rule for evaluating the percentage of CI or CA splits in a HISAM or SHISAM database.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.CICA_SPLITS.10

Rule description

KSDS CI or CA splits in HISAM and SHISAM.

Resource types supported

The following resource types are supported by this rule.

- HISAM
- SHISAM

Exception class

EXCESSIVE_CI_OR_CA_SPLITS

Rule condition expression

OR(
  IF(DB_PCT_NUM_CI_SPLIT.1,GE,
    &1
  )
  IF(DB_PCT_NUM_CA_SPLIT.1,GE,
    &2
  )
)
**Rule condition description**

Specify thresholds on the percentage of the number of CI splits (DB_PCT_NUM_CI_SPLIT) and the percentage of the number of CA splits (DB_PCT_NUM_CA_SPLIT) of the primary data set of a HISAM or SHISAM database.

DB_PCT_NUM_CI_SPLIT: &1
DB_PCT_NUM_CA_SPLIT: &2

An exception is issued if one of these thresholds is reached or exceeded.

**Rule exception expression**
- EXCEPTION_CLASS(EXCESSIVE_CI_OR_CA_SPLITS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of CI/CA splits of database %RESOURCE% has increased

**Data elements being evaluated for this rule**

DB_PCT_NUM_CI_SPLIT &1
DB_PCT_NUM_CA_SPLIT &2

The variable &1 specifies a threshold for the data element value of DB_PCT_NUM_CI_SPLIT of the primary data set.

The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_CA_SPLIT of the primary data set.

**Rule threshold sets**

*Table 48. Rule threshold sets for IBM.CICA_SPLITS.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 40</td>
</tr>
</tbody>
</table>
IBM.DBDS_EXTENTS.10 is a simple rule for evaluating the limited availability of data set extents.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DBDS_EXTENTS.10

**Rule description**

Availability of data set extents

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

**Exception class**

DATA_SET_EXTENTS_AVAILABILITY

**Rule condition expression**

\[
\text{OR}(
\text{AOR}(
\text{AAND}\left(
\text{IF}(\text{DB\_FLAG\_SMS}, \text{IS}, \text{N})
\text{IF}(\text{DB\_AVAIL\_EXT\_LESS\_100}, \text{IS}, \text{Y})
\text{IF}(\text{DB\_NUM\_AVAIL\_EXT}, \text{LE}, \&1
\right)
\right)
\]

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Rule condition description

Specify a threshold on the estimated number of extents that can be allocated for a database data set (DB_NUM_AVAIL_EXT). The threshold must be less than 100. For an SMS-managed data set, also specify a threshold on the number of candidate volumes (DB_NUM_UNUSED_VOL_CAND).

1. For a non-SMS-managed data set, an exception is issued if DB_NUM_AVAIL_EXT of one of database data sets is less than or equal to the following threshold:
   &1

2. For an SMS-managed data set, an exception is issued if DB_NUM_UNUSED_VOL_CAND is less than or equal to:
   &2
   and DB_NUM_AVAIL_EXT is less than or equal to:
   &3

   for one of database data sets.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(DATA_SET_EXTENTS_AVAILABILITY)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of available extents for a data set of %RESOURCE% is small

Data elements being evaluated for this rule

<table>
<thead>
<tr>
<th>DB_NUM_AVAIL_EXT</th>
<th>&amp;1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_UNUSED_VOL_CAND</td>
<td>&amp;2</td>
</tr>
<tr>
<td>DB_NUM_AVAIL_EXT</td>
<td>&amp;3</td>
</tr>
</tbody>
</table>

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of DB_NUM_AVAIL_EXT for the data set on non-SMS-managed volumes.
• The variable &2 specifies a threshold for the data element value of DB_NUM_UNUSED_VOL_CAND for the data set on SMS-managed volumes.
• The variable &3 specifies a threshold for the data element value of DB_NUM_AVAIL_EXT for the data set on SMS-managed volumes.

The values of the data elements DB_FLAG_SMS and DB_AVAIL_EXT_LESS_100 are also referred to in this rule template.

**Rule threshold sets**

*Table 49. Rule threshold sets for IBM.DBDS_EXTENTS.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOW</strong></td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 5</td>
</tr>
<tr>
<td><strong>MED</strong></td>
<td>&amp;1 = 3</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 3</td>
</tr>
<tr>
<td><strong>HIGH</strong></td>
<td>&amp;1 = 1</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 1</td>
</tr>
</tbody>
</table>
Rule: IBM.DBDS_GROWTH.10

IBM.DBDS_GROWTH.10 is a simple rule for evaluating the size of database data sets.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DBDS_GROWTH.10

Rule description

Growth data set size.

Important: This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:
• Replace a similar rule in an existing REORG Domain policy
• Add this rule to one of the existing REORG Domain policies
• Create a REORG Domain policy and add this rule along with other rules

Resource types supported

The following resource types are supported by this rule.
• HDAM
• HIDAM
• PHDAM
• PHIDAM
• HISAM
• SHISAM

Exception class

DATA_SET_SIZE_GROWTH
Rule condition expression

OR(
  OR(
    IF(DB_NUM_DBDS_BLOCKS,GE,
      &1
    )
    IF(DB_PCT_OF_MAX_DS_SIZE,GE,
      &2
    )
    IF(DB_RBA_HIGH_ALLOC,GE,
      &3
    )
    IF(DB_RBA_HIGH_USED,GE,
      &4
    )
  )
)

Rule condition description

Specify thresholds on the database data set size.

The following thresholds can be used in this rule:
1. Number of database data set blocks:
   DB_NUM_DBDS_BLOCKS : &1
2. Percentage of maximum data set size:
   DB_PCT_OF_MAX_DS_SIZE: &2
3. High-Allocated RBA:
   DB_RBA_HIGH_ALLOC: &3
4. High-Used RBA:
   DB_RBA_HIGH_USED: &4

An exception is issued if one or more of these thresholds are reached or exceeded in one of the data sets.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Tip: Use rulesIBM.DBDS_GROWTH.20 and IBM.DBDS_GROWTH.30 because these rules measure the total amount of free space and evaluate the potential benefits of reorganizing free space.

Rule exception expression

- EXCEPTION_CLASS(DATA_SET_SIZE_GROWTH)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The size of a database data set in %RESOURCE% has reached or exceeded a threshold
Data elements being evaluated for this rule

<table>
<thead>
<tr>
<th>Data element</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_DBDS_BLOCKS</td>
<td>&amp;1</td>
</tr>
<tr>
<td>DB_PCT_OF_MAX_DS_SIZE</td>
<td>&amp;2</td>
</tr>
<tr>
<td>DB_RBA_HIGH_ALLOC</td>
<td>&amp;3</td>
</tr>
<tr>
<td>DB_RBA_HIGH_USED</td>
<td>&amp;4</td>
</tr>
</tbody>
</table>

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of DB_NUM_DBDS_BLOCKS for the data set.
- The variable &2 specifies a threshold for the data element value of DB_PCT_OF_MAX_DS_SIZE for the data set.
- The variable &3 specifies a threshold for the data element value of DB_RBA_HIGH_ALLOC for the data set.
- The variable &4 specifies a threshold for the data element value of DB_RBA_HIGH_USED for the data set.

Rule threshold sets

Table 50. Rule threshold sets for IBM.DBDS_GROWTH.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 16777216</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 60</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 8589934592</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 16777216</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 80</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 8589934592</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 16777216</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 8589934592</td>
</tr>
</tbody>
</table>

The default threshold values for the variables &1, &2, and &4 are never reached nor exceeded.

It is expected that each of these threshold values be changed only if you want to monitor the data element value that correspond to the variable.
Rule: IBM.DBDS_GROWTH.20

IBM.DBDS_GROWTH.20 is a simple rule for evaluating the size of data sets that have certain amount of free space.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DBDS_GROWTH.20

Rule description

Percentage growth data set and free space

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

GROWING_DBDS_WITH_FREE_SPACES

Rule condition expression

\[
\text{OR} \left( \text{AND} \left( \\
\text{IF} (\text{DB\_PCT\_OF\_MAX\_DS\_SIZE}, \text{GE}, \&1) \\
\text{IF} (\text{DB\_PCT\_BYTES\_FREE\_SPACE}, \text{GE}, \\
\ldots)
\right)
\right)
\]
Rule condition description

Specify a threshold on the percentage of the maximum data set size (DB_PCT_OF_MAX_DS_SIZE) and a threshold on the percentage of the free space in formatted database blocks (DB_PCT_BYTES_FREE_SPACE):

\[ \text{DB_PCT_OF_MAX_DS_SIZE: } \&1 \\
\text{DB_PCT_BYTES_FREE_SPACE: } \&2 \]

An exception is issued if both of these thresholds are reached or exceeded in any of the database data sets. An exception indicates that a high percentage of unusable free space elements might have caused the growth in data set size.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(GROWING_DBDS_WITH_FREE_SPACES)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The size of a data set in %RESOURCE%, which still has a certain amount of free space, has increased.

Data elements being evaluated for this rule

\[ \text{DB_PCT_OF_MAX_DS_SIZE: } \&1 \\
\text{DB_PCT_BYTES_FREE_SPACE: } \&2 \]

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable \&1 specifies a threshold for the data element value of DB_PCT_OF_MAX_DS_SIZE for the data set.
- The variable \&2 specifies a threshold for the data element value of DB_PCT_BYTES_FREE_SPACE for the data set.

Rule threshold sets

Table 51. Rule threshold sets for IBM.DBDS_GROWTH.20

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75, &amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85, &amp;2 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90, &amp;2 = 20</td>
</tr>
</tbody>
</table>
Rule: IBM.DBDS_GROWTH.30

IBM.DBDS_GROWTH.30 is a simple rule for evaluating the size of a data set that is full of segment data.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DBDS_GROWTH.30

Rule description

Growth data set size full of segment data

Resource types supported

The following resource types are supported by this rule.

• HDAM
• HIDAM
• PHDAM
• PHIDAM
• HISAM
• SHISAM

Exception class

GROWING_DBDS_WITH_DATA_FULL

Rule condition expression

OR(
  AAND(
    IF(DB_PCT_OF_MAX_DS_SIZE,GE, &1
  )
  IF(DB_PCT_BYTES_SEG,GE, &2
)
)
Rule condition description

Specify a threshold on the percentage of the maximum data set size (DB_PCT_OF_MAX_DS_SIZE), a threshold on the percentage of segment data in the formatted database blocks (DB_PCT_BYTES_SEG), and a threshold on the percentage of the unused bytes in the allocated data set (DB_PCT_UNUSED.Bytes):

DB_PCT_OF_MAX_DS_SIZE: &1
DB_PCT_BYTES_SEG : &2
DB_PCT_UNUSED_BYTES : &3

An exception is issued if the first two thresholds are reached or exceeded and the percentage of the unused bytes is less than or equal to the third threshold for one of the database data sets.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(GROWING_DBDS_WITH_DATA_FULL)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The size of a data set in %RESOURCE%, which is full of data and is approaching its size limit, has increased.

Data elements being evaluated for this rule

- DB_PCT_OF_MAX_DS_SIZE &1
- DB_PCT_BYTES_SEG &2
- DB_PCT_UNUSED_BYTES &3

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of DB_PCT_OF_MAX_DS_SIZE for the data set.
- The variable &2 specifies a threshold for the data element value of DB_PCT_BYTES_SEG for the data set.
- The variable &3 specifies a threshold for the data element value of DB_PCT_UNUSED_BYTES for the data set.
**Rule threshold sets**

*Table 52. Rule threshold sets for IBM.DBDS_GROWTH.30*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 10</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 10</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_DBREC_IO.10

IBM.DEDB_DBREC_IO.10 is a simple rule for evaluating the average number of I/Os per database record.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_DBREC_IO.10

**Rule description**

Average number of I/Os per database record

**Resource types supported**

DEDB

**Exception class**

DEDB_EXCESSIVE_AVG_NUM_RECORD_IO

**Rule condition expression**

\[
\text{OR(}
\begin{align*}
\text{IF}( & \text{DB\_AVG\_DBREC\_IO,GT,} \\
& \&1)
\end{align*}
\text{)}
\]

**Rule condition description**

Specify a threshold on the average number of I/Os that are required to read a database record in a DEDB area.

\[
\text{DB\_AVG\_DBREC\_IO: } \&1
\]

An exception is issued if the threshold is exceeded.
**Rule exception expression**

- EXCEPTION_CLASS(DEDB_EXCESSIVE_AVG_NUM_RECORD_IO)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The average number of I/Os per DB record exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_AVG_DBREC_IO &1

**Rule threshold sets**

*Table 53. Rule threshold sets for IBM.DEBD_DBREC_IO.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;l = 1.5</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;l = 2.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;l = 2.5</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_DBREC_IO.20

IBM.DEDB_DBREC_IO.20 is a simple rule for evaluating the maximum number of I/Os per database record.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_DBREC_IO.20

**Rule description**

Maximum number of I/Os per database record

**Resource types supported**

DEDB

**Exception class**

DEDB_DBRECORD_WITH_EXCESSIVE_IO

**Rule condition expression**

\[
\text{OR(} \\
\begin{align*}
\text{IF(DB_MAX_DBREC_IO,GT,} & \& 1
\end{align*}
\]}

**Rule condition description**

Specify a threshold on the maximum number of I/Os that are required to read a database record in a DEDB area.

DB_MAX_DBREC_IO: &1

An exception is issued if the threshold is exceeded.
Rule exception expression

- EXCEPTION_CLASS(DEDB_DBRECORD_WITH_EXCESSIVE_IO)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The maximum number of I/Os per DB record exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_MAX_DBREC_IO &1

Rule threshold sets

Table 54. Rule threshold sets for IBM.DEDB_DBREC_IO.20

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 6.0</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 7.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 8.0</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_DBRECCNT.10

IBM.DEDB_DBRECCNT.10 is a simple rule for calculating the number of database records in a DEDB area.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DBRECCNT.10

Rule description

Number of database records in a DEDB area

Resource types supported

DEDB

Exception class

NUMBER_OF_DB_RECORDS

Rule condition expression

OR(
    IF(DB_NUM_ROOT,GE,
        &1
    )
)

Rule condition description

Specify a threshold on the number of root segment occurrences in a DEDB area.

DB_NUM_ROOT: &1

An exception is issued if the threshold is reached or exceeded. Use this threshold to measure the growth of database records in an area.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to enable this rule.

**Rule exception expression**
- EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of database records in area %RESOURCE% has reached or exceeded a threshold.

**Data elements being evaluated for this rule**

DB_NUM_ROOT &1

**Rule threshold sets**

*Table 55. Rule threshold sets for IBM.DEDB_DBRECCNT.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.10

IBM.DEDB_FS.10 is a simple rule for evaluating the percentage of free space in AREA RAA BASE.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.10

Rule description

Percent of free space in AREA RAA BASE

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_AVAIL_IN_RAA

Rule condition expression

\[
\text{OR(}
\text{IF(DB\_PCT\_BYTES\_FS\_RAA,LT,}
\&1
\text{)}
\text{)}
\]

Rule condition description

Specify a threshold on the percentage of free space in the RAA BASE section of a DEDB area.

DB\_PCT\_BYTES\_FS\_RAA: \&1

An exception is issued if the percentage falls below the threshold.
Rule exception expression

- EXCEPTION_CLASS(DEDB_FREE_SPACE_AVAIL_IN_RAA)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of free space in RAA BASE fell below a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_PCT_BYTES_FS_RAA &1

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 10</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.20

IBM.DEDB_DEDB_FS.20 is a simple rule for evaluating the percentage of free space in AREA DOVF.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.20

Rule description

Percent of free space in AREA DOVF

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_AVAIL_IN_DOVF

Rule condition expression

\[
\text{OR(}
\quad \text{IF(DB\_PCT\_BYTES\_FS\_DOVF,LT, \&1)}
\quad \text{)}
\]

Rule condition description

Specify a threshold on the percentage of free space in the DOVF section of a DEDB area.

DB\_PCT\_BYTES\_FS\_DOVF: \&1

An exception is issued if the percentage falls below the threshold.
Rule exception expression

- EXCEPTION_CLASS(DEDB_FREE_SPACE_AVAIL_IN_DOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of free space in DOVF fell below a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_PCT_BYTES_FS_DOVF &1

Rule threshold sets

Table 57. Rule threshold sets for IBM.DEDB_DEDB_FS.20

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.30

IBM.DEDB_FS.30 is a simple rule for evaluating the percentage of free space in AREA IOVF.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.30

Rule description

Percent of free space in AREA IOVF

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_AVAIL_IN_IOVF

Rule condition expression

\[
\text{OR(}
  \text{IF(DB\_PCT\_BYTES\_FS\_IOVF,LT,}
  \&1
  
  )}
\]

Rule condition description

Specify a threshold on the percentage of free space in the IOVF section of a DEDB area.

\text{DB\_PCT\_BYTES\_FS\_IOVF: \&1}

An exception is issued if the percentage falls below the threshold.
**Rule exception expression**

- EXCEPTION_CLASS(DEDB_FREE_SPACE_AVAIL_IN_IOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The percentage of free space in IOVF fell below a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_PCT_BYTES_FS_IOVF &1

**Rule threshold sets**

*Table 58. Rule threshold sets for IBM.DEDB_DEDB_FS.30*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 80</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 30</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.31

IBM.DEDB_FS.31 is a simple rule for evaluating the percentage of free space in the independent overflow (IOVF) portion of a DEDB area.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_FS.31

**Rule description**

Percentage of free space in the IOVF portion of a DEDB area. This rule can also trigger an action (such as an IOVF extension of the subject area).

**Important:** This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

DEDB

**Exception class**

DEDB_IOVF_NEEDS_TO_BE_EXTENDED

**Rule condition expression**

```
OR(
  IF(DB_PCT_BYTES_FS_IOVF,LT,&1)
)
```
Rule condition description

Specify a threshold on the percentage of free space in the IOVF portion of a DEDB area.

\[ \text{DB\_PCT\_BYTES\_FS\_IOVF} : \&1 \]

An exception is issued if the percentage falls below the threshold.

Important: If you want to trigger a utility action to extend the IOVF section of the subject area, use this rule instead of IBM.DEDB_FS.30.

Rule exception expression

- EXCEPTION_CLASS(DEDB_IOVF_NEEDS_TO_BE_EXTENDED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of free space in the IOVF section fell below a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

\[ \text{DB\_PCT\_BYTES\_FS\_IOVF} : \&1 \]

Rule threshold sets

Table 59. Rule threshold sets for IBM.DEDB_RFS.31

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 90</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 60</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.40

IBM.DEDB_FS.40 is a simple rule for calculating the amount of free spaces in AREA RAA BASE and DOVF.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.40

Rule description

Free spaces in AREA RAA BASE and DOVF

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_IN_RAA_VS_DOVF

Rule condition expression

\[
\text{AND}\left(\begin{array}{l}
\text{IF}(DB\_\text{PCT}\_\text{BYTES}\_\text{FS}\_\text{RAA}, \text{GT}, \\
& 1)
\\text{IF}(DB\_\text{PCT}\_\text{BYTES}\_\text{FS}\_\text{DOVF}, \text{LT}, \\
& 2)
\end{array}\right)
\]

Rule condition description

Specify thresholds on the percentage of free spaces in the RAA BASE section (DB_PCT_BYTES_FS_RAA) and in the DOVF section (DB_PCT_BYTES_FS_DOVF) of a DEDB area.
An exception is issued if the first threshold is exceeded and the second threshold has fallen below the defined percentage.

**Rule exception expression**

- EXCEPTION_CLASS(DED_DB_FREE_SPACE_IN_RAA_VS_DOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

Free spaces in RAA BASE and DOVF are used inefficiently in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_PCT_BYTES_FS_RAA  &1
DB_PCT_BYTES_FS_DOVF  &2

**Rule threshold sets**

*Table 60. Rule threshold sets for IBM.DEDB_DEDB_FS.40*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20, &amp;2 = 50</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 20, &amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20, &amp;2 = 20</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.50

IBM.DEDB_DEDB_FS.50 is a simple rule for calculating free spaces in AREA RAA and IOVF.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.50

Rule description

Free spaces in AREA RAA and IOVF

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_IN_RAA_VS_IOVF

Rule condition expression

AND(
  IF(DB_PCT_BYTES_FS_RAA,GT,&1
    )
  IF(DB_PCT_BYTES_FS_IOVF,LT,&2
    )
  )

Rule condition description

Specify thresholds on the percentage of free spaces in the RAA BASE section (DB_PCT_BYTES_FS_RAA) and in the IOVF section (DB_PCT_BYTES_FS_IOVF) of a DEDB area.
DB_PCT_BYTES_FS_RAA : &1
DB_PCT_BYTES_FS_IOVF: &2

An exception is issued if the first threshold is exceeded and the second threshold has fallen below the defined percentage.

**Rule exception expression**
- EXCEPTION_CLASS(DEDB_FREE_SPACE_IN_RAA_VS_IOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

Free spaces in RAA BASE and IOVF are used inefficiently in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_PCT_BYTES_FS_RAA &1
DB_PCT_BYTES_FS_IOVF &2

**Rule threshold sets**

*Table 61. Rule threshold sets for IBM.DEDB_DEDB_FS.50*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20, &amp;2 = 80</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 20, &amp;2 = 50</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20, &amp;2 = 30</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.60

IBM.DEDB_FS.60 is a simple rule for calculating free spaces in DOVF and IOVF of an AREA.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_DEDB_FS.60

**Rule description**

Free spaces in DOVF and IOVF of an AREA

**Resource types supported**

DEDB

**Exception class**

DEDB_FREE_SPACE_AVAIL_IN_OVFLOW

**Rule condition expression**

\[
\text{AND(}
\quad \text{IF(DPCT.BYTES_FS.DOVF,GT,}
\quad \quad \&1
\quad \text{)}
\quad \text{IF(DPCT.BYTES_FS.IOVF,LT,}
\quad \quad \&2
\quad \text{)}
\text{)}
\]

**Rule condition description**

Specify thresholds on the percentage of free spaces in the DOVF section (DB_PCT_BYTES_FS_DOVF) and in the IOVF section (DB_PCT_BYTES_FS_IOVF) of a DEDB area.
An exception is issued if the first threshold is exceeded and the second threshold has fallen below the defined percentage.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_FREE_SPACE_AVAIL_IN_OVFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

Free spaces in DOVF and IOVF are used inefficiently in area %RESOURCE%.

**Data elements being evaluated for this rule**

\[\text{DB\textunderscore PCT\textunderscore BYTES\textunderscore FS\textunderscore DOVF: } &1\]

\[\text{DB\textunderscore PCT\textunderscore BYTES\textunderscore FS\textunderscore IOVF: } 2\]

**Rule threshold sets**

*Table 62. Rule threshold sets for IBM.DEDEB\_DEDB\_FS.60*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 30, &amp;2 = 50</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30, &amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 30, &amp;2 = 20</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.70

IBM.DEDB_DEDB_FS.70 is a simple rule for calculating free spaces in RAA, DOVF, and IOVF.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_DEDB_FS.70

**Rule description**

Free spaces in RAA, DOVF, and IOVF

**Resource types supported**

DEDB

**Exception class**

DEDB_FREE_SPACE_IN_RAA-vs-OVFLOW

**Rule condition expression**

\[
\text{AND} ( \\
\quad \text{IF(DB\_PCT\_BYTES\_FS\_RAA,GT,} \\
\quad \quad \&1 \\
\quad ) \\
\quad \text{OR} ( \\
\quad \quad \text{IF(DB\_PCT\_BYTES\_FS\_DOVF,LT,} \\
\quad \quad \quad \&2 \\
\quad \quad ) \\
\quad \quad \text{IF(DB\_PCT\_BYTES\_FS\_IOVF,LT,} \\
\quad \quad \quad \quad \&3 \\
\quad \quad ) \\
\quad ) \\
\]

**Rule condition description**

Specify thresholds on the percentage of free spaces in the RAA BASE section (DB_PCT_BYTES_FS_RAA), in the DOVF section (DB_PCT_BYTES_FS_DOVF), and in the IOVF section (DB_PCT_BYTES_FS_IOVF) of a DEDB area.

\[
\begin{align*}
DB\_PCT\_BYTES\_FS\_RAA & : & \&1 \\
DB\_PCT\_BYTES\_FS\_DOVF & : & \&2 \\
DB\_PCT\_BYTES\_FS\_IOVF & : & \&3
\end{align*}
\]

An exception is issued if the first threshold is exceeded and either the second or third threshold has fallen below the defined percentage.

**Rule exception expression**

- EXCEPTION_CLASS(DEDDB_FREE_SPACE_IN_RAA_VS_OVFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

Free spaces in RAA, DOVF, and IOVF are used inefficiently in area %RESOURCE%.

**Data elements being evaluated for this rule**

\[
\begin{align*}
DB\_PCT\_BYTES\_FS\_RAA & : & \&1 \\
DB\_PCT\_BYTES\_FS\_DOVF & : & \&2 \\
DB\_PCT\_BYTES\_FS\_IOVF & : & \&3
\end{align*}
\]

**Rule threshold sets**

*Table 63. Rule threshold sets for IBM.DEDB_DEDB_FS.70*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20, &amp;2 = 30, &amp;3 = 80</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 20, &amp;2 = 20, &amp;3 = 80</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20, &amp;2 = 10, &amp;3 = 50</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.80

IBM.DEDB_DEDB_FS.80 is a simple rule for calculating the percentage of free space in SDEP part.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_DEDB_FS.80

Rule description

Percent of free space in SDEP part

Resource types supported

DEDB

Exception class

DEDB_FREE_SPACE_AVAIL_IN_SDEP

Rule condition expression

OR(
  IF(DB_PCT_BYTES_FS_SDEP,LT,
    &1
  )
)

Rule condition description

Specify a threshold on the percentage of free space in the sequential dependent segment (SDEP) part of a DEDB area.

DB_PCT_BYTES_FS_SDEP: &1

An exception is issued if the percentage falls below the threshold.
If the SDEP is not defined for the database, this rule is ignored.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_FREE_SPACE_AVAIL_IN_SDEP)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The percentage of free space in the SDEP fell below a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_PCT_BYTES_FS_SDEP &1

**Rule threshold sets**

*Table 64. Rule threshold sets for IBM.DEDB_DEDB_FS.80*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_FS.81

IBM.DEDB_FS.81 is a simple rule for evaluating the percentage of free space in the sequential dependent (SDEP) portion of a DEDB area.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_FS.81

**Rule description**

Percentage of free space in the sequential dependent (SDEP) portion of a DEDB area. This rule can also trigger an action (such as an SDEP extension of the subject area).

**Important:** This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

DEDB

**Exception class**

DEDB_SDEP_NEEDS_TO_BE_EXTENDED

**Rule condition expression**

```plaintext
OR( IF(DB_PCT_BYTES_FS_SDEP,LT,&1 ) )
```
Rule condition description

Specify a threshold on the percentage of free space in the sequential dependent segment (SDEP) portion of a DEDB area.

\[ \text{DB_PCT_BYTES_FS_SDEP: \&1} \]

An exception is issued if the percentage falls below the threshold.

**Important:** If you want to trigger a utility action to extend the SDEP section of the subject area, use this rule instead of IBM.DEDB_FS.80.

Rule exception expression

- EXCEPTION_CLASS(DEDB_SDEP_NEEDS_TO_BE_EXTENDED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of free space in the SDEP section fell below a threshold in area \%RESOURCE\%.

Data elements being evaluated for this rule

\[ \text{DB_PCT_BYTES_FS_SDEP \&1} \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.10

IBM.DEDB_OVERFLOW.10 is a simple rule for calculating the percentage of UOWs that are using DOVF CIs.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_OVERFLOW.10

**Rule description**

Percent of UOWs that are using DOVF CIs

**Resource types supported**

DEDB

**Exception class**

DEDB_EXCESS_PCT_UOWS_USING DOVF

**Rule condition expression**

\[
\text{OR} (\text{IF(DB\_PCT\_NUM\_UOW\_USE\_DOVF, GT, }\&1) )
\]

**Rule condition description**

Specify a threshold on the percentage of the number of UOWs that are using CIs in the DOVF section of a DEDB area.

DB\_PCT\_NUM\_UOW\_USE\_DOVF: &1

An exception is issued if the threshold is exceeded.
Rule exception expression

- EXCEPTION_CLASS(DEDB_EXCESS_PCT_UOWS USING DOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of UOWs that are using DOVF exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_PCT_NUM_UOW_USE_DOVF &1

Rule threshold sets

Table 66. Rule threshold sets for IBM.DEDB_OVERFLOW.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.20

IBM.DEDB_OVERFLOW.20 is a simple rule for calculating the percentage of UOWs that are using IOVF CIs.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.20

Rule description

Percent of UOWs that are using IOVF CIs

Resource types supported

DEDB

Exception class

DEDB_EXCESS_PCT_UOWS_USING_IOVF

Rule condition expression

OR(
    IF(DB_PCT_NUM_UOW_USE_IOVF,GT,&1,
    )
)

Rule condition description

Specify a threshold on the percentage of the number of UOWs that are using CIs in the IOVF section of a DEDB area.

DB_PCT_NUM_UOW_USE_IOVF: &1

An exception is issued if the threshold is exceeded.
**Rule exception expression**

- `EXCEPTION_CLASS(DEDB_EXCESS_PCT_UOWS_USING_IOVF)`
- `EXCEPTION_LEVEL(WARNING)`
- `EXCEPTION_MESSAGE`

**Rule message template**

The percentage of UOWs that are using IOVF exceeded a threshold in area `%RESOURCE%`.

**Data elements being evaluated for this rule**

`DB_PCT_NUM_UOW_USE_IOVF &1`

**Rule threshold sets**

*Table 67. Rule threshold sets for IBM.DEDB_OVERFLOW.20*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 30</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.30

IBM.DEDB_OVERFLOW.30 is a simple rule for calculating the number of UOWs using IOVF CIs.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.30

Rule description

Number of UOWs using IOVF CIs

Resource types supported

DEDB

Exception class

DEDB_EXCESS_NUM_UOWS_USING_IOVF

Rule condition expression

OR(
    IF(DB_NUM_UOW_USE_IOVF,GT,
        &1
    )
)

Rule condition description

Specify a threshold on the number of UOWs that are using at least one CI in the IOVF section of a DEDB area.

DB_NUM_UOW_USE_IOVF: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_EXCESS_NUM_UOWS_USING_IOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of UOWs using IOVF CIs exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_NUM_UOW_USE_IOVF \&1

**Rule threshold sets**

*Table 68. Rule threshold sets for IBM.DEDB_OVERFLOW.30*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 32766</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.40

IBM.DEDB_OVERFLOW.40 is a simple rule for calculating the average use of IOVF CIs per UOW.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.40

Rule description

Average use of IOVF CIs per UOW

Resource types supported

DEDB

Exception class

DEDB_EXCESS_AVG_IOVF_CI_PER_UOW

Rule condition expression

OR(
  IF(DB_AVG_NUM_IOVF_CI_BY_UOW,GT,&1
  )
)

Rule condition description

Specify a threshold on the average number of IOVF CIs used by a UOW in a DEDB area.

DB_AVG_NUM_IOVF_CI_BY_UOW: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**
- `EXCEPTION_CLASS(DEDB_EXCESS_AVG_IOVF_CI_PER_UOW)`
- `EXCEPTION_LEVEL(WARNING)`
- `EXCEPTION_MESSAGE`

**Rule message template**
The average use of IOVF CIs per UOW exceeded a threshold in area `%RESOURCE%`.

**Data elements being evaluated for this rule**
- `DB_AVG_NUM_IOVFCI_BY_UOW` &1

**Rule threshold sets**

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 8388608</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 8388608</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 8388608</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.50

IBM.DEDB_OVERFLOW.50 is a simple rule for calculating the maximum use of IOVF CIs by a UOW.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.50

Rule description

Maximum use of IOVF CIs by a UOW

Resource types supported

DEDB

Exception class

DEDB_UOW_USING_EXCESSIVE_IOVF_CI

Rule condition expression

OR(
    IF(DB_MAX_NUM_IOVFCI_BY_UOW, GT, &1
)
)

Rule condition description

Specify a threshold on the maximum number of IOVF CIs used by a UOW in a DEDB area.

DB_MAX_NUM_IOVFCI_BY_UOW: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**
- EXCEPTION_CLASS(DEDB_UOW_USING_EXCESSIVE_IOVF_CI)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The maximum use of IOVF CIs by a UOW exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_MAX_NUM_IOVF_CI_BY_UOW &1

**Rule threshold sets**

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW &amp;1</td>
<td>8388608</td>
</tr>
<tr>
<td>MED &amp;1</td>
<td>8388608</td>
</tr>
<tr>
<td>HIGH &amp;1</td>
<td>8388608</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.60

IBM.DEDB_OVERFLOW.60 is a simple rule for calculating the minimum use of IOVF CIs by a UOW.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.60

Rule description

Minimum use of IOVF CIs by a UOW

Resource types supported

DEDB

Exception class

DEDB_EXCESS_MIN_IOVF_CI_PER_UOW

Rule condition expression

OR(
  IF(DB_MIN_NUM_IOVF_CI_BY_UOW,GT,&1,
    
    )
  )

Rule condition description

Specify a threshold on the minimum number of IOVF CIs used by a UOW in a DEDB area.

DB_MIN_NUM_IOVF_CI_BY_UOW: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_EXCESS_MIN_IOVF_CI_PER_UOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The minimum use of IOVF CIs by a UOW exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_MIN_NUM_IOVF_CI_BY_UOW &I

**Rule threshold sets**

*Table 71. Rule threshold sets for IBM.DEDB_OVERFLOW.60*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;I = 1.0</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;I = 2.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;I = 3.0</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.70

IBM.DEDB_OVERFLOW.70 is a simple rule for calculating the percentage of IOVF CIs used.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.70

Rule description

Percent of IOVF CIs used

Resource types supported

DEDB

Exception class

DEDB_EXCESSIVE_IOVF_CI_USED

Rule condition expression

OR(
  IF(DB_PCT_NUM_IOVFCI_USED,GT,&1,
  )
)

Rule condition description

Specify a threshold on the percentage of the number of CIs used in the IOVF of a DEDB area.

DB_PCT_NUM_IOVFCI_USED: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_EXCESSIVE_IOVF_CI_USED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The maximum use of IOVF CIs by a UOW exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_PCT_NUM_IOVFCI_USED &1

**Rule threshold sets**

*Table 72. Rule threshold sets for IBM.DEDB_OVERFLOW.70*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 60</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 70</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.80

IBM.DEDB_OVERFLOW.80 is a simple rule for calculating the percentage of RAP CIs using overflow.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.80

Rule description

Percent of RAP CIs using overflow

Resource types supported

DEDB

Exception class

DEDB_EXCESS_RAP_CI_USING_OVFLOW

Rule condition expression

OR(
  IF(DB_PCT_NUM_RAPCI_OVFL,GT,
    &1
  )
)

Rule condition description

Specify a threshold on the percentage of the number of RAP CIs that are using CIs in the DOVF section or the IOVF section of a DEDB area.

DB_PCT_NUM_RAPCI_OVFL: &1

An exception is issued if the threshold is exceeded.
Rule exception expression
- EXCEPTION_CLASS(DEDB_EXCESS_RAP_CI_USING_OVFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template
The percentage of RAP CIs using overflow exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule
DB_PCT_NUM_RAPCI_OVFL &1

Rule threshold sets
Table 73. Rule threshold sets for IBM.DEDB_OVERFLOW.80

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_OVERFLOW.90

IBM.DEDB_OVERFLOW.90 is a simple rule for calculating the percentage of database records using IOVF.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_OVERFLOW.90

Rule description

Percent of database records using IOVF

Resource types supported

DEDB

Exception class

DEDB_EXCESSIVE_DBREC_USING_IOVF

Rule condition expression

OR(
    IF(DB_PCT_NUM_DBREC_IOVF,GT,
        &1
    )
)

Rule condition description

Specify a threshold on the percentage of database records that are using CIs in the IOVF section of a DEDB area.

DB_PCT_NUM_DBREC_IOVF: &1

An exception is issued if the threshold is exceeded.
Rule exception expression

- EXCEPTION_CLASS(DEDB_EXCESSIVE_DBREC_USING_IOVF)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of DB records using IOVF exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_PCT_NUM_DBREC_IOVF &1

Rule threshold sets

Table 74. Rule threshold sets for IBM.DEDB_OVERFLOW.90

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 15</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20</td>
</tr>
</tbody>
</table>
**Rule: IBM.DEDB_RFS.10**

IBM.DEDB_RFS.10 is a simple rule for evaluating the number of UOWs that match the RFS condition.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_RFS.10

**Rule description**

Number of UOWs that match the RFS condition.

**Important:** This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

DEDB

**Exception class**

DEDB_EXCESSIVE_UOWS_MATCH_COND

**Rule condition expressions**

```
OR(
    IF(DB_NUM_UOW_RFS_COND,GT,
        &1
    )
)
```
Rule condition description

Specify a threshold on the number of UOWs that match the RBASEFS or the RDOVFFS condition.

DB_NUM_UOW_RFS_COND: &1

An exception is issued if the threshold is exceeded.

Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

Requirement: If you want to trigger a utility action to reorganize the subject area, use IBM.DEDB_RFS.11 instead of this rule.

Rule exception expression

- EXCEPTION_CLASS(DEDB_EXCESSIVE_UOWS_MATCH_COND)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of UOWs that match the RBASEFS or the RDOVFFS condition exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_NUM_UOW_RFS_COND &1

Rule threshold sets

Table 75. Rule threshold sets for IBM.DEDB_RFS.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 32766</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_RFS.11

IBM.DEDB_RFS.11 is a simple rule for evaluating the number of UOWs that match the RFS condition.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_RFS.11

**Rule description**

Number of UOWs that match the RFS condition. This rule can also trigger an action (such as a reorganization).

**Important:** This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

DEDB

**Exception class**

DEDB_NEEDS_TO_BE_REORGANIZED

**Rule condition expression**

```sql
OR(
  IF(DB_NUM_UOW_RFS_COND,GT,
    1
  )
)```
**Rule condition description**

Specify a threshold on the number of UOWs that match the RBASEFS or the RDOVFFS condition.

DB_NUM_UOW_RFS_COND: &1

An exception is issued if the threshold is exceeded.

Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Requirement:** If you want to trigger a utility action to reorganize the subject area, use this rule instead of IBM.DEDB_RFS.10.

**Rule exception expressions**

- EXCEPTION_CLASS(DEDB_NEEDS_TO_BE_REORGANIZED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of UOWs that match the RBASEFS or the RDOVFFS condition exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_NUM_UOW_RFS_COND &1

**Rule threshold sets**

*Table 76. Rule threshold sets for IBM.DEDB_RFS.11*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 32766</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 32766</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_RFS.20

IBM.DEDB_RFS.20 is a simple rule for evaluating the percentage of UOWs that match the RFS condition.

Rule template version

The rule template version is indicated by a 4-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_RFS.20

Rule description

Percentage of UOWs that match the RFS condition.

Important: This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:
• Replace a similar rule in an existing REORG Domain policy
• Add this rule to one of the existing REORG Domain policies
• Create a REORG Domain policy and add this rule along with other rules

Resource types supported

DEDB

Exception class

DEDB_EXCESS_PCT_UOWS_MATCH_COND

Rule condition expression

\[ \text{OR} \left( \text{IF} \left( \text{DB\_PCT\_NUM\_UOW\_RFS\_COND}, \gt, \&1 \right) \right) \]
**Rule condition description**

Specify a threshold on the percentage of UOWs that match the RBASEFS or the RDOVFFS condition.

`DB_PCT_NUM_UOW_RFS_COND: &1`

An exception is issued if the threshold is exceeded.

**Important:** If you want to trigger a utility action to reorganize the subject area, use IBM.DEDB_RFS.21 instead of this rule.

**Rule exception expression**

- `EXCEPTION_CLASS(DEDB_EXCESS_PCT_UOWS_MATCH_COND)`
- `EXCEPTION_LEVEL(WARNING)`
- `EXCEPTION_MESSAGE`

**Rule message template**

The percentage of UOWs that match the RBASEFS or the RDOVFFS condition exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

`DB_PCT_NUM_UOW_RFS_COND: &1`

**Rule threshold sets**

*Table 77. Rule threshold sets for IBM.DEDB_RFS.20*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 1</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 10</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_RFS.21

IBM.DEDB_RFS.21 is a simple rule for evaluating the percentage of UOWs that match the RFS condition.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_RFS.21

**Rule description**

Percent of UOWs that match the RFS condition. This rule can also trigger an action (such as a reorganization).

**Important:** This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:
- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

DEDB

**Exception class**

DEDB_NEEDS_TO_BE_REORGANIZED

**Rule condition expression**

```plaintext
OR(  IF(DB_PCT_NUM_UOW_RFS_COND, GT, &1
) )
```
Rule condition description

Specify a threshold on the number of UOWs that match the RBASEFS condition or the RDOVFFS condition.

DB_PCT_NUM_UOW_RFS_COND: &1

An exception is issued if the threshold is exceeded.

Requirement: If you want to trigger a utility action to reorganize the subject area, use this rule instead of IBM.DEDB_RFS.20.

Rule exception expression

- EXCEPTION_CLASS(DEDB_NEEDS_TO_BE_REORGANIZED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of UOWs that match the RBASEFS or the RDOVFFS condition exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_PCT_NUM_UOW_RFS_COND &1

Rule threshold sets

Table 78. Rule threshold sets for IBM.DEDB_RFS.21

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 1</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 10</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_ROOT_IO.10

IBM.DEDB_ROOT_IO.10 is a simple rule for calculating the average number of I/Os per root segment.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_ROOT_IO.10

**Rule description**

Average number of I/Os per root segment

**Resource types supported**

DEDB

**Exception class**

DEDB_EXCESSIVE_AVG_NUM_ROOT_IO

**Rule condition expression**

\[
\text{OR(}
\begin{align*}
&\text{IF(DB\textunderscore AVG\textunderscore ROOT\textunderscore IO, GT,} \\
&\quad &\&1 \\
&\quad ) \\
&\end{align*}
\) \]

**Rule condition description**

Specify a threshold on the average number of I/Os that are required to read a root segment in a DEDB area.

\text{DB\textunderscore AVG\textunderscore ROOT\textunderscore IO}: \&1

An exception is issued if the threshold is exceeded.
Rule exception expression

- EXCEPTION_CLASS(DEDB_EXCESSIVE_AVG_NUM_ROOT_IO)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The average number of I/Os per root segment exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_AVG_ROOT_IO &1

Rule threshold sets

Table 79. Rule threshold sets for IBM.DEBD_ROOT_IO.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 1.3</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 1.4</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 1.5</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_ROOT_IO.20

IBM.DEDB_ROOT_IO.20 is a simple rule for calculating the maximum number of I/Os per root segment.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_ROOT_IO.20

**Rule description**

Maximum number of I/Os per root segment

**Resource types supported**

DEDB

**Exception class**

DEDB_ROOT_SEGMENT_WITH_EXCESS_IO

**Rule condition expression**

```
OR(
    IF(DB_MAX_ROOT_IO,GT,&1
)
)
```

**Rule condition description**

Specify a threshold on the maximum number of I/Os that are required to read a root segment in a DEDB area.

DB_MAX_ROOT_IO: &1

An exception is issued if the threshold is exceeded.
Rule exception expression

- EXCEPTION_CLASS(DEDB_ROOT_SEGMENT_WITH_EXCESS_IO)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The maximum number of I/Os per root segment exceeded a threshold in area %RESOURCE%.

Data elements being evaluated for this rule

DB_MAX_ROOT_IO &1

Rule threshold sets

Table 80. Rule threshold sets for IBM.DEDB_ROOT_IO.20

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4.0</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 5.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 6.0</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_SEGM_CNT.10

IBM.DEDB_SEGM_CNT.10 is a simple rule for evaluating the number of segment occurrences.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.DEDB_SEGM_CNT.10

**Rule description**

Number of segment occurrences

**Resource types supported**

DEDB

**Exception class**

EXCESSIVE_SEGMENT_OCCURRENCES

**Rule condition expression**

\[
\text{OR}
\left[
\begin{array}{l}
\text{IF(DB\_NUM\_SEG, GE, \\
\ & \& 1}
\end{array}
\right]
\]

**Rule condition description**

Specify a threshold on the number of segment occurrences in a DEDB area.

DB\_NUM\_SEG: \&1

An exception is issued if the threshold is reached or exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**

- EXCEPTION_CLASS(EXCESSIVE_SEGMENT_OCCURRENCES)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of segment occurrences exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_NUM_SEG &1

**Rule threshold sets**

*Table 81. Rule threshold sets for IBM.DEDB_SEGM_CNT.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_SYN_LEN.10

IBM.DEDB_SYN_LEN.10 is a simple rule for calculating the average length of RAP synonym chains.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_SYN_LEN.10

Rule description

Average length of RAP synonym chains

Resource types supported

DEDB

Exception class

DEDB_EXCESSIVE_AVG_LEN_SYNONYMS

Rule condition expression

OR(
  IF(DB_AVG_LEN_SYNONYM_CHAIN,GT,
     &1
     )
)

Rule condition description

Specify a threshold on the average length of RAP synonym chains in a DEDB area. DB_AVG_LEN_SYNONYM_CHAIN: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**
- EXCEPTION_CLASS(DEDB_EXCESSIVE_AVG_LEN_SYNONYMS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The average length of RAP synonym chains exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_AVG_LEN_SYNONYM_CHAIN &1

**Rule threshold sets**

*Table 82. Rule threshold sets for IBM.DEDB_SYN_LEN.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 29496729</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 29496729</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 29496729</td>
</tr>
</tbody>
</table>
Rule: IBM.DEDB_SYN_LEN.20

IBM.DEDB_SYN_LEN.20 is a simple rule for evaluating the maximum length of RAP synonym chains.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.DEDB_SYN_LEN.20

Rule description

Maximum length of RAP synonym chains

Resource types supported

DEDB

Exception class

DEDB_LONG_SYNONYM_CHAIN

Rule condition expression

OR(
  IF(DB_MAX_LEN_SYNONYM_CHAIN,GT,
    &1
  )
)

Rule condition description

Specify a threshold on the maximum length of RAP synonym chains in a DEDB area.

DB_MAX_LEN_SYNONYM_CHAIN: &1

An exception is issued if the threshold is exceeded.
Because the default threshold value is a dummy high value, the threshold is never exceeded. You must modify the threshold value to a non-dummy value to effectively enable this rule.

**Rule exception expression**

- EXCEPTION_CLASS(DEDB_LONG_SYNONYM_CHAIN)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The maximum length of RAP synonym chains exceeded a threshold in area %RESOURCE%.

**Data elements being evaluated for this rule**

DB_MAX_LEN_SYNONYM_CHAIN &1

**Rule threshold sets**

*Table 83. Rule threshold sets for IBM.DEDB_SYN_LEN.20*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 29496729</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 29496729</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 29496729</td>
</tr>
</tbody>
</table>
Rule: IBM.FFDB_FRAGDFSE.10

IBM.FFDB_FRAGDFSE.10 is a rule for evaluating the percentage of fragmented free space elements in a full-function database.

Rule template version

The rule template version is indicated by a 4-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.FFDB_FRAGDFSE.10

Rule description

Percentage of fragmented free space elements in a full-function database.

Resource types supported

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

FRAGMENTED_FREE_SPACE_ELEMENTS

Rule condition expression

OR(
   AOR(
      IF(DB_PCT_NUM_FRAGD_FSE,GT,&1
   )
   )
)
Rule condition description

Specify a threshold on the percentage of fragmented free space elements in a data set.

\[ \text{DB\_PCT\_NUM\_FRAGD\_FSE: } &1 \]

A fragmented free space element is an element that cannot hold the largest segment in the data set.

An exception is issued if the threshold is exceeded in one of the data sets of the database or partition.

Rule exception expression

- EXCEPTION_CLASS(FRAGMENTED_FREE_SPACE_ELEMENTS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of fragmented free space elements in a data set of %RESOURCE% exceeded a threshold.

Data elements being evaluated for this rule

\[ \text{DB\_PCT\_NUM\_FRAGD\_FSE: } &1 \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.FFDB_NREUSFSE.10

IBM.FFDB_NREUSFSE.10 is a rule for evaluating the percentage of non-reusable free space elements in a full-function database.

Rule template version

The rule template version is indicated by a 4-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.FFDB_NREUSFSE.10

Rule description

Percentage of non-reusable free space elements in a full-function database.

Resource types supported

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

NONREUSABLE_FREE_SPACE_ELEMENTS

Rule condition expression

\[
\text{OR(}
  \text{AOR(}
    \text{IF(DB_PCT_NUM_NOREUSE_FSE,GT,}
      81
    )}
  \text{)}
\text{)}
\]
Rule condition description

Specify a threshold on the average percentage, per block or CI (VSAM control interval), of free space elements whose lengths are shorter than that of the smallest segment in a data set.

DB_PCT_NUM_NOREUSE_FSE: &1

An exception is issued if the threshold is exceeded in one of the data sets of the database or partition.

Rule exception expression

- EXCEPTION_CLASS(NONREUSABLE_FREE_SPACE_ELEMENTS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The percentage of non-reusable free space elements in one of the data sets of %RESOURCE% has increased.

Data elements being evaluated for this rule

DB_PCT_NUM_NOREUSE_FSE &1

Rule threshold sets

Table 85. Rule threshold sets for IBM.FFDB_NREUSFSE.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.FRAGMENTATION.10

IBM.FRAGMENTATION.10 is a simple rule for evaluating the statistics of Free Space Elements (FSE) in HD database data sets.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.FRAGMENTATION.10

**Rule description**

Fragmented free space in HD DB data sets

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

**Exception class**

FRAGMENTED_FREE_SPACES

**Rule condition expression**

\[
\text{OR} \left( \text{AOR} \left( \begin{array}{l}
\text{IF(DB\_AVG\_NUM\_FSE,GE,} & \text{&1}\n\text{)} \text{IF(DB\_AVG\_NUM\_NOREUSE\_FSE,GE,} & \text{&2}\n\text{)} \text{IF(DB\_NUM\_FSE,GE,} & \text{&3}\n\end{array} \right) \right)
\]
Rule condition description

Specify various thresholds on free space elements (FSEs).

The following thresholds can be used in this rule:

1. Average number of FSEs per database data set block:
   \( DB_{\text{AVG\_NUM\_FSE}} \): \&1
2. Average number of non-reusable FSEs per database data set block:
   \( DB_{\text{AVG\_NUM\_NOREUSE\_FSE}} \): \&2
3. Total number of FSEs in a database data set:
   \( DB_{\text{NUM\_FSE}} \): \&3
4. Total number of FSEs that can hold the defined smallest segment in the data set:
   \( DB_{\text{NUM\_FSE\_MIN}} \): \&4
5. Total number of FSEs that can hold the defined largest segment in the data set:
   \( DB_{\text{NUM\_FSE\_MAX}} \): \&5

An exception is issued if one or more of these thresholds are reached or exceeded in one of the database data sets.

You can apply this rule to a non-partitioned HD database or a PHDAM/PHIDAM partition.

Rule exception expression

- EXCEPTION_CLASS(FRAGMENTED_FREE_SPACES)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The fragmentation of free space in %RESOURCE% has increased

Data elements being evaluated for this rule

\begin{align*}
DB_{\text{AVG\_NUM\_FSE}} & \quad \&1 \\
DB_{\text{AVG\_NUM\_NOREUSE\_FSE}} & \quad \&2 \\
DB_{\text{NUM\_FSE}} & \quad \&3 \\
DB_{\text{NUM\_FSE\_MIN}} & \quad \&4 \\
DB_{\text{NUM\_FSE\_MAX}} & \quad \&5
\end{align*}

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable \&1 specifies a threshold for the data element value of \( DB_{\text{AVG\_NUM\_FSE}} \) for the data set.
- The variable \&2 specifies a threshold for the data element value of \( DB_{\text{AVG\_NUM\_NOREUSE\_FSE}} \) for the data set.
• The variable &3 specifies a threshold for the data element value of DB_NUM_FSE for the data set.
• The variable &4 specifies a threshold for the data element value of DB_NUM_FSE_MIN for the data set.
• The variable &5 specifies a threshold for the data element value of DB_NUM_FSE_MAX for the data set.

Rule threshold sets

Table 86. Rule threshold sets for IBM.FRAGMENTATION.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 5</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;5 = 2147483648</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 10</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 10</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;5 = 2147483648</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;5 = 2147483648</td>
</tr>
</tbody>
</table>

The default threshold values for the variables &3, &4, and &5 are never reached nor exceeded.

It is expected that each of these threshold values be changed only if you want to monitor the data element value that correspond to the variable.
Rule: IBM.FREE_SPACES.10

IBM.FREE_SPACES.10 is a simple rule for evaluating the IMS free space availability

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.FREE_SPACES.10

**Rule description**

Availability of IMS free space.

*Important:* This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

**Exception class**

FREE_SPACE_AVAILABILITY
Rule condition expression

OR(
  AOR(
    IF(DB_BYTES_SEG,GE, &1
    )
    IF(DB_PCT_BYTES_SEG,GE, &2
    )
    IF(DB_BYTES_FREE_SPACE,LE, &3
    )
    IF(DB_PCT_BYTES_FREE_SPACE,LE, &4
    )
  )
)

Rule condition description

Specify thresholds on data volume and free space.

The following thresholds can be used in this rule:
1. Total number of bytes used by segment data:
   DB_BYTES_SEG: &1
2. Percentage of bytes used by segment data:
   DB_PCT_BYTES_SEG: &2
3. Total number of free space bytes:
   DB_BYTES_FREE_SPACE: &3
4. Percentage of total free space bytes:
   DB_PCT_BYTES_FREE_SPACE: &4

An exception is issued if either:
• Thresholds 1 or 2 are reached or exceeded.
• Thresholds 3 or 4 are reached or fallen below the defined value in one of the database data sets.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

• EXCEPTION_CLASS(FREE_SPACE_AVAILABILITY)
• EXCEPTION_LEVEL(WARNING)
• EXCEPTION_MESSAGE

Rule message template

IMS space utilization statistics of %RESOURCE% has reached or crossed a threshold

Data elements being evaluated for this rule

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_BYTES_SEG</td>
<td>&amp;1</td>
</tr>
<tr>
<td>DB_PCT_BYTES_SEG</td>
<td>&amp;2</td>
</tr>
<tr>
<td>DB_BYTES_FREE_SPACE</td>
<td>&amp;3</td>
</tr>
<tr>
<td>DB_PCT_BYTES_FREE_SPACE</td>
<td>&amp;4</td>
</tr>
</tbody>
</table>
The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of `DB_BYTES_SEG` for the data set.
- The variable &2 specifies a threshold for the data element value of `DB_PCT_BYTES_SEG` for the data set.
- The variable &3 specifies a threshold for the data element value of `DB_BYTES_FREE_SPACE` for the data set.
- The variable &4 specifies a threshold for the data element value of `DB_PCT_BYTES_FREE_SPACE` for the data set.

### Rule threshold sets

**Table 87. Rule threshold sets for IBM.FREE_SPACES.10**

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 70</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 30</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 80</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 90</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 0</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 10</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the total number of bytes of segment data in each data set of the database or the partition.
IBM.HDAM_OVERFLOW.10 is a simple rule for evaluating the percentage of overflow data in an HDAM or PHDAM database.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.HDAM_OVERFLOW.10

**Rule description**

Percent of segment data overflow

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- PHDAM

**Exception class**

EXCESSIVE_HDAM_OVERFLOW

**Rule condition expression**

\[
\text{OR(}
  \text{IF(DB\_PCT\_BYTES\_OVFL, GE, &1)}
\text{)}
\]

**Rule condition description**

Specify a threshold on the percentage of the total bytes of segment occurrences in the overflow area of an HDAM database or a PHDAM partition:

DB\_PCT\_BYTES\_OVFL: &1
An exception is issued if the threshold is reached or exceeded.

**Rule exception expression**
- EXCEPTION_CLASS(EXCESSIVE_HDAM_OVERFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**
Overflow data in %RESOURCE% has increased

**Data elements being evaluated for this rule**
DB_PCT_BYTES_OVFL &1

The variable &1 specifies a threshold for the data element value of DB_PCT_BYTES_OVFL for the HDAM database or the PHDAM partition.

**Rule threshold sets**

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 50</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 60</td>
</tr>
</tbody>
</table>
IBM.HDAM_SYN_LEN.10 is a rule for evaluating the average length of HDAM RAP synonym chains.

**Rule template version**

The rule template version is indicated by a 4-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.HDAM_SYN_LEN.10

**Rule description**

Average length of HDAM RAP synonym chains.

**Resource types supported**

- HDAM
- PHDAM

**Exception class**

HDAM_AVG_SYNONYM_CHAIN_LENGTH

**Rule condition expression**

\[
\text{OR(}
\text{IF(DB\_AVG\_LEN\_SYNONYM\_CHAIN,GT,}
&1
\text{)}
\text{)}
\]

**Rule condition description**

Specify a threshold on the average length of RAP synonym chains in an HDAM database or a PHDAM partition.

`DB\_AVG\_LEN\_SYNONYM\_CHAIN: &1`

An exception is issued if the threshold is exceeded.
Important: To activate this rule, you must specify SENSOR_HOME=YES for the DB Sensor.

Rule exception expression

- EXCEPTION_CLASS(HDAM_AVG_SYNONYM_CHAIN_LENGTH)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The average length of RAP synonym chains exceeded a threshold in %RESOURCE%.

Data elements being evaluated for this rule

DB_AVG_LEN_SYNONYM_CHAIN &1

Rule threshold sets

Table 89. Rule threshold sets for IBM.HDAM_SYN_LEN.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 3</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 5</td>
</tr>
</tbody>
</table>
Rule: IBM.HISAM_SEG_DEL.10

IBM.HISAM_SEG_DEL.10 is a simple rule for evaluating the percentage of deleted segments in a HISAM database.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.HISAM_SEG_DEL.10

Rule description

Percent deleted segments in a HISAM database.

Resource types supported

The following resource types are supported by this rule.

• HISAM

Exception class

EXCESSIVE_HISAM_DELETEstrtolower(SEGM

Rule condition expression

OR(
    IF(DB_PCT_NUM_DELSEG.1,GT,
        &1
    )
    IF(DB_PCT_NUM_DELSEG.2,GT,
        &2
    )
)

Rule condition description

Specify thresholds on the percentage of deleted segment occurrences (DB_PCT_NUM_DELSEG) for both the primary data set and the overflow data set of a HISAM database:
• For the primary data set:
  &1
• For the overflow data set:
  &2

An exception is issued if one of these thresholds is reached. If the overflow data set is not defined for the database, only the threshold for the primary data set is evaluated.

**Rule exception expression**

- EXCEPTION_CLASS(EXCESSIVE_HISAM_DELETE_SEGM)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

Many segments of the HISAM database %RESOURCE% are marked as deleted.

**Data elements being evaluated for this rule**

- DB_PCT_NUM_DELSEG &1
- DB_PCT_NUM_DELSEG &2

The variables &1 and &2 specify thresholds for the data element values of DB_PCT_NUM_DELSEG for the primary data set and the overflow data set, if it exists, of the HISAM database respectively.

**Rule threshold sets**

*Table 90. Rule threshold sets for IBM.HISAM_SEG_DEL.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 5</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 10</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 10</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_NUM_SEGM.10

IBM.IX_NUM_SEGM.10 is a simple rule for calculating the total number of index pointer segments.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_NUM_SEGM.10

Rule description

Total number of index pointer segments

Resource types supported

The following resource types are supported by this rule:

• INDEX
• PHIDAM
• PSINDEX

Exception class

NUMBER_OF_INDEX_POINTER_SEGMENTS

Rule condition expression

OR(
    IF(DBX_NUM_IPS,GE, &1

)

)

Rule condition description

Specify a threshold on the number of occurrences of index pointer segments (IPS).

DBX_NUM_IPS: &1
An exception is issued if the threshold is exceeded.

You can apply this rule to a HIDAM primary index, a secondary index, a PHIDAM primary index, or a PSINDEX partition.

**Rule exception expression**

- EXCEPTION_CLASS(NUMBER_OF_INDEX_POINTER_SEGMENTS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of index pointer segments reached or exceeded a threshold in %RESOURCE%.

**Data elements being evaluated for this rule**

DBX_NUM_IPS &1

**Rule threshold sets**

*Table 91. Rule threshold sets for IBM.IX_NUM_SEGM.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 2147483648</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 2147483648</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 2147483648</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_OVERFLOW.10

IBM.IX_OVERFLOW.10 is a simple rule for calculating the total number of index pointer segments in overflow.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_OVERFLOW.10

Rule description

Index pointer segments in overflow

Resource types supported

The following resource types are supported by this rule:

• INDEX
• PSINDEX

Exception class

EXCESSIVE_INDEX_OVERFLOW

Rule condition expression

OR(
  IF(DBX_NUM_IPS_OVFL,GE,
     &1
  )
  IF(DBX_PCT_IPS_OVFL,GE,
     &2
  )
)

Rule condition description

Specify thresholds on the amount of index pointer segment occurrences in the overflow data set. You can specify the thresholds by a number (DBX_NUM_IPS_OVFL), by a percentage (DBX_PCT_IPS_OVFL), or both.

DBX_NUM_IPS_OVFL: &1
DBX_PCT_IPS_OVFL: &2

An exception is issued if the threshold is exceeded.

You can apply this rule to a secondary index or a PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_INDEX_OVERFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The amount of index pointer segments in overflow reached or exceeded a threshold in %RESOURCE%.

Data elements being evaluated for this rule

DBX_NUM_IPS_OVFL &1
DBX_PCT_IPS_OVFL &2

Rule threshold sets

Table 92. Rule threshold sets for IBM.IX_OVERFLOW.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 2147483648,</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 100</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 2147483648,</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 100</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 2147483648,</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 100</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_EXTENTS.10

IBM.IX_EXTENTS.10 is a simple rule for evaluating the availability of index data set extents.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_EXTENTS.10

Rule description

Availability of index data set extents

Resource types supported

The following resource types are supported by this rule:

- INDEX
- PSINDEX

Exception class

INDEX_EXTENTS_AVAILABILITY

Rule condition expression

\[
\text{OR(}
\text{AOR(}
\text{AAND(}
\text{IF(DBX_FLAG_SMS,IS,N)}
\text{IF(DBX_AVAIL_EXT_LESS_100,IS,Y)}
\text{IF(DBX_NUM_AVAIL_EXT,LE,}
\&1)
\text{)}
\text{AAND(}
\text{IF(DBX_FLAG_SMS,IS,Y)}
\text{IF(DBX_NUM_UNUSED_VOL_CAND,LE,}
\&2)
\text{)}
\text{)}
\text{)}
\]
IF(DBX_AVAIL_EXT_LESS_100,IS,Y)
  IF(DBX_NUM_AVAIL_EXT,LE,&3)

Rule condition description

Specify a threshold on the estimated number of extents that are available on the
DASD volumes that are assigned for an index data set (DBX_NUM_AVAIL_EXT).
The threshold must be in the range of 0 - 99. For an SMS-managed data set, also
specify a threshold on the number of candidate volumes
(DBX_NUM_UNUSED_VOL_CAND).

1. For a non-SMS-managed data set, an exception is issued if
   DBX_NUM_AVAIL_EXT of one of database data sets is less than or equal to the
   following threshold.
   &1

2. For an SMS-managed data set, an exception is issued if
   DBX_NUM_UNUSED_VOL_CAND is less than or equal to
   &2

   and DBX_NUM_AVAIL_EXT is less than or equal to
   &3

   for one of the index data sets.

You can apply this rule to a HIDAM primary index, a secondary index, or a
PSINDEX partition.

Use the rule IBM.IX_EXTENTS.11 for a PHIDAM primary index.

Rule exception expression

- EXCEPTION_CLASS(INDEX_EXTENTS_AVAILABILITY)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of available extents for an index data set of %RESOURCE% is
inadequate.

Data elements being evaluated for this rule

| DBX_NUM_AVAIL_EXT | &1 |
| DBX_NUM_UNUSED_VOL_CAND | &2 |
| DBX_NUM_AVAIL_EXT | &3 |

Rule threshold sets

Table 93. Rule threshold sets for IBM.IX_EXTENTS.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 5, &amp;2 = 0, &amp;3 = 5</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 3, &amp;2 = 0, &amp;3 = 3</td>
</tr>
</tbody>
</table>

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Table 93. Rule threshold sets for IBM.IX_EXTENTS.10 (continued)

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>&amp;1 = 1, &amp;2 = 0, &amp;3 = 1</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_EXTENTS.11

IBM.IX_EXTENTS.11 is a simple rule for evaluating the availability of PHIDAM primary index extents.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_EXTENTS.11

Rule description

Availability of PHIDAM primary index extents

Resource types supported

PHIDAM

Exception class

INDEX_EXTENTS_AVAILABILITY

Rule condition expression

\[
\text{OR(}
\text{AND(}
\text{IF}(\text{DBX\_FLAG\_SMS}, \text{IS}, \text{N})
\text{IF}(\text{DBX\_AVAIL\_EX\_LESS\_100}, \text{IS}, \text{Y})
\text{IF}(\text{DBX\_NUM\_AVAIL\_EXT}, \text{LE}, &1)
\text{)}
\text{AND(}
\text{IF}(\text{DBX\_FLAG\_SMS}, \text{IS}, \text{Y})
\text{IF}(\text{DBX\_NUM\_UNUSED\_VOL\_CAND}, \text{LE}, &2)
\text{)}
\text{IF}(\text{DBX\_AVAIL\_EX\_LESS\_100}, \text{IS}, \text{Y})
\text{IF}(\text{DBX\_NUM\_AVAIL\_EXT}, \text{LE},}
\]
Rule condition description

Specify a threshold on the estimated number of extents that are available on the DASD volumes that are assigned for the PHIDAM primary index (DBX_NUM_AVAIL_EXT). The threshold must be in the range of 0 - 99. For an SMS-managed data set, also specify a threshold on the number of candidate volumes (DBX_NUM_UNUSED_VOL_CAND).

1. If the data set is not SMS-managed, an exception is issued if DBX_NUM_AVAIL_EXT of one of database data sets is less than or equal to the following threshold.

\&1

2. If the data set is SMS-managed, an exception is issued if
   DBX_NUM_UNUSED_VOL_CAND is less than or equal to \&2
   and DBX_NUM_AVAIL_EXT is less than or equal to \&3

   for one of the index data sets.

You can apply this rule only to a PHIDAM primary index.

Use the rule IBM.IX_EXTENTS.10 for a HIDAM primary index, a secondary index, or a PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(INDEX_EXTENTS_AVAILABILITY)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of available extents for the primary index of %RESOURCE% is inadequate.

Data elements being evaluated for this rule

- DBX_NUM_AVAIL_EXT \&1
- DBX_NUM_UNUSED_VOL_CAND \&2
- DBX_NUM_AVAIL_EXT \&3

Rule threshold sets

Table 94. Rule threshold sets for IBM.IX_EXTENTS.11

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 5, &amp;2 = 0, &amp;3 = 5</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 3, &amp;2 = 0, &amp;3 = 3</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 1, &amp;2 = 0, &amp;3 = 1</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_GROWTH.10

IBM.IX_GROWTH.10 is a simple rule for evaluating the data set size of an index and its overflow.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.IX_GROWTH.10

**Rule description**

Data set size of an index and its overflow

**Resource types supported**

The following resource types are supported by this rule:

- INDEX
- PSINDEX

**Exception class**

INDEX_SIZE_GROWTH

**Rule condition expression**

```
OR(
  AOR(
    IF(DBX_NUM_DBDS_BLOCKS,GE,
      &1
    )
    IF(DBX_PCT_OF_MAX_DS_SIZE,GE,
      &2
    )
    IF(DBX_RBA_HIGH_ALLOC,GE,
      &3
    )
    IF(DBX_RBA_HIGH_USED,GE,
      &4
    )
  )
)```

Chapter 21. Domain REORG rules
Rule condition description

Specify thresholds on the index data set size.

You can use the following thresholds in this rule:
1. Number of data set blocks
   \[ \text{DBX\_NUM\_DBDS\_BLOCKS} \]
2. Percentage of maximum data set size
   \[ \text{DBX\_PCT\_OF\_MAX\_DS\_SIZE} \]
3. High-Allocated-RBA (in decimal expression)
   \[ \text{DBX\_RBA\_HIGH\_ALLOC} \]
4. High-Used-RBA (in decimal expression)
   \[ \text{DBX\_RBA\_HIGH\_USED} \]

An exception is issued if one or more of these thresholds are reached or exceeded in one of the data sets.

You can apply this rule to a HIDAM primary index, a secondary index, or a PSINDEX partition.

Use the rule IBM.IX\_GROWTH.11 for a PHIDAM primary index.

Rule exception expression
- EXCEPTION\_CLASS(INDEX\_SIZE\_GROWTH)
- EXCEPTION\_LEVEL(WARNING)
- EXCEPTION\_MESSAGE

Rule message template

The size of an index data set reached or exceeded a threshold in \%RESOURCE\%.

Data elements being evaluated for this rule

\[ \begin{align*}
\text{DBX\_NUM\_DBDS\_BLOCKS} & : & 1 \\
\text{DBX\_PCT\_OF\_MAX\_DS\_SIZE} & : & 2 \\
\text{DBX\_RBA\_HIGH\_ALLOC} & : & 3 \\
\text{DBX\_RBA\_HIGH\_USED} & : & 4
\end{align*} \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 16777216,</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 60,</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 6442450944,</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 6442450944</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 16777216,</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 80,</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 6442450944,</td>
</tr>
<tr>
<td></td>
<td>&amp;4 = 6442450944</td>
</tr>
</tbody>
</table>
Table 95. Rule threshold sets for IBM.IX_GROWTH.10 (continued)

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>&amp;1 = 16777216,&lt;br&gt;&amp;2 = 90,&lt;br&gt;&amp;3 = 6442450944,&lt;br&gt;&amp;4 = 6442450944</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_GROWTH.11

IBM.IX_GROWTH.1 is a simple rule for evaluating the data set size of a PHIDAM primary index.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.IX_GROWTH.11

**Rule description**

Data set size of a PHIDAM primary index

**Resource types supported**

PHIDAM

**Exception class**

INDEX_SIZE_GROWTH

**Rule condition expression**

\[ OR( \]
\[ \quad IF(DBX\_NUM\_DBDS\_BLOCKS,GE, &1 \) \]
\[ \quad IF(DBX\_PCT\_OF\_MAX\_DS\_SIZE,GE, &2 \) \]
\[ \quad IF(DBX\_RBA\_HIGH\_ALLOC,GE, &3 \) \]
\[ \quad IF(DBX\_RBA\_HIGH\_USED,GE, &4 \) \]
\[ ) \]

IBM Tools Base: Policy Services User's Guide and Reference
Rule condition description

Specify thresholds on the data set size of the PHIDAM primary index.

You can use the following thresholds in this rule:

1. Number of data set blocks
   \( \text{DBX\_NUM\_DBDS\_BLOCKS} : &1 \)

2. Percentage of maximum data set size
   \( \text{DBX\_PCT\_OF\_MAX\_DS\_SIZE} : &2 \)

3. High-Allocated-RBA (in decimal expression)
   \( \text{DBX\_RBA\_HIGH\_ALLOC} : &3 \)

4. High-Used-RBA (in decimal expression)
   \( \text{DBX\_RBA\_HIGH\_USED} : &4 \)

An exception is issued if one or more of these thresholds are reached or exceeded.

You can apply this rule only to a PHIDAM primary index.

Use the rule IBM.IX_GROWTH.10 for a HIDAM primary index, a secondary index, or a PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(INDEX_SIZE_GROWTH)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The size of the primary index data set reached or exceeded a threshold in \%RESOURCE\%.

Data elements being evaluated for this rule

\[
\begin{align*}
\text{DBX\_NUM\_DBDS\_BLOCKS} & : &1 \\
\text{DBX\_PCT\_OF\_MAX\_DS\_SIZE} & : &2 \\
\text{DBX\_RBA\_HIGH\_ALLOC} & : &3 \\
\text{DBX\_RBA\_HIGH\_USED} & : &4 
\end{align*}
\]

Rule threshold sets

Table 96. Rule threshold sets for IBM.IX_GROWTH.11

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
</table>
| LOW                | \&1 = 16777216,  \\
|                    | \&2 = 60,        \\
|                    | \&3 = 6442450944,  \\
|                    | \&4 = 6442450944 |
| MED                | \&1 = 16777216,  \\
|                    | \&2 = 80,        \\
|                    | \&3 = 6442450944,  \\
|                    | \&4 = 6442450944 |
| HIGH               | \&1 = 16777216,  \\
|                    | \&2 = 90,        \\
|                    | \&3 = 6442450944,  \\
|                    | \&4 = 6442450944 |
Rule: IBM.IX_GROWTH.20

IBM.IX_GROWTH.20 is a simple rule for evaluating the data growth in an index and its overflow.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_GROWTH.20

Rule description

Data growth in an index and its overflow

Resource types supported

The following resource types are supported by this rule:
- INDEX
- PSINDEX

Exception class

GROWING_INDEX_WITH_DATA_FULL

Rule condition expression

OR(
  AND(
    IF(DBX_PCT_OF_MAX_DS_SIZE,GE, &1
  )
  IF(DBX_PCT_UNUSED_BYTES,LE, &2
  )
  )
)
Rule condition description

Specify a threshold on the percentage of the maximum data set size (DBX_PCT_OF_MAX_DS_SIZE) and a threshold on the percentage of the free space in the data set (DBX_PCT_UNUSED_BYTES) for an index data set.

\[ DBX_PCT_OF_MAX_DS_SIZE: \&1 \]
\[ DBX_PCT_UNUSED_BYTES : \&2 \]

An exception is issued if the first threshold is reached or exceeded and the second threshold has reached or fallen below the defined value in any of the index data sets. An exception indicates the possibility that the data set is approaching the size limitation of 4 GB.

You can apply this rule to a HIDAM primary index, a secondary index, or a PSINDEX partition.

Use the rule IBM.IX_GROWTH.21 for a PHIDAM primary index.

Rule exception expression

- EXCEPTION_CLASS(GROWING_INDEX_WITH_DATA_FULL)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The size of an index data set is approaching its limit in %RESOURCE%.

Data elements being evaluated for this rule

\[ DBX_PCT_OF_MAX_DS_SIZE \&1 \]
\[ DBX_PCT_UNUSED_BYTES \&2 \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75, &amp;2 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85, &amp;2 = 10</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90, &amp;2 = 10</td>
</tr>
</tbody>
</table>
**Rule: IBM.IX_GROWTH.21**

IBM.IX_GROWTH.21 is a simple rule for evaluating the data growth in a PHIDAM primary index.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.IX_GROWTH.21

**Rule description**

Data growth in a PHIDAM primary index

**Resource types supported**

PHIDAM

**Exception class**

GROWING_INDEX_WITH_DATA_FULL

**Rule condition expression**

\[
\text{OR}\left( \text{AND}\left( \\
\quad \text{IF}(\text{DBX\_PCT\_OF\_MAX\_DS\_SIZE}, \geq, ~1) \\
\quad \text{IF}(\text{DBX\_PCT\_UNUSED\_BYTES}, \leq, ~2) \\
\right) \right)
\]
Rule condition description

Specify a threshold on the percentage of the maximum data set size (DBX_PCT_OF_MAX_DS_SIZE) and a threshold on the percentage of the free space in the data set (DBX_PCT_UNUSED_BYTES) for the primary index data set.

DBX_PCT_OF_MAX_DS_SIZE: &1
DBX_PCT_UNUSED_BYTES : &2

An exception is issued if the first threshold is reached or exceeded and the second threshold has reached or fallen below the defined value in the index data set. An exception indicates the possibility that the size of data set is approaching the 4 GB limit.

You can apply this rule only to a PHIDAM primary index.

Use the rule IBM.IX_GROWTH.20 for a HIDAM primary index, a secondary index, or a PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(GROWING_INDEX_WITH_DATA_FULL)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The primary index data set is approaching its size limit in %RESOURCE%.

Data elements being evaluated for this rule

DBX_PCT_OF_MAX_DS_SIZE &1
DBX_PCT_UNUSED_BYTES &2

Rule threshold sets

Table 98. Rule threshold sets for IBM.IX_GROWTH.21

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 75, &amp;2 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85, &amp;2 = 10</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90, &amp;2 = 10</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_CICA_SPLIT.10

IBM.IX_CICA_SPLIT.10 is a simple rule for evaluating the percentage of CI or CA splits in an index primary data set.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_CICA_SPLIT.10

Rule description

CI or CA splits in an index primary data set

Resource types supported

The following resource types are supported by this rule:

- INDEX
- PSINDEX

Exception class

EXCESSIVE_INDEX_CI_OR_CA_SPLITS

Rule condition expression

OR(
  IF(DBX_PCT_NUM_CI_SPLIT.1,GE, &1
  )
  IF(DBX_PCT_NUM_CA_SPLIT.1,GE, &2
  )
)
Rule condition description

Specify thresholds on the percentage of the number of CI splits (DBX_PCT_NUM_CI_SPLIT) and the percentage of the number of CA splits (DBX_PCT_NUM_CA_SPLIT) of the primary data set of an index.

DBX_PCT_NUM_CI_SPLIT: &1
DBX_PCT_NUM_CA_SPLIT: &2

An exception is issued if one of these thresholds is reached or exceeded.

You can apply this rule to a HIDAM primary index, a secondary index, or a PSINDEX partition.

Use the ruleIBM.IX_CICA_SPLIT.11 for a PHIDAM primary index.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_INDEX_CI_OR_CA_SPLITS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of CI/CA splits of the index primary data set is increasing in %RESOURCE%.

Data elements being evaluated for this rule

DBX_PCT_NUM_CI_SPLIT &1
DBX_PCT_NUM_CA_SPLIT &2

Rule threshold sets

Table 99. Rule threshold sets for IBM.IX_CICA_SPLIT.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20, &amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30, &amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40, &amp;2 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_CICA_SPLIT.11

IBM.IX_CICA_SPLIT.11 is a simple rule for evaluating the percentage of CI or CA splits in a PHIDAM primary index.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.IX_CICA_SPLIT.11

Rule description

CI or CA splits in a PHIDAM primary index

Resource types supported

PHIDAM

Exception class

EXCESSIVE_INDEX_CI_OR_CA_SPLITS

Rule condition expression

OR(
    IF(DBX_PCT_NUM_CI_SPLIT,GE,
       &1
    )
    IF(DBX_PCT_NUM_CA_SPLIT,GE,
       &2
    )
)

Rule condition description

Specify thresholds on the percentage of the number of CI splits (DBX_PCT_NUM_CI_SPLIT) and the percentage of the number of CA splits (DBX_PCT_NUM_CA_SPLIT) of the primary index data set of PHIDAM.
An exception is issued if one of these thresholds is reached or exceeded.

You can apply this rule only to a PHIDAM primary index.

Use the rule IBM.IX_CICA_SPLIT.10 for a HIDAM primary index, a secondary index, or a PSINDEX partition.

**Rule exception expression**

- EXCEPTION_CLASS(EXCESSIVE_INDEX_CI_OR_CA_SPLITS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of CI/CA splits of the primary index data set is increasing in %RESOURCE%.

**Data elements being evaluated for this rule**

DBX_PCT_NUM_CI_SPLIT: &1
DBX_PCT_NUM_CA_SPLIT: &2

**Rule threshold sets**

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20, &amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30, &amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40, &amp;2 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.LAST_REORG.10

IBM.LAST_REORG.10 is a rule for evaluating the number of days that have elapsed since the last reorganization.

Rule template version

The rule template version is indicated by a 4-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.LAST_REORG.10

Rule description

Number of days since the last reorganization.

Resource types supported

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM
- DEDB

Exception class

DAYS_PASSED_SINCE_LAST_REORG

Rule condition expression

\[
\text{OR(}
\quad \text{IF(DB\_DAYS\_SINCE\_LAST\_REORG,GT\&1)}
\quad \text{)}
\]
Rule condition description

Specify a threshold on the number of days that have passed since the last reorganization.

\[ \text{DB DAYS SINCE LAST REORG} \leq 1 \]

An exception is issued if the threshold is exceeded.

Rule exception expression

- EXCEPTION_CLASS(DAYS_PASSED_SINCE_LAST_REORG)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

No reorganization has been performed on \%RESOURCE\% for a while.

Data elements being evaluated for this rule

\[ \text{DB DAYS SINCE LAST REORG} \leq 1 \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 60</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 180</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 365</td>
</tr>
</tbody>
</table>
Rule: IBM.NUM_DBRECORDS.10

IBM.NUM_DBRECORDS.10 is a simple rule for evaluating the number of database records.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.NUM_DBRECORDS.10

**Rule description**

Total number of database records.

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

**Exception class**

NUMBER_OF_DB_RECORDS

**Rule condition expression**

```plaintext
OR(
  IF(DB_NUM_ROOT,GE,&1),
)```

IBM Tools Base: Policy Services User's Guide and Reference
Rule condition description

Specify a threshold on the total number of root segment occurrences in the database or the partition:

\[ DB_{\text{NUM\_ROOT}}: \ &1 \]

An exception is issued if the threshold is reached or exceeded. The threshold can be used to measure the growth of the number of database records.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

\[ \text{EXCEPTION\_CLASS}(\text{NUMBER\_OF\_DB\_RECORDS}) \]
\[ \text{EXCEPTION\_LEVEL}(\text{WARNING}) \]
\[ \text{EXCEPTION\_MESSAGE} \]

Rule message template

The number of database records in \%RESOURCE\% has reached or exceeded a threshold

Data elements being evaluated for this rule

\[ DB_{\text{NUM\_ROOT}} \ &1 \]

The variable \&1 specifies a threshold for the data element value of DB_NUM_ROOT for the database or the HALDB partition.

Rule threshold sets

\emph{Table 102. Rule threshold sets for IBM.NUM_DBRECORDS.10}

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
</tbody>
</table>

The default threshold values for the variable \&1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number of database records in the database or the HALDB partition.
Rule: IBM.RAA_DENSITY.10

IBM.RAA_DENSITY.10 is a simple rule for evaluating the data volume in the Root Addressable Area of an HDAM or PHDAM database.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.RAA_DENSITY.10

Rule description

Volume of data in the RAA of HDAM or PHDAM.

Important: This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:
• Replace a similar rule in an existing REORG Domain policy
• Add this rule to one of the existing REORG Domain policies
• Create a REORG Domain policy and add this rule along with other rules

Resource types supported

The following resource types are supported by this rule.
• HDAM
• PHDAM

Exception class

DATA_VOLUME_IN_HDAM_RAA

Rule condition expression

OR(
  IF(DB_BYTES_SEG_RAA,GE, &1 )
)
Rule condition description

Specify a threshold on the total bytes of segment occurrences in the root addressable area:

DB_BYTES_SEG_RAA: &1

An exception is issued if the threshold is reached or exceeded.

You can apply this rule to an HDAM database or a PHDAM partition.

Rule exception expression

- EXCEPTION_CLASS(DATA_VOLUME_IN_HDAM_RAA)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The data volume in the Root Addressable Area of %RESOURCE% has increased

Data elements being evaluated for this rule

DB_BYTES_SEG_RAA &1

The variable &1 specifies a threshold for the data element value of DB_BYTES_SEG_RAA for the HDAM database or the PHDAM partition.

Rule threshold sets

Table 103. Rule threshold sets for IBM.RAA_DENSITY.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 8589934592</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 8589934592</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the total number of bytes in the RAA.
Rule: IBM.RANDOMIZING.10

IBM.RANDOMIZING.10 is a simple rule for evaluating the imbalanced HDAM or PHDAM randomizing.

Note: Imbalanced randomizing refers to Root Anchor Points (RAPs) in an HDAM database or PHDAM partition that are not evenly used in terms of both the RAP usage ratio and the average number of synonyms that occur in each RAP used.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.RANDOMIZING.10

Rule description

Imbalanced randomizing of root segments.

Resource types supported

The following resource types are supported by this rule.
- HDAM
- PHDAM

Exception class

IMBALANCED_RANDOMIZING

Rule condition expression

AND(
   IF(DB_PCT_NUM_UNUSED_RAP, GE, &1
   )
   IF(DB_PCT_NUM_SYNONYM, GE, &2
   )
)
Rule condition description

Specify thresholds on the percentage of unused root anchor points (DB_PCT_NUM_UNUSED_RAP) and the percentage of root segments on synonym chains (DB_PCT_NUM_SYNONYM):

\[
\begin{align*}
\text{DB_PCT_NUM_UNUSED_RAP} & : & \&1 \\
\text{DB_PCT_NUM_SYNONYM} & : & \&2 \\
\end{align*}
\]

An exception is issued if both of these thresholds are reached or exceeded. This condition indicates imbalanced randomizing.

You can apply this rule to an HDAM database or a PHDAM partition.

Rule exception expression

- EXCEPTION_CLASS(IMBALANCED_RANDOMIZING)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

Imbalanced randomizing and inefficient use of RAPs have increased in \%RESOURCE\%.

Data elements being evaluated for this rule

\[
\begin{align*}
\text{DB_PCT_NUM_UNUSED_RAP} & : & \&1 \\
\text{DB_PCT_NUM_SYNONYM} & : & \&2 \\
\end{align*}
\]

The following data element values are evaluated for the HDAM database or the PHDAM partition:

- The variable \&1 specifies a threshold for the data element value of DB_PCT_NUM_UNUSED_RAP.
- The variable \&2 specifies a threshold for the data element value of DB_PCT_NUM_SYNONYM.

Rule threshold sets

\textbf{Table 104. Rule threshold sets for IBM.RANDOMIZING.10}

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 40</td>
</tr>
</tbody>
</table>
Rule: IBM.RAP_SYNONYMS.10

IBM.RAP_SYNONYMS.10 is a simple rule for evaluating the number and the percentage of synonyms for an HDAM or PHDAM database.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.RAP_SYNONYMS.10

**Rule description**

Number of synonym root segments

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- PHDAM

**Exception class**

EXCESSIVE_RAP_SYNONYMS

**Rule condition expression**

```or(
  if(db_num_synonym,ge,
    &1
  )
  if(db_pct_num_synonym,ge,
    &2
  )
)```
Rule condition description

Specify thresholds on the amount of root segment occurrences involved in synonym chains of HDAM/PHDAM randomizing. The thresholds can be specified by a number (DB_NUM_SYNONYM) and a percentage (DB_PCT_NUM_SYNONYM):

```
DB_NUM_SYNONYM: &1
DB_PCT_NUM_SYNONYM: &2
```

An exception is issued if one of these thresholds is reached or exceeded:

1. By default, only a threshold on DB_PCT_NUM_SYNONYM is active. If you want to use a threshold on DB_NUM_SYNONYM, set an appropriate value.
2. If you want to monitor imbalanced randomizing, use the rule IBM.RANDOMIZING.10 instead of this rule.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_RAP_SYNONYMS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of synonyms in randomizing has increased in %RESOURCE%

Data elements being evaluated for this rule

```
DB_NUM_SYNONYM   : &1
DB_PCT_NUM_SYNONYM: &2
```

The following data element values are evaluated for the HDAM database or the PHDAM partition:

- The variable &1 specifies a threshold for the data element value of DB_NUM_SYNONYM.
- The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_SYNONYM.

Rule threshold sets

Table 105. Rule threshold sets for IBM.RAP_SYNONYMS.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 30</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number, rather than or in addition to the percentage, of synonyms.
Rule: IBM.ROOT_OVERFLOW.10

IBM.ROOT_OVERFLOW.10 is a simple rule for evaluating the number and the percentage of overflowed HDAM or PHDAM roots.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.ROOT_OVERFLOW.10

Rule description

Number of overflowed root segments.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- PHDAM

Exception class

EXCESSIVE_HDAM_ROOTS_OVERFLOW

Rule condition expression

\[
\text{OR(}
\text{IF(DB_NUM_ROOT_OVFL,GE,}
\&1
\text{)}
\text{IF(DB_PCT_NUM_ROOT_OVFL,GE,}
\&2
\text{)}
\text{)}
\]
**Rule condition description**

Specify thresholds on the amount of root segment occurrences located in the overflow area of an HDAM database or a PHDAM partition. The thresholds can be specified by a number (DB_NUM_ROOT_OVFL) and a percentage (DB_PCT_NUM_ROOT_OVFL):

- **DB_NUM_ROOT_OVFL**: &1
- **DB_PCT_NUM_ROOT_OVFL**: &2

An exception is issued if one of these thresholds is reached or exceeded.

**Tip:** By default, only a threshold on DB_PCT_NUM_ROOT_OVFL is active. If you want to use a threshold on DB_NUM_ROOT_OVFL, set an appropriate value.

**Rule exception expression**

- EXCEPTION_CLASS(EXCESSIVE_HDAM_ROOTS_OVERFLOW)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number or the percentage of roots in the overflow part in %RESOURCE% has increased

**Data elements being evaluated for this rule**

- **DB_NUM_ROOT_OVFL**: &1
- **DB_PCT_NUM_ROOT_OVFL**: &2

The following data element values are evaluated for the HDAM database or the PHDAM partition:

- The variable &1 specifies a threshold for the data element value of DB_NUM_ROOT_OVFL.
- The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_ROOT_OVFL.

**Rule threshold sets**

*Table 106. Rule threshold sets for IBM.ROOT_OVERFLOW.10*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOW</strong></td>
<td>&amp;1 = 1073741824</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 40</td>
</tr>
<tr>
<td><strong>MED</strong></td>
<td>&amp;1 = 1073741824</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 50</td>
</tr>
<tr>
<td><strong>HIGH</strong></td>
<td>&amp;1 = 1073741824</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 60</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number, rather than or in addition to the percentage, of root segments in the overflow.
Rule: IBM.ROOTS_NOTHOME.10

IBM.ROOTS_NOTHOME.10 is a simple rule for evaluating the number and the percentage of the roots that are not in home blocks.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.ROOTS_NOTHOME.10

Rule description

Number of roots not in home blocks.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- PHDAM

Exception class

EXCESSIVE_HDAM_ROOTS_NOT_HOME

Rule condition expression

OR(
   IF(DB_NUM_ROOT_NOHOME,GE,&1

   )
   IF(DB_PCT_NUM_ROOT_NOHOME,GE,&2

   )
)

IBM Tools Base: Policy Services User's Guide and Reference
Rule condition description

Specify thresholds on the amount of root segment occurrences that are not located in their home blocks. The thresholds can be specified by a number (DB_NUM_ROOT_NOHOME) and a percentage (DB_PCT_NUM_ROOT_NOHOME):

- DB_NUM_ROOT_NOHOME: &1
- DB_PCT_NUM_ROOT_NOHOME: &2

An exception is issued if one of these thresholds is reached or exceeded.

You can apply this rule to an HDAM database or a PHDAM partition.

Tip: By default, only a threshold on DB_PCT_NUM_ROOT_NOHOME is active. If you want to use a threshold on DB_NUM_ROOT_NOHOME, set an appropriate value.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_HDAM_ROOTS_NOT_HOME)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of roots not in their home blocks in %RESOURCE% has increased

Data elements being evaluated for this rule

- DB_NUM_ROOT_OVFL : &1
- DB_PCT_NUM_ROOT_OVFL: &2

The following data element values are evaluated for the HDAM database or the PHDAM partition:

- The variable &1 specifies a threshold for the data element value of DB_NUM_ROOT_NOHOME.
- The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_ROOT_NOHOME.

Rule threshold sets

Table 107. Rule threshold sets for IBM.ROOTS_NOTHOME.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 30</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number, rather than or in addition to the percentage, of root segments that are not in their home blocks.
Rule: IBM.SEGM_COUNT.10

IBM.SEGM_COUNT.10 is a simple rule for evaluating the number of segment occurrences.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.SEGM_COUNT.10

Rule description

Number of segment occurrences.

Important: This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

- Replace a similar rule in an existing REORG Domain policy
- Add this rule to one of the existing REORG Domain policies
- Create a REORG Domain policy and add this rule along with other rules

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

EXCESSIVE_SEGMENT_OCCURRENCES
Rule condition expression

\[
\text{OR(}
\quad \text{AOR(}
\quad \quad \text{IF(DB_NUM_SEG,GE,}
\quad \quad \quad &1
\quad \quad)
\quad )
\quad )
\]

Rule condition description

Specify a threshold on the total number of segment occurrences in a database data set:

\[
\text{DB_NUM_SEG: } &1
\]

An exception is issued if the threshold is reached or exceeded in one of the database data sets.

You can apply this rule to a non-partitioned database or a HALDB partition, with the exception of an index or PSINDEX partition.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_SEGMENT_OCCURRENCES)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of segments in a data set of %RESOURCE% has reached or exceeded a threshold

Data elements being evaluated for this rule

\[
\text{DB_NUM_SEG } &1
\]

The variable &1 specifies a threshold for the data element value of DB_NUM_SEG for each data set of the database or the HALDB partition.

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4294967295</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4294967295</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 is never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the total number of segments in each data set of the database or the HALDB partition.
Rule: IBM.SEGM_SPREAD.10

IBM.SEGM_SPREAD.10 is a simple rule for evaluating the segment scattering.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

REORG

**Rule template type**

STANDARD

**Rule template name**

IBM.SEGM_SPREAD.10

**Rule description**

Scattered segment occurrences.

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

**Exception class**

EXCESSIVE_SEGMENT_SCATTERING

**Rule condition expression**

```plaintext
OR(
  AOR(
    IF(DB_PCT_NUM_PTR_DIFF_BLK,GE,&1)
  )
  IF(DB_NUM_PTR_DIFF_BLK,GE,&2)
)
```
Rule condition description

Specify thresholds on the amount of physical pointers that point to a different database block. The thresholds can be specified by a percentage (DB_PCT_NUM_PTR_DIFF_BLK) and a number (DB_NUM_PTR_DIFF_BLK):

\[
\begin{align*}
DB_PCT_NUM_PTR_DIFF_BLK: & & \&1 \\
DB_NUM_PTR_DIFF_BLK: & & \&2 \\
\end{align*}
\]

An exception is issued if one of these thresholds is reached or exceeded in one of the database data sets.

You can apply this rule to a non-partitioned HD database or a PHDAM/PHIDAM partition.

Tip: By default, only a threshold on DB_PCT_NUM_PTR_DIFF_BLK is active. If you want to use a threshold on DB_NUM_PTR_DIFF_BLK, set an appropriate value.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_SEGMENT_SCATTERING)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

A data set of %RESOURCE% has many pointers that point to other blocks or CIs.

Data elements being evaluated for this rule

\[
\begin{align*}
DB_PCT_NUM_PTR_DIFF_BLK: & & \&1 \\
DB_NUM_PTR_DIFF_BLK: & & \&2 \\
\end{align*}
\]

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable \&1 specifies a threshold for the data element value of DB_PCT_NUM_PTR_DIFF_BLK for the data set.
- The variable \&2 specifies a threshold for the data element value of DB_NUM_PTR_DIFF_BLK for the data set.

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20 &amp;2 = 2147483648</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30 &amp;2 = 2147483648</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40 &amp;2 = 2147483648</td>
</tr>
</tbody>
</table>

The default threshold values for the variable \&2 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number rather than or in addition to the percentage.
Rule: IBM.SLACK_BYTES.10

IBM.SLACK_BYTES.10 is a simple rule for evaluating the statistics on the slack bytes.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.SLACK_BYTES.10

Rule description

Slack byte occurrences.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

Exception class

EXCESSIVE_SLACK_BYTES

Rule condition expression

OR(
  AOR(
    IF(DB_AVG_NUM_UNIDENTIFIED,GE,
        &1  
      )
    IF(DB_NUM_UNIDENTIFIED,GE,
        &2  
      )
    IF(DB_BYTES_UNIDENTIFIED,GE,
        &3  
      )
  )
)
Rule condition description

Specify thresholds on the amount of slack-byte elements in a database data set. The thresholds can be specified on the average number of slack-byte elements per database block (DB_AVG_NUM_UNIDENTIFIED), the total number of slack-byte elements in a data set (DB_NUM_UNIDENTIFIED), and the total number of bytes consumed by slack bytes in a data set (DB_BYTES_UNIDENTIFIED):

DB_AVG_NUM_UNIDENTIFIED: &1
DB_NUM_UNIDENTIFIED: &2
DB_BYTES_UNIDENTIFIED: &3

An exception is issued if one of these thresholds is reached or exceeded in one of the database data sets.

You can apply this rule to a non-partitioned HD database or a PHDAM/PHIDAM partition.

Tip: A slack-byte element is a sequence of bytes that is identified neither as a segment nor a free space. It is a space that is not reused by IMS.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_SLACK_BYTES)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of unidentified bytes in a data set of %RESOURCE% has reached or exceeded a threshold.

Data elements being evaluated for this rule

DB_AVG_NUM_UNIDENTIFIED &1
DB_NUM_UNIDENTIFIED &2
DB_BYTES_UNIDENTIFIED &3

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of DB_AVG_NUM_UNIDENTIFIED for the data set.
- The variable &2 specifies a threshold for the data element value of DB_NUM_UNIDENTIFIED for the data set.
- The variable &3 specifies a threshold for the data element value of DB_BYTES_UNIDENTIFIED for the data set.
Rule threshold sets

Table 110. Rule threshold sets for IBM.SLACK_BYTES.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 2147483648</td>
</tr>
<tr>
<td></td>
<td>&amp;3 = 8589934592</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &2 and &3 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number or the total number of bytes, rather than or in addition to the percentage, of the unidentified data in each data set of the database or the HALDB partition.
Rule: IBM.UNUSED_RAPS.10

IBM.UNUSED_RAPS.10 is a simple rule for evaluating the number and the percentage of unused RAPs in an HDAM or PHDAM database.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.UNUSED_RAPS.10

Rule description

Percentage of unused root anchor points.

Important: This rule is not included in any of the IBM-supplied REORG Domain policies. You can use this rule in any of the following ways:

• Replace a similar rule in an existing REORG Domain policy
• Add this rule to one of the existing REORG Domain policies
• Create a REORG Domain policy and add this rule along with other rules

Resource types supported

The following resource types are supported by this rule.

• HDAM
• PHDAM

Exception class

EXCESSIVE_UNUSED_RAPS

Rule condition expression

OR(
  IF(DB_NUM_UNUSED_RAP,GE, &1
  )
)
IF(DB_PCT_NUM_UNUSED_RAP,GE,
  &2
)

Rule condition description

Specify thresholds on the amount of unused root anchor points in an HDAM database or a PHDAM partition. The thresholds can be specified by a number (DB_NUM_UNUSED_RAP) and a percentage (DB_PCT_NUM_UNUSED_RAP):

DB_NUM_UNUSED_RAP : &1
DB_PCT_NUM_UNUSED_RAP : &2

An exception is issued if one of these thresholds is reached or exceeded.

Tips:
• By default, only a threshold on DB_PCT_NUM_UNUSED_RAP is active. If you want to use a threshold on DB_NUM_UNUSED_RAP, set an appropriate value.
• If you want to monitor imbalanced randomizing, use the rule IBM.RANDOMIZING.10 instead of this rule.

Rule exception expression

• EXCEPTION_CLASS(EXCESSIVE_UNUSED_RAPS)
• EXCEPTION_LEVEL(WARNING)
• EXCEPTION_MESSAGE

Rule message template

The number or the percentage of unused RAPs in %RESOURCE% has increased

Data elements being evaluated for this rule

DB_NUM_UNUSED_RAP &1
DB_PCT_NUM_UNUSED_RAP &2

The following data element values are evaluated for the HDAM database or the PHDAM partition:
• The variable &1 specifies a threshold for the data element value of DB_NUM_UNUSED_RAP.
• The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_UNUSED_RAP.

Rule threshold sets

Table 111. Rule threshold sets for IBM UNUSED_RAPS.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 4278189825</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 4278189825</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 4278189825</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 30</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &1 are never reached nor exceeded.
It is expected that these values be changed only if you want to monitor the number, rather than or in addition to the percentage, of unused RAPs.
Rule: IBM.VL_SEGM_SPLIT.10

IBM.VL_SEGM_SPLIT.10 is a simple rule for evaluating the number and the percentage of variable-length split segments.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

REORG

Rule template type

STANDARD

Rule template name

IBM.VL_SEGM_SPLIT.10

Rule description

Number of variable-length split segments.

Resource types supported

The following resource types are supported by this rule.

• HDAM
• HIDAM
• PHDAM
• PHIDAM

Exception class

EXCESSIVE_VL_SPLIT_SEGMENTS

Rule condition expression

\[
\text{OR}(\text{AOR}(\text{IF}(\text{DB\_PCT\_NUM\_VLSEG\_SPLIT}, \geq, 1)\\ \text{IF}(\text{DB\_NUM\_VLSEG\_SPLIT}, \geq, 2))))
\]
Rule condition description

Specify thresholds on the amount of variable-length split segments in a database data set. The thresholds can be specified by a percentage (DB_PCT_NUM_VLSEG_SPLIT) and a number (DB_NUM_VLSEG_SPLIT):

DB_PCT_NUM_VLSEG_SPLIT: &1
DB_NUM_VLSEG_SPLIT : &2

An exception is issued if one of these thresholds is reached or exceeded in one of the database data sets.

You can apply this rule to a non-partitioned HD database or a PHDAM/PHIDAM partition.

Tip: By default, only a threshold on DB_PCT_NUM_VLSEG_SPLIT is active. If you want to use a threshold on DB_NUM_VLSEG_SPLIT, set an appropriate value.

Rule exception expression

- EXCEPTION_CLASS(EXCESSIVE_VL_SPLIT_SEGMENTS)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The number of variable-length split segments in %RESOURCE% has increased

Data elements being evaluated for this rule

DB_PCT_NUM_VLSEG_SPLIT &1
DB_NUM_VLSEG_SPLIT &2

The following data element values are evaluated for each data set that composes the database or the HALDB partition:

- The variable &1 specifies a threshold for the data element value of DB_PCT_NUM_VLSEG_SPLIT for the data set.
- The variable &2 specifies a threshold for the data element value of DB_NUM_VLSEG_SPLIT for the data set.

Rule threshold sets

Table 112. Rule threshold sets for IBM.VL_SEGM_SPLIT.10

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 20</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 4294967295</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 4294967295</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 4294967295</td>
</tr>
</tbody>
</table>

The default threshold values for the variable &2 are never reached nor exceeded.

It is expected that these values be changed only if you want to monitor the number rather than or in addition to the percentage.
Chapter 22. Domain REORG policies

The domain REORG policies are used to evaluate the database state, and specify how Policy Services responds to any events that reach or exceed the threshold values specified for the state.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

A descriptive message within the rule that describes the maintenance history information for this policy.

The initial maintenance message is blank because at initial product installation no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

The original name of this policy template.

The name always begins with IBM.

**Policy domain**

Defines the domain for which this policy is intended to be used.

For IMS Database Reorganization Expert, the domain name is REORG.

**Policy template type**

Defines the policy template type.

Currently, there is only one type: Basic

**Policy name**

The policy name is same as the name that appears in the title line and is also the same as the template original name.

**Policy description**

Defines in words what database functionality this policy monitors.

**Action description**

Show exceptions and associated severity and actions.

**Notify reference list**

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more of these notification lists.

The list you provide is where the summary notification message is sent.

**Resource type list**

The resource types are all IMS-supported Hierarchical Direct Access Methods.

**Rule list**
List of rules associated with this policy. The policy monitors the evaluation of all these rules and takes action when any rule threshold is met or exceeded (exception).

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.DEDB

IBM.DBDTYPE.DEDB is a predefined IBM basic policy for DEDB databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.DEDB

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.DEDB

Policy description

DEDB policy

Action description

The action for all exceptions of all severity levels for DEDB is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:

- DEDB
Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

Table 113. Rule list for IBM.DBDTYPE.DEDB

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold Set</th>
<th>Severity Level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.DEDB_DBREC_IO.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBREC_IO.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBRECCNT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.40</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.50</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.60</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.70</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.80</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.40</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.50</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
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<td>IBM.DEDB_OVERFLOW.60</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.70</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
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<td>IBM.DEDB_OVERFLOW.80</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.90</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SEGM_CNT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SYN_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SYN_LEN.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBREC_IO.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBREC_IO.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBRECCNT.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.10</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
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<td>SKIPEVAL</td>
</tr>
<tr>
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<td>SKIPEVAL</td>
</tr>
<tr>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.50</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>Rule</td>
<td>Threshold Set</td>
<td>Severity Level</td>
<td>If comparison data is missing</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>IBM.DEDB_FS.60</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.70</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.10</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.20</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.30</td>
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<td>SEVERE</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.40</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.50</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.60</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.70</td>
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<td>IBM.DEDB_OVERFLOW.90</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.20</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SEGMCNT.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.DEDB_SYN_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SYN_LEN.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBREC.IO.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBREC.IO.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_DBRECCNT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.40</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.DEDB_FS.50</td>
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<tr>
<td>IBM.DEDB_FS.60</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.70</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_FS.80</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.40</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.50</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.60</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.DEDB_OVERFLOW.70</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.80</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_OVERFLOW.90</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_ROOT_IO.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 113. Rule list for IBM.DBDTYPE.DEDB (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold Set</th>
<th>Severity Level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.DEDB_SEGM_CNT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SYN_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DEDB_SYN_LEN.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.FFDB

IBM.DBDTYPE.FFDB is a predefined IBM basic policy for full function databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.FFDB

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.FFDB

Policy description

Full-function database policy

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_HISAM_DELETE_SEGM</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>
Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 115. Rule list for IBM.DBDTYPE.FFDB

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 115. Rule list for IBM.DBDTYPE_FFDB (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
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<td>SKIPEVAL</td>
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<tr>
<td>IBM.SLACK_BYTES.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<td>IBM.SEGM_SPREAD.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<td>IBM.RANDOMIZING.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.RAP_SYNONYMS.10</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.DBDS_GROWTH.30</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
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<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
</tbody>
</table>
Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
IBM.DBDTYPE.FFDBALL is a predefined IBM basic policy for full function databases and index databases.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

IBM.DBDTYPE.FFDBALL

**Policy domain**

REORG

**Policy template type**

BASIC

**Policy name**

IBM.DBDTYPE.FFDBALL

**Policy description**

Full-function database and index policy

**Action description**

The following table summarizes exception class and severity level pairs that result in REORG action.

*Table 116. REORG action description for exceptions detected by IBM.DBDTYPE.FFDBALL*

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_HISAM_DELETE_SEGM</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>DAYS_PASSED_SINCE_LAST_REORG</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>INDEXBLD</td>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>
Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:
- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 117. Rule list for IBM.DBDTYPE.FFDBALL

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
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<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
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<tr>
<td>IBM.RAP_SYNONYMS.10</td>
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<td>SKIPPEVAL</td>
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</table>
Table 117. Rule list for IBM.DBDTYPE_FFDBALL (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
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</thead>
<tbody>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
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<td>IBM.IX_GROWTH.10</td>
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<td>CRITICAL</td>
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<td>IBM.IX_GROWTH.20</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
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<td>IBM.IX_CICA_SPLIT.10</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
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<td>IBM.IX_EXTENTS.11</td>
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<td>CRITICAL</td>
<td>EVALUATE</td>
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<tr>
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<td>IBM.NUM_DBRECORDS.10</td>
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<td>SKIPEVAL</td>
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<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
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<td>IBM.RAP_SYNONYMS.10</td>
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<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
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<tr>
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<td>EVALUATE</td>
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<tr>
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<td>Rule</td>
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<td>Severity level</td>
<td>If comparison data is missing:</td>
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<td>-------------------------------</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
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<td>WARNING</td>
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</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACKBYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
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<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
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<td>IBM.IX_EXTENTS.11</td>
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<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.21</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
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</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.HDAM

IBM.DBDTYPE.HDAM is a predefined IBM basic policy for HDAM databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.HDAM

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.HDAM

Policy description

HDAM database policy.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource types supported

The following resource types are supported by this policy:

• HDAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 119. Rule list for IBM.DBDTYPE.HDAM

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
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<td>SKIPEVAL</td>
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<tr>
<td>IBM.DBDS_EXTENTS.10</td>
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<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
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<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
### Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
IBM.DBDTYPE.HDDB is a predefined IBM basic policy for HD databases.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

IBM.DBDTYPE.HDDB

**Policy domain**

REORG

**Policy template type**

BASIC

**Policy name**

IBM.DBDTYPE.HDDB

**Policy description**

HD database policy.

**Action description**

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

**Note:** If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource types supported

The following resource types are supported by this policy:

- HDAM
- PHDAM
- HIDAM
- PHIDAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 121. Rule list for IBM.DBDTYPE.HDDB

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DDBS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.SLACKgetBytes.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
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<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
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<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
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<td>IBM.RAP_SYNONYMS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
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<td>SEVERE</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.DDBS_EXTENTS.10</td>
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<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
</tbody>
</table>

Chapter 22. Domain REORG policies 407
Table 121. Rule list for IBM.DBDTYPE.HDDB (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
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<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
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<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RANDOMIZING.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.RAP_SYNONYMS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.HIDAM

IBM.DBDTYPE.HIDAM is a predefined IBM basic policy for HIDAM databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.HIDAM

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.HIDAM

Policy description

HIDAM database policy.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource types supported

The following resource types are supported by this policy:

- HIDAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 123. Rule list for IBM.DBDTYPE.HIDAM (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.HISAM

IBM.DBDTYPE.HISAM is a predefined IBM basic policy for HISAM databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.HISAM

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.HISAM

Policy description

HISAM database policy.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

Table 124. REORG action description for exceptions detected by IBM.DBDTYPE.HISAM

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_HISAM_DELETE_SEGM</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Resource types supported

The following resource types are supported by this policy:

- HISAM

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 125. Rule list for IBM.DBTYPE.HISAM

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
### Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
</tbody>
</table>
IBM.DBDTYPE.INDEX is a predefined IBM basic policy for non-partitioned index databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.INDEX

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.INDEX

Policy description

Index policy for non-partitioned index.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDEXBLD</td>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MESSAGE</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:

- INDEX

Rule list

The following table summarizes the default rules used in this policy.

SKIPENVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 127. Rule list for IBM.DBDTYPE.INDEX

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPENVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPENVAL</td>
</tr>
</tbody>
</table>
**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.PHDAM

IBM.DBDTYPE.PHDAM is a predefined IBM basic policy for PHDAM partitions.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.PHDAM

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.PHDAM

Policy description

PHDAM partition policy.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource type is supported by this policy:

- PHDAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 129. Rule list for IBM.DBDTYPE.PHDAM

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>VLSEGMENT_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SLACKBYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SEGMENT_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RANDOMIZING.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RAP_SYNONYMS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOTS_NOTHOME.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>HDAM_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOT_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 129. Rule list for IBM.DBDTYPE.PHDAM (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SLACK_BYTES.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SEGM_SPREAD.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RANDOMIZING.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RAP_SYNONYMS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOTS_NOTHOME.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>HDAM_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOT_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>AVG_DBREC_LENGTH.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RANDOMIZING.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>RAP_SYNONYMS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOTS_NOTHOME.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>HDAM_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>ROOT_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.PHIDAM

IBM.DBDTYPE.PHIDAM is a predefined IBM basic policy for PHIDAM partitions.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.PHIDAM

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.PHIDAM

Policy description

PHIDAM partition policy.

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Resource types supported

The following resource types are supported by this policy:

- PHIDAM

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 131. Rule list for IBM.DBDTYPE.PHIDAM (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.DBDTYPE.PHIDAM.A

IBM.DBDTYPE.PHIDAM.A is a predefined IBM basic policy for PHIDAM partitions and index databases.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.DBDTYPE.PHIDAM.A

Policy domain

REORG

Policy template type

BASIC

Policy name

IBM.DBDTYPE.PHIDAM.A

Policy description

PHIDAM partition policy with index rules

Action description

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>INDEXBLD</td>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MESSAGE*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:

- PHIDAM

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 133. Rule list for IBM.DBDTYPE.PHIDAM.A

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.21</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Table 133. Rule list for IBM.DBDTYPE.PHIDAM.A (continued)

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.21</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.21</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
IBM.DBDTYPE.PSINDEX is a predefined IBM basic policy for PSINDEX partitions.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

IBM.DBDTYPE.PSINDEX

**Policy domain**

REORG

**Policy template type**

BASIC

**Policy name**

IBM.DBDTYPE.PSINDEX

**Policy description**

Index policy for PSINDEX partition

**Action description**

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDEXBLD</td>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MESSAGE</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**Note:** If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.

**Notify reference list**

Policies are shipped with no notification lists provided.
You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

**Resource type list**

The following resource types are supported by this policy:
- PSINDEX

**Rule list**

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.IX_NUM_SEG.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEG.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEG.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.
When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
**Policy: IBM.DBDTYPE.SHISAM**

IBM.DBDTYPE.SHISAM is a predefined IBM basic policy for SHISAM databases.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

IBM.DBDTYPE.SHISAM

**Policy domain**

REORG

**Policy template type**

BASIC

**Policy name**

IBM.DBDTYPE.SHISAM

**Policy description**

SHISAM database policy.

**Action description**

The following table summarizes exception class and severity level pairs that result in REORG action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>REORG</td>
<td>EXCESSIVE_CI_OR_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

**Note:** If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 23, “Domain REORG exceptions,” on page 433.
Resource types supported

The following resource types are supported by this policy:

- SHISAM

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

Table 137. Rule list for IBM.DBDTYPE.SHISAM

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
**Chapter 23. Domain REORG exceptions**

The domain REORG exceptions define the response to any database state that crosses the defined threshold boundaries.

*Table 138. Exceptions for the REORG policy domain*

<table>
<thead>
<tr>
<th>Exception class</th>
<th>Exception description</th>
<th>Originating rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE_DB_RECORD_LENGTH</td>
<td>Excessive average length of database records</td>
<td>IBM.AVG_DBREC_LEN.10</td>
</tr>
<tr>
<td>DATA_SET_EXTENTS_AVAILABILITY</td>
<td>Limited availability of data set extents</td>
<td>IBM.DBDS_EXTENTS.10</td>
</tr>
<tr>
<td>DATA_SET_SIZE_GROWTH</td>
<td>Excessive growth in one or more data sets</td>
<td>IBM.DBDS_GROWTH.10</td>
</tr>
<tr>
<td>DATA_VOLUME_IN_HDAM_RAA</td>
<td>Excessive volume of data in root addressable area</td>
<td>IBM.RAA_DENSITY.10</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_AVAIL_IN_RAA</td>
<td>Insufficient free space available in RAA BASE</td>
<td>IBM.DEDB_FS.10</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_AVAIL_IN_DOVF</td>
<td>Insufficient free space available in DOVF</td>
<td>IBM.DEDB_FS.20</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_AVAIL_IN_IOVF</td>
<td>Insufficient free space available in IOVF</td>
<td>IBM.DEDB_FS.30</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_IN_RAA_VS_DOVF</td>
<td>Insufficient free space in DOVF compared to RAA</td>
<td>IBM.DEDB_FS.40</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_IN_RAA_VS_IOVF</td>
<td>Insufficient free space in IOVF compared to RAA</td>
<td>IBM.DEDB_FS.50</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_AVAIL_IN_OVFLOW</td>
<td>Insufficient free space in the overflow part</td>
<td>IBM.DEDB_FS.60</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_IN_RAA_VS_OVFLOW</td>
<td>Insufficient free space in OVFLOW compared to RAA</td>
<td>IBM.DEDB_FS.70</td>
</tr>
<tr>
<td>DEDB_FREE_SPACE_AVAIL_IN_SDEP</td>
<td>Insufficient free space available in SDEP</td>
<td>IBM.DEDB_FS.80</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_AVG_NUM_RECORD_IO</td>
<td>Excessive average number of I/Os per DB record</td>
<td>IBM.DEDB_DBREC_IO.10</td>
</tr>
<tr>
<td>DEDB_DBRECORD_WITH_EXCESSIVE_IO</td>
<td>DB record that requires excessive number of I/Os</td>
<td>IBM.DEDB_DBREC_IO.20</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_AVG_NUM_ROOT_IO</td>
<td>Excessive average number of I/Os per root segment</td>
<td>IBM.DEDB_ROOT_IO.10</td>
</tr>
<tr>
<td>DEDB_ROOT_SEGMENT_WITH_EXCESS_IO</td>
<td>Root segment that requires excessive number of I/O</td>
<td>IBM.DEDB_ROOT_IO.20</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_AVG_LEN_SYNONYMS</td>
<td>Excessive average length of RAP synonym chains</td>
<td>IBM.DEDB_SYN_LEN.10</td>
</tr>
<tr>
<td>DEDB_LONG_SYNONYM_CHAIN</td>
<td>Excessive length of a RAP synonym chain</td>
<td>IBM.DEDB_SYN_LEN.20</td>
</tr>
<tr>
<td>DEDB_EXCESS_PCT_UOWS_USING_DOVF</td>
<td>Excessive number of UOWs that use DOVF CIs</td>
<td>IBM.DEDB_OVERFLOW.10</td>
</tr>
<tr>
<td>DEDB_EXCESS_PCT_UOWS_USING_IOVF</td>
<td>Excessive percentage of UOWs that use IOVF CIs</td>
<td>IBM.DEDB_OVERFLOW.20</td>
</tr>
<tr>
<td>Exception class</td>
<td>Exception description</td>
<td>Originating rule</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>DEDB_EXCESS_NUM_UOWS_USING_IOVF</td>
<td>Excessive number of UOWs that use IOVF CIs</td>
<td>IBM.DEDB_OVERFLOW.30</td>
</tr>
<tr>
<td>DEDB_EXCESS_AVG_IOVF_CI_PER_UOW</td>
<td>Excessive average number of IOVF CIs per UOW</td>
<td>IBM.DEDB_OVERFLOW.40</td>
</tr>
<tr>
<td>DEDB_UOW_USING_EXCESSIVE_IOVF_CI</td>
<td>UOW that uses excessive number of IOVF CIs</td>
<td>IBM.DEDB_OVERFLOW.50</td>
</tr>
<tr>
<td>DEDB_EXCESS_MIN_IOVF_CI_PER_UOW</td>
<td>Excessive use of IOVF CIs by every UOW</td>
<td>IBM.DEDB_OVERFLOW.60</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_IOVF_CI_USED</td>
<td>Excessive number of IOVF CIs used</td>
<td>IBM.DEDB_OVERFLOW.70</td>
</tr>
<tr>
<td>DEDB_EXCESS_RAP_CI_USING_OVFLOW</td>
<td>Excessive number of RAP CIs that use overflow</td>
<td>IBM.DEDB_OVERFLOW.80</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_DBREC_USING_IOVF</td>
<td>Excessive number of DB records that use IOVF</td>
<td>IBM.DEDB_OVERFLOW.90</td>
</tr>
<tr>
<td>EXCESSIVE_CI_OR_CA_SPLITS</td>
<td>Excessive number of VSAM CI/CA splits</td>
<td>IBM.CICA_SPLITS.10</td>
</tr>
<tr>
<td>EXCESSIVE_UNUSED_RAPS</td>
<td>Excessive number of unused root anchor points</td>
<td>IBM.UNUSED_RAPS.10</td>
</tr>
<tr>
<td>EXCESSIVE_HDAM_ROOTS_NOT_HOME</td>
<td>Excessive number of roots not in home blocks</td>
<td>IBM.ROOTS_NOTHOME.10</td>
</tr>
<tr>
<td>EXCESSIVE_HDAM_OVERFLOW</td>
<td>Excessive volume of data in (P)HDAM overflow area</td>
<td>IBM.HDAM_OVERFLOW.10</td>
</tr>
<tr>
<td>EXCESSIVE_HDAM_ROOTS_OVERFLOW</td>
<td>Excessive number of roots in (P)HDAM overflow area</td>
<td>IBM.ROOT_OVERFLOW.10</td>
</tr>
<tr>
<td>EXCESSIVE_HISAM_DELETE_SEGM</td>
<td>Excessive number of deleted segments in HISAM</td>
<td>IBM.HISAM_SEG_DEL.10</td>
</tr>
<tr>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>Excessive number of VSAM CI/CA splits</td>
<td>IBM.IX_CICA_SPLIT.10</td>
</tr>
<tr>
<td>EXCESSIVE_INDEX_CI_OR_CA_SPLITS</td>
<td>Excessive number of VSAM CI/CA splits</td>
<td>IBM.IX_CICA_SPLIT.11</td>
</tr>
<tr>
<td>EXCESSIVE_INDEX_OVERFLOW</td>
<td>Excessive number of IPSs in overflow</td>
<td>IBM.IX_OVERFLOW.10</td>
</tr>
<tr>
<td>Important: This rule is not applicable to non-partitioned or PHIDAM primary indexes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCESSIVE_RAP_SYNONYMS</td>
<td>Excessive number of synonyms on root anchor points</td>
<td>IBM.RAP_SYNONYMS.10</td>
</tr>
<tr>
<td>EXCESSIVE_SEGMENT_OCCURRENCES</td>
<td>Excessive number of segments in data set(s)</td>
<td>Full function database resources:IBM.SEGM_COUNT.10</td>
</tr>
<tr>
<td>Important: This rule is not applicable to non-partitioned or PHIDAM primary indexes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEDB areas:IBM.DEDB_SEG_CNT.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCESSIVE_SEGMENT_SCATTERING</td>
<td>Excessive number of extensively scattered segments</td>
<td>IBM.SEGM_SPREAD.10</td>
</tr>
<tr>
<td>EXCESSIVE_SLACK_BYTES</td>
<td>Excessive number of slack bytes in data set(s)</td>
<td>IBM.SLACK_BYTES.10</td>
</tr>
<tr>
<td>EXCESSIVE_VL_SPLIT_SEGMENTS</td>
<td>Excessive number of variable-length split segments</td>
<td>IBM.VL_SEGM_SPLIT.10</td>
</tr>
<tr>
<td>FRAGMENTED_FREE_SPACES</td>
<td>Excessive free space fragmentation in data set(s)</td>
<td>IBM.FRAGMENTATION.10</td>
</tr>
<tr>
<td>Exception class</td>
<td>Exception description</td>
<td>Originating rule</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>FREE_SPACE_AVAILABILITY</td>
<td>Insufficient free space available in data set(s)</td>
<td>IBM.FREE_SPACES.10</td>
</tr>
<tr>
<td>GROWING_DBDS_WITH_DATA_FULL</td>
<td>Data set(s) full and approaching the size limit</td>
<td>IBM.DBDS_GROWTH.30</td>
</tr>
<tr>
<td>GROWING_DBDS_WITH_FREE_SPACES</td>
<td>Large data set with high rate of total free space</td>
<td>IBM.DBDS_GROWTH.20</td>
</tr>
<tr>
<td>GROWING_INDEX_WITH_DATA_FULL</td>
<td>Data set(s) full and approaching the size limit</td>
<td>• IBM.IX_GROWTH.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.IX_GROWTH.21</td>
</tr>
<tr>
<td>IMBALANCED_RANDOMIZING</td>
<td>Imbalanced randomizing and inefficient use of RAPs</td>
<td>IBM.RANDOMIZING.10</td>
</tr>
<tr>
<td>INDEX_EXTENTS_AVAILABILITY</td>
<td>Limited availability of data set extents in index</td>
<td>• IBM.IX_EXTENTS.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.IX_EXTENTS.11</td>
</tr>
<tr>
<td>INDEX_SIZE_GROWTH</td>
<td>Excessive growth in one or more data set</td>
<td>• IBM.IX_GROWTH.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.IX_GROWTH.11</td>
</tr>
<tr>
<td>NUMBER_OF_DB_RECORDS</td>
<td>Excessive number of database records</td>
<td>Full function database resources:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DEDB areas:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IBM.DEDB_DBRECCNT.10</td>
</tr>
<tr>
<td>NUMBER_OF_INDEX_POINTER_SEGMENTS</td>
<td>Excessive number of Index Pointer Segments</td>
<td>IBM.IX_NUM_SEGM.10</td>
</tr>
<tr>
<td>DEDB_IOVF_NEEDS_TO_BE_EXTENDED</td>
<td>The IOVF section needs to be extended</td>
<td>IBM.DEDB_FS.31</td>
</tr>
<tr>
<td>DEDB_SDEP_NEEDS_TO_BE_EXTENDED</td>
<td>The SDEP section needs to be extended</td>
<td>IBM.DEDB_FS.81</td>
</tr>
<tr>
<td>DEDB_EXCESSIVE_UOWS_MATCH_COND</td>
<td>Excessive number of UOWs match the RFS condition</td>
<td>IBM.DEDB_RFS.10</td>
</tr>
<tr>
<td>DEDB_EXCESS_PCT_UOWS_MATCH_COND</td>
<td>Excessive percentage of UOWs match the RFS condition</td>
<td>IBM.DEDB_RFS.20</td>
</tr>
<tr>
<td>DEDB_NEEDS_TO_BE_REORGANIZED</td>
<td>The area needs to be reorganized</td>
<td>IBM.DEDB_RFS.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IBM.DEDB_RFS.21</td>
</tr>
<tr>
<td>DAYS_PASSED_SINCE_LAST_REORG</td>
<td>Excessive number of days have passed since the last reorganization</td>
<td>IBM.LAST_REORG.10</td>
</tr>
<tr>
<td>HDAM_AVG_SYNONYM_CHAIN_LENGTH</td>
<td>Excessive average length of HDAM synonym chains</td>
<td>IBM.HDAM_SYN_LEN.10</td>
</tr>
<tr>
<td>FRAGMENTED_FREE_SPACE_ELEMENTS</td>
<td>Excessive percentage of fragmented FSEs</td>
<td>IBMFFFFFFFF.FRAGDFSE.10</td>
</tr>
<tr>
<td>NONREUSABLE_FREE_SPACE_ELEMENTS</td>
<td>Excessive percentage of nonreusable FSEs</td>
<td>IBM.FFDB_NREUSFSE.10</td>
</tr>
</tbody>
</table>
Part 7. Reference: Domain RECOVERY

The topics in this section provide you with supplemental technical references for the Policy Services RECOVERY domain.

Topics:
• Chapter 24, “Domain RECOVERY rules,” on page 439
• Chapter 25, “Domain RECOVERY policies,” on page 457
• Chapter 26, “Domain RECOVERY exceptions,” on page 465
• Chapter 27, “Domain RECOVERY actions,” on page 467
Chapter 24. Domain RECOVERY rules

The domain RECOVERY rules are used to compare the stored data element values against the predefined threshold values that specify the limits for a set of data element values.

Rule template version
The rule template version is indicated by a four-byte integer value.

Maintenance messages
A descriptive message within the rule that describes the maintenance history information for this rule.

The initial maintenance message is blank because at initial product installation no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain
Defines the domain for which this rule is intended to be used.

Rule template type
Defines the rule template type.
Currently, there is only one type: Standard

Rule template name
The name of this rule template.

Rule description
Defines in words what database functionality this rule evaluates.

Resource types supported
The resource types are all IMS-supported Hierarchical Direct Access Methods.

Exception class
The exception class represents the type of exception that can be raised by this rule.

Rule condition expression
The actual condition expression that is applied to the list of data elements for this rule.

Rule condition description
Describes in words what the rule condition expression is doing.

Rule exception expression
The rule exception expression consists of the following items:
- Exception class
- Exception level
- Exception message
These lines in the rule template file are used only as the template for building rule definition streams that are included in various policy definition streams. The actual exception severity level for a rule is determined by the enclosing individual policy stream. The EXCEPTION_LEVEL(WARNING) statement is then overridden by the actual exception severity level that the policy creator (IBM or a user) assigned for a threshold level.

**Rule message template**

Defines the actual message that is sent to the notification list when the condition is met.

The following condition applies to the default exception messages that are shown in the rule message template section of each rule topic:

- \%RESOURCE\% is the IMS database that encountered the exception.
- \%EXCPCOMP\% is a list of data sets that encountered the exception.

**Data elements being evaluated for this rule**

The data element is the smallest named unit of information having predefined attributes.

**Rule threshold sets**

The set of threshold values that are initially set by IBM. There are two sets of threshold values:

- Original values set by IBM that cannot be changed
- Original values initially set by IBM that can be modified
Rule: IBM.BACKOUT_NEEDED

IBM.BACKOUT_NEEDED is a simple rule for checking RECON BACKOUT NEEDED flag for a database resource.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.BACKOUT_NEEDED

Rule description

RECON BACKOUT NEEDED flag for a database resource.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

DATABASE_NEEDS_TO_BE_BACKED_OUT
Rule condition expression

\[
\text{OR(}
\text{IF(DB\_DBRC\_BACKOUT\_NEEDED,IS, \&1)}
\text{)}
\]

Rule condition description

If the RECON BACKOUT NEEDED flag is set to ON for a database resource, the following data element value will be set to Y and an exception will be reported:

DB\_DBRC\_BACKOUT\_NEEDED: \&1

You can apply this rule to any non-HALDB database, HALDB partition, or DEDB area.

Note: The threshold value cannot be changed for this rule, and only the exception level can be controlled.

Rule exception expression

- EXCEPTION\_CLASS(DATABASE\_NEEDS\_TO\_BE\_BACKED\_OUT)
- EXCEPTION\_LEVEL(WARNING)
- EXCEPTION\_MESSAGE

Rule message template

RECON BACKOUT NEEDED flag is turned ON for the database resource \%RESOURCE\%.

Data elements being evaluated for this rule

DB\_DBRC\_BACKOUT\_NEEDED \&1

Rule threshold sets

Table 139. Rule threshold sets for IBM\_BACKOUT\_NEEDED

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>&amp;1 = Y</td>
</tr>
</tbody>
</table>
Rule: IBM.EEQE_COUNT

IBM.EEQE_COUNT is a simple rule for evaluating the number of Extended Error Queue Elements for each data set of a database resource.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

RECOVERY

**Rule template type**

STANDARD

**Rule template name**

IBM.EEQE_COUNT

**Rule description**

Number of EEQEs for each data set of a DB resource.

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

**Exception class**

DATABASE_NEEDS_TO_BE_RECOVERED
Rule condition expression

\[ \text{OR(} \begin{align*}
& \text{IF(DB_DBRC_EEQE_COUNT,GE,} \\
& \quad \&1 \\
& \text{)} \\
& \text{)} \]

Rule condition description

Specify a threshold on the number of Extended Error Queue Elements for a data set.

\[ \text{DB_DBRC_EEQE_COUNT: } \&1 \]

An exception is issued if the threshold is reached or exceeded in one of the data sets of the database or partition or in a DEDB area.

Rule exception expression

- \text{EXCEPTION_CLASS(DATABASE_NEEDS_TO_BE_RECOVERED)}
- \text{EXCEPTION_LEVEL(WARNING)}
- \text{EXCEPTION_MESSAGE}

Rule message template

The number of EEQE has reached or exceeded a threshold for the following data sets of the resource \%RESOURCE\%: \%EXCPCOMP\%.

Data elements being evaluated for this rule

\[ \text{DB_DBRC_EEQE_COUNT } \&1 \]

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 1</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 2</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 3</td>
</tr>
</tbody>
</table>
Rule: IBM.HRS_SINCE_LASTCA

IBM.HRS_SINCE_LASTCA is a simple rule for evaluating the elapsed hours since the last change accumulation performed for a RECON change accumulation group.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.HRS_SINCE_LASTCA

Rule description

Elapsed hours since last CA for CAGRP.

Resource types supported

CAGRP

Exception class

CHANGE_ACCUM_NEEDS_TO_BE_DONE

Rule condition expression

\[ \text{OR} \left( \text{IF(DB\_HOURS\_SINCE\_LASTCA,GE \&1} \right) \]

Rule condition description

Specify a threshold on the number of hours since the last time the change accumulation was performed for a change accumulation group.

\[ \text{DB\_HOURS\_SINCE\_LASTCA: \&1} \]

An exception is issued if the threshold is reached or exceeded.
**Rule exception expression**

- EXCEPTION_CLASS(CHANGE_ACCUM_NEEDS_TO_BE_DONE)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

**Rule message template**

The number of hours since the last CA has reached or exceeded a threshold for the change accumulation group `%RESOURCE%`.

**Data elements being evaluated for this rule**

`DB_HOURS_SINCE_LASTCA &1`

**Rule threshold sets**

*Table 141. Rule threshold sets for IBM.HRS_SINCE_LASTCA*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 12</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 14</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 16</td>
</tr>
</tbody>
</table>
Rule: IBM.HRS_SINCE_LASTIC

IBM.HRS_SINCE_LASTIC is a simple rule for evaluating the elapsed hours since the last image copy for a database data set or a DEDB area.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.HRS_SINCE_LASTIC

Rule description

Elapsed hours since last IC for DB data sets/DEDB area.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

OR(
  IF(DB_HOURS_SINCE_LASTIC,GE,
    &1
  )
)

Rule condition description

Specify a threshold on the number of hours since the last time the image copy of a
data set or area was taken.

DB_HOURS_SINCE_LASTIC: &1

An exception is issued if the threshold is reached or exceeded in one of the data
sets of the database or the HALDB partition or in the DEDB area.

Rule exception expression

- EXCEPTION_CLASS(IMAGE_COPY_NEEDS_TO_BE_TAKEN)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

Hours since the last IC has reached or exceeded a threshold for the following data
sets or area of %RESOURCE%: %EXCPCOMP%.

Data elements being evaluated for this rule

DB_HOURS_SINCE_LASTIC &1

The variable &1 specifies a threshold for the data element value
DBRC_HOURS_SINCE_LASTIC for the data set or DEDB area.

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 264</td>
<td>Elapsed time of 11 days</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 312</td>
<td>Elapsed time of 13 days</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 360</td>
<td>Elapsed time of 15 days</td>
</tr>
</tbody>
</table>
Rule: IBM.IC_NEEDED

IBM.IC_NEEDED is a simple rule for checking RECON IC NEEDED flag for a database data set or a DEDB area.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.IC_NEEDED

Rule description

RECON IC NEEDED flag for DB data sets/DEDB area.

Resource types supported

The following resource types are supported by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

```plaintext
OR(
    IF(DB_DBRC_IC_NEEDED, IS, &1)
)
```

Rule condition description

If the RECON IC NEEDED flag is set to ON for a database data set or a DEDB area, the following data element value will be set to Y:

```
DB_DBRC_IC_NEEDED: &1
```

If the value is Y for at least one of the data sets or the area, an exception will be reported.

You can apply this rule to any non-HALDB database, HALDB partition, or DEDB area.

**Note:** The threshold value cannot be changed for this rule, and only the exception level can be controlled.

Rule exception expression

- EXCEPTION_CLASS(IMAGE_COPY_NEEDS_TO_BE_TAKEN)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The RECON IC NEEDED flag is turned ON for the following data set or data sets of %RESOURCE%: %EXCPCOMP%.

Data elements being evaluated for this rule

```
DB_DBRC_IC_NEEDED &1
```

Rule threshold sets

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>&amp;1 = Y</td>
</tr>
</tbody>
</table>
IBM.IC_RECOMMENDED is a simple rule for checking RECON IC RECOMMENDED flag for a database data set.

**Rule template version**

The rule template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

**Policy domain**

RECOVERY

**Rule template type**

STANDARD

**Rule template name**

IBM.IC_RECOMMENDED

**Rule description**

RECON IC RECOMMENDED flag for DB data sets/DEDB area.

**Resource types supported**

The following resource types are supported by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

**Exception class**

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

```
OR(
    IF(DB_DBRC_IC_RECOMMENDED, IS, &1)
)
```

Rule condition description

If the RECON IC RECOMMENDED flag is set to ON for a database data set, the following data element value will be set to Y:

```
DB_DBRC_IC_RECOMMENDED: &1
```

If the value is Y for at least one of the data sets or the area, an exception will be reported.

You can apply this rule to any non-HALDB database, HALDB partition, or DEDB area.

**Note:** The threshold value cannot be changed for this rule, and only the exception level can be controlled.

Rule exception expression

- EXCEPTION_CLASS(IMAGE_COPY_NEEDS_TO_BE_TAKEN)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The RECON IC RECOMMENDED flag is turned ON for the following data sets of the database resource %RESOURCE%: %EXCPCOMP%.

Data elements being evaluated for this rule

```
DB_DBRC_IC_RECOMMENDED &1
```

Rule threshold sets

*Table 144. Rule threshold sets for IBM.IC_RECOMMENDED*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>&amp;1 = Y</td>
</tr>
</tbody>
</table>
Rule: IBM.NOT_IN_CAGRP

IBM.NOT_IN_CAGRP is a simple rule for checking whether all data sets of a full-function database, a HALDB partition, or a DEDB area belong to a change accumulation group.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.NOT_IN_CAGRP

Rule description

Data sets not in a CA group.

Resource types supported

The following resource types are supported by this rule.
- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

NOT_A_MEMBER_OF_ANY_CAGRP
Rule condition expression

OR(
    IF(DB_IS_IN_A_DBRC_CAGRP, IS,
        &1
    )
)

Rule condition description

If a data set of a non-partitioned full-function database, a HALDB partition, or a DEDB area is not included in any change accumulation group defined in the RECON, the following data element value is set for the data set:

\[ DB_IS_IN_A_DBRC_CAGRP = &1 \]

If the value N is set for at least one of the data sets or the area, an exception will be reported.

Notes:
- The threshold value cannot be changed for this rule, and only the exception level can be controlled.
- No sensor data for the data element DB_HOURS_SINCE_LASTIC is collected for ILDS and primary index data sets for a HALDB partition and the sensor data for the data element is processed as missing data. This is normal.
- For this rule, you must always specify directive EVALUATE for the ONMISSING option when you use this rule in a policy.

Rule exception expression

- EXCEPTION_CLASS(NOT_A_MEMBER_OF_ANY_CAGRP)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The following data sets of the database resource %RESOURCE% are not included in any CA group: %EXCPCOMP%.

Data elements being evaluated for this rule

DB_IS_IN_A_DBRC_CAGRP &1

Rule threshold sets

Table 145. Rule threshold sets for IBM.NOT_IN_CAGRP

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>&amp;1 = N</td>
</tr>
</tbody>
</table>
Rule: IBM.RECOV_NEEDED

IBM.RECOV_NEEDED is a simple rule for checking RECON RECOV NEEDED flag for a database data set or a DEDB area.

Rule template version

The rule template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the rule.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this rule.

Policy domain

RECOVERY

Rule template type

STANDARD

Rule template name

IBM.RECOV_NEEDED

Rule description

RECON RECOV NEEDED flag for DB data sets/DEDB area.

Resource types supported

The following resource types are supported by this rule.
• HDAM
• HIDAM
• HISAM
• SHISAM
• PHDAM
• PHIDAM
• DEDB
• INDEX
• PSINDEX

Exception class

DATABASE_NEEDS_TO_BE_RECOVERED
Rule condition expression

\[
\text{OR}(
\quad \text{IF}(\text{DB_DBRC_RECOV_NEEDED}, \text{IS}, \&1)
\)
\]

Rule condition description

If the RECON RECOV NEEDED flag is set to ON for a database data set or a DEDB area, the following data element value will be set to Y:

\[
\text{DB_DBRC_RECOV_NEEDED: } \&1
\]

If the value is Y for at least one of the data sets or the area, an exception will be reported.

You can apply this rule to any non-HALDB database, HALDB partition, or DEDB area.

**Note:** The threshold value cannot be changed for this rule, and only the exception level can be controlled.

Rule exception expression

- EXCEPTION_CLASS(DATABASE_NEEDS_TO_BE_RECOVERED)
- EXCEPTION_LEVEL(WARNING)
- EXCEPTION_MESSAGE

Rule message template

The RECON RECOV NEEDED flag is turned ON for the following data sets of the database resource %RESOURCE%: %EXCPCOMP%.

Data elements being evaluated for this rule

\[
\text{DB_DBRC_RECOV_NEEDED } \&1
\]

Rule threshold sets

*Table 146. Rule threshold sets for IBM.RECOV.NEEDED*

<table>
<thead>
<tr>
<th>Threshold set name</th>
<th>Threshold values</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>&amp;1 = Y</td>
</tr>
</tbody>
</table>
Chapter 25. Domain RECOVERY policies

The domain RECOVERY policies are used to evaluate the DBRC state of a full-function database, a HALDB partition, a DEDB area, or a change accumulation group, and specify how Policy Services responds to any events that reach or exceed the threshold values specified for the state.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

A descriptive message within the rule that describes the maintenance history information for this policy.

The initial maintenance message is blank because at initial product installation no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

The original name of this policy template.

The name always begins with IBM.

Policy domain

Defines the domain for which this policy is intended to be used.

Policy template type

Defines the policy template type.

Currently, there is only one type: Basic

Policy name

The policy name is same as the name that appears in the title line and is also the same as the template original name.

Policy description

Defines in words what database functionality this policy monitors.

Action description

Show exceptions and associated severity and actions.

Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more of these notification lists.

The list you provide is where the summary notification message is sent.

Resource type list

The resource types are all IMS-supported Hierarchical Direct Access Methods.

Rule list
List of rules associated with this policy. The policy monitors the evaluation of all these rules and takes action when any rule threshold is met or exceeded (exception).

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Policy: IBM.RECOV_DEFAULT

IBM.RECOV_DEFAULT is a predefined IBM basic policy for recovery preparedness for a non-partitioned full-function database, a HALDB partition, or a DEDB area.

Policy template version

The policy template version is indicated by a four-byte integer value.

Maintenance messages

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

Template original name

IBM.RECOV_DEFAULT

Policy domain

RECOVERY

Policy template type

BASIC

Policy name

IBM.RECOV_DEFAULT

Policy description

Policy for a database, partition, or area.

Action description

The following table summarizes exception class and severity level pairs that result in RECOVERY action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMAGECOPY</td>
<td>IMAGE_COPY_NEEDS_TO_BE_TAKEN</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>ADDTOCAGRP</td>
<td>NOT_A_MEMBER_OF_ANY_CAGRP</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>DBRECOVERY</td>
<td>DATABASE_NEEDS_TO_BE_RECOVERED</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>BACKOUT</td>
<td>DATABASE_NEEDS_TO_BE_BACKED_OUT</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

Note: If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 26, “Domain RECOVERY exceptions,” on page 465.
Notify reference list

Policies are shipped with no notification lists provided.

You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

Resource type list

The following resource types are supported by this policy:

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Rule list

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.HRS_SINCE_LASTIC</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.HRS_SINCE_LASTIC</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.HRS_SINCE_LASTIC</td>
<td>LOW</td>
<td>WARNING</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IC_NEEDED</td>
<td>YES</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.IC_RECOMMENDED</td>
<td>YES</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.NOT_IN_CAGRP</td>
<td>NO</td>
<td>CRITICAL</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.RECOV_NEEDED</td>
<td>YES</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.EEQE_COUNT</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.EEQE_COUNT</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.EEQE_COUNT</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.BACKOUT_NEEDED</td>
<td>YES</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>
Rule list history

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
**Policy: IBM.CAGRP_DEFAULT**

IBM.CAGRP_DEFAULT is a predefined IBM basic policy for a change accumulation group defined in RECON.

**Policy template version**

The policy template version is indicated by a four-byte integer value.

**Maintenance messages**

The initial maintenance message is blank because no maintenance has been applied to the policy.

When maintenance is applied, this field contains information provided by IBM that describes the updates made to this policy.

**Template original name**

IBM.CAGRP_DEFAULT

**Policy domain**

RECOVERY

**Policy template type**

BASIC

**Policy name**

IBM.CAGRP_DEFAULT

**Policy description**

Policy for a CAGRP.

**Action description**

The following table summarizes exception class and severity level pairs that result in RECOVERY action.

<table>
<thead>
<tr>
<th>Action</th>
<th>Exception class</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGEACCUM</td>
<td>CHANGE_ACCUM_NEEDS_TO_BE_DONE</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>

**Note:** If an exception and severity pair is not found in this table, the default action for that pair is MESSAGE. For a list of the correspondence between exception classes and their originating rules, see Chapter 26, “Domain RECOVERY exceptions,” on page 465.

**Notify reference list**

Policies are shipped with no notification lists provided.
You must create your own notification list or lists, and then update this policy to provide one or more notification lists.

**Resource type list**

The following resource types are supported by this policy:

- CAGRP

**Rule list**

The following table summarizes the default rules used in this policy.

SKIPEVAL means that the evaluation of this rule is skipped if any data that is referred to in the rule cannot be made available at the time of the policy evaluation.

EVALUATE means that the evaluation of this rule is made even if a data that is referred to in the rule cannot be made available at the time of the policy evaluation. The comparison of the unavailable data with the threshold value defined for it returns the default result that is determined by the rule condition expression.

*Table 150. Rule list for IBM.CAGRP_DEFAULT*

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold set</th>
<th>Severity level</th>
<th>If comparison data is missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.HRS_SINCE_LASTCA</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HRS_SINCE_LASTCA</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.HRS_SINCE_LASTCA</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

**Rule list history**

The initial rule list history is blank because no maintenance has been applied to the rule list for this policy.

When maintenance is applied, this field contains information provided by IBM that describes the addition, deletion, or changes to the rule list for this policy.
Chapter 26. Domain RECOVERY exceptions

The domain RECOVERY exceptions define the response to any DBRC-managed resource state that crosses the defined threshold boundaries.

*Table 151. Exceptions for the RECOVERY policy domain*

<table>
<thead>
<tr>
<th>Exception class</th>
<th>Exception description</th>
<th>Originating rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMAGE_COPY_NEEDS_TO_BE_TAKEN</td>
<td>At least one data set needs an image copy.</td>
<td>• IBM.HRS_SINCE_LASTIC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.IC_NEEDED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.IC_RECOMMENDED</td>
</tr>
<tr>
<td>NOT_A_MEMBER_OF_ANY_CAGRP</td>
<td>One or more data sets do not belong to any CAGRP.</td>
<td>IBM.NOT_IN_CAGRP</td>
</tr>
<tr>
<td>DATABASE_NEEDS_TO_BE_RECOVERED</td>
<td>The database, partition, or area needs recovery.</td>
<td>• IBM.RECOV_NEEDED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IBM.EEQE_COUNT</td>
</tr>
<tr>
<td>DATABASE_NEEDS_TO_BE_BACKED_OUT</td>
<td>The database updates need to be backed out.</td>
<td>IBM.BACKOUT_NEEDED</td>
</tr>
<tr>
<td>CHANGE_ACCUM_NEEDS_TO_BE_DONE</td>
<td>A new change accumulation is needed for the CAGRP.</td>
<td>IBM.HRS_SINCE_LASTCA</td>
</tr>
</tbody>
</table>
Chapter 27. Domain RECOVERY actions

Policy Services RECOVERY domain action processes will return one or more of the following process requests that will result in a passive process as determined by Autonomics Director.

Table 152. Process actions for RECOVERY domain

<table>
<thead>
<tr>
<th>Keyword for process action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMAGECOPY</td>
<td>Take an image copy of each data set of the database resource.</td>
</tr>
<tr>
<td>CHANGEACCUM</td>
<td>Create a new change accumulation for the change accumulation group.</td>
</tr>
<tr>
<td>DBRECOVERY</td>
<td>Perform recover process for the database resource.</td>
</tr>
<tr>
<td>ADDTOCAGRP</td>
<td>Add all data sets of the database resource to a DBRC CAGRP.</td>
</tr>
<tr>
<td>BACKOUT</td>
<td>Perform backout process for the database updates.</td>
</tr>
</tbody>
</table>
Part 8. Troubleshooting

The topics in this section provide you with technical references to help you troubleshoot and diagnose Policy Services problems.

Topics:
- Chapter 28, “Runtime error messages (BSN),” on page 471
- Chapter 29, “RECOVERY domain summary messages (IRO),” on page 525
- Chapter 30, “Return and reason codes,” on page 527
- Chapter 31, “Gathering diagnostic information,” on page 573
Chapter 28. Runtime error messages (BSN)

Use the information in these messages to help you diagnose and solve Policy Services problems.

Message format

Policy Services messages adhere to the following format:

BSNnnnx

Where:

BSN Indicates that the message was issued by Policy Services
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.
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.

Module
The Module section indicates which module or modules are affected.

BSN1000E LOAD OF BSNSCI00 HAS FAILED

Explanation: Unable to load the Policy Services initialization module. This error should not occur.

System action: The requested function is rejected. A return code and a reason code that define the failure are returned to the client.

User response: Check to see if module BSNSCI00 resides in the hlq.SHKTLOAD load library. If the module is in the library, you might have an installation problem. Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCI0F0

BSN1001E CLIENT REQUESTED FUNCTION (FUNC_CODE) NOT VALID. R15=hhrrrrrrrr.

Explanation: The requested function is invalid.

System action: Policy Services rejected the call from the client. A return code and a reason code that define the failure are returned to the client.
System processing continues.

**User response:** Restart the client, which is either the IMS Tools client or the user interface client.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNSCIF0

---

**BSN1002E**

**CLIENT REQUESTED FUNCTION (func_code) REJECTED. POLICY SERVICES HAVE NOT BEEN INITIALIZED.**

**Explanation:** The requested function has been rejected. The function being requested is not valid until the client issues the initialization request.

**System action:** The requested function is rejected. A return code and a reason code that define the failure are returned to the client.

**User response:** Restart the client, which is either the IMS Tools client or the dialogue client.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNSCIF0

---

**BSN1008E**

**THE POLICY SERVICES WAS UNABLE TO ALLOCATE WORK STORAGE FOR THE ESTAE ROUTINE**

**Explanation:** Working storage could not be obtained for the ESTAE routine.

**System action:** Initialization of Policy Services continues and normal processing continues. The ESTAE routine is not active.

**User response:** This is an internal error. Contact IBM Software Support and notify them of the IMS tool that encountered this problem.

**Module:** BSNSCIF0

---

**BSN1009E**

**POLICY SERVICES WAS UNABLE TO CREATE THE ESTAE ROUTINE FOR the client_type.**

**Explanation:** During the initialization of Policy Services, the creation of an ESTAE failed, where client_type is:

**IMS TOOL**
One of the supported IMS Tool products

**DIALOGUE**
The Policy Services user interface

This error should not occur.

**System action:** Initialization of Policy Services continues and normal processing continues. The ESTAE routine is not active.

**User response:** This is an internal error. Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNSCIF0

---

**BSN1501I**

**THE PES MODULE module_name RECEIVED CONTROL WITH FUNCTION function_code: RC=nn, RSN=nn.**

**Explanation:** This message is a policy environment service (PES) message that indicates the module flow and provides the return code and the reason code for each module.

**System action:** None.

**User response:** No action is required.

**Module:** BSNPES10, BSNPES20, BSNPES30, BSNPES40, BSNPESH0, BSNPESI0, BSNPESW0, BSNPES0, BSNPESK0, BSNPESD0, BSNPESA0, BSNPESQ0, BSNPESL0, BSNPESL1

---

**BSN1503E**

**PES HAS A CRITICAL ERROR IN MODULE module_name: FUNCTION=function_code, RC=nn, RSN=nn.**

**Explanation:** An error occurred in the policy environment service (PES) module. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** See the PES return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNPES00, BSNPES10, BSNPES20, BSNPES30, BSNPES40, BSNPESH0, BSNPESI0, BSNPESW0, BSNPES0, BSNPESK0, BSNPESD0, BSNPESA0, BSNPESQ0, BSNPESL0, sBSNPESL1

---

**BSN1506E**

**FOR DOMAIN=domain_name, ENVIRONMENT=environment, THE FPQSRV FUNCTION=FPQ_function_code FAILED IN MODULE module_name WITH RC=nn, RSN=nn. THE FPQSRV DIAGNOSTIC FEEDBACK= WORD1=word1_first_half-word1_second_half, WORD2=word2, WORD3=word3.**

**Explanation:** A repository server function failed in the policy environment service (PES) module. The FPQ
function code specifies the repository function name, and the environment variable specifies either the environment type (MAINTENANCE, OPERATION, or HISTORY) or the environment level.

The feedback field includes IBM diagnostic and debugging information. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and reason code that define the failure are returned to the client.

**User response:** See the repository service return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNPES0, BSNPES0, BSNPES0, BSNPES0, BSNPES0, BSNPES0, BSNPES0

---

**BSN1507E**

THE PES CONTROL MEMBER HAS ENCOUNTERED AN ERROR WITH THE REPOSITORY.
THE FPOSRV FUNCTION=func FAILED IN MODULE module WITH RC=rc, RSN=rsn

**Explanation:** A repository server function failed in the policy environment service (PES) module.

The FPQ function code specifies the repository function name. Return and reason codes are those returned by the FPQ call and are documented in the IBM Tools Base for z/OS IMS Tools Knowledge Base User’s Guide and Reference. They are included for IBM diagnostic and debugging information.

This error is an internal IMS tools error.

**System action:** The requested function is rejected. A return code and a reason code that define the failure are returned to the client.

**User response:** See the description of the repository service return code and reason code in the reference section of the IBM Tools Base for z/OS IMS Tools Knowledge Base User’s Guide and Reference to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNPESH0

---

**BSN1509E**

THE USER HAS INSUFFICIENT ACCESS AUTHORITY TO THE REPOSITORY.

**Explanation:** The ISPF user or IMS Tool does not have the appropriate RACF® access of UPDATE that is required.

**System action:** The requested function is rejected and Policy Services is terminated.

**User response:** Either correct the user ID, or update the user ID to have UPDATE access for the IMS Tools KB Input repository.

**Module:** BSNSCI00

---

**BSN1511I**

FOR DOMAIN=domain_name, ENVIRONMENT LEVEL=environment_level, THE PES action STARTED

**Explanation:** The policy environment service (PES) process (action) has started for domain_name, environment_level, and recon_ID.

The variable action is one of the following actions:
- GET WORKLIST ITEM SERVICE
- UPDATE WORKLIST ITEM SERVICE
- WORKLIST MAINTENANCE PROCESS
- IMPORT WORKLIST SERVICE
- ADD APARS SERVICE
- ADD PACKAGE SERVICE
- ENVIRONMENT COMMIT PROCESS
- ENVIRONMENT CREATE PROCESS
- ENVIRONMENT DELETE PROCESS
- ENVIRONMENT SELECT PROCESS
- ENVIRONMENT VALIDATE PROCESS

**System action:** None.

**User response:** No action is required.

**Module:** BSNPES20, BSNPES30, BSNPES40

---

**BSN1512I**

FOR DOMAIN=domain_name, ENVIRONMENT LEVEL=environment_level, THE PES action ENDED, RC=nn, RSN=nn.

**Explanation:** The policy environment service (PES) process (action) has ended for domain_name, environment_level, and recon_ID.

The variable action is one of the following actions:
- GET WORKLIST ITEM SERVICE
- UPDATE WORKLIST ITEM SERVICE
- WORKLIST MAINTENANCE PROCESS
- IMPORT WORKLIST SERVICE
- ADD APARS SERVICE
- ADD PACKAGE SERVICE
- ENVIRONMENT COMMIT PROCESS
- ENVIRONMENT CREATE PROCESS
- ENVIRONMENT DELETE PROCESS
- ENVIRONMENT SELECT PROCESS
- ENVIRONMENT VALIDATE PROCESS
System action: None.
User response: No action is required.
Module: BSNPES20, BSNPES30, BSNPES40

BSN1600E  A POCB CONTROL BLOCK COULD NOT BE OBTAINED: RC=nn, RSN=nn.

Explanation: The request to obtain an internal Policy Control Block (POCB) failed. The REGION parameter does not have enough specified memory for the job.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The base rule, policy, or notification list processing completes with an error, and system processing continues.

User response: Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

Module: BSNASM00

BSN1603E  IMS POLICY SERVICES RETRY OF SYSTEM FAILURE FAILED, AND AN ABEND WAS REQUESTED.

Explanation: An internal Policy Services error has occurred, was resolved by Policy Services recovery, and has occurred a second time. The second occurrence resulted in a termination of Policy Services.

System action: The requested function is rejected. A return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCIF0


Explanation: The request to start a journal unit of work that represents the start of the Policy Decision Making Report failed.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The policy lookup processing that was requested by the Policy Services client completes with an error, and system processing continues.

User response: See the association manager return code and reason code to determine and correct the problem.

For the R15 code, see the client API interface return codes and reason codes.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1605I  IMS PSS API TCB ABEND
abend_code–sub_code, THD=failing_thread
DIAG= sdwaflgs/sdwacmpf
MODULE ID = modid EP = module_entry_point_address
PSW = psw_value OFFSET = module_offset
R0-3 reg0_value reg1_value reg2_value reg3_value
R4-7 reg4_value reg5_value reg6_value reg7_value
R8-11 reg8_value reg9_value reg10_value reg11_value
R12-15 reg12_value reg13_value reg14_value reg15_value

Explanation: An internal Policy Services error was detected and reported back to the client for a retry option. The retry also failed, so a dump was taken.

• Line 1 - Abending TCB and abend code
• Line 2 - Abending module ID and EPA
• Line 3 - PSW at abend and module offset
• Line 4-7 - Registers at abend

If the abend is a propagated abend (U4095), or if the abend is being passed down from the parent TCB, then only the first line of the message is issued.

System action: A dump is taken and the Policy Services client is terminated.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCIF0

BSN1606E  THE JOURNAL MANAGER UNIT OF WORK COULD NOT BE COMMITTED: RC=nn, RSN=nn, R15=hhhhhhhh.

Explanation: The request to commit a journal unit of work that represents the end of the Policy Decision Making Report failed.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The policy lookup processing that was requested by the Policy Services client completes with an error, and system processing continues.

User response: See the association manager return code and reason code to determine and correct the problem.
code and reason code to determine and correct the problem.

For the R15 code, see the client API interface return codes and reason codes.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1607I  PSW AND REGISTERS AT ABEND ARE NOT AVAILABLE.

Explanation: Policy Services detected an ABEND. However, the PSW and registers are not available.

System action: Error processing continues.

User response: None. This message is informational.

Module: BSNSCIF0

BSN1608E  SDUMP FAILED FOR mmmn ABEND, RC=xx, RSN=xx

Explanation: Policy Services recovery intercepted an ABEND. While trying to request the dump, it failed.

System action: System is terminated.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNXEST0

BSN1609I  DAE SUPPRESSED DUMP FOR mnn ABEND

Explanation: The dump for the ABEND was suppressed.

System action: The system is terminated.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNXEST0

BSN1610E  AN INVALID FUNCTION WAS REQUESTED: FUNCTION=function_code.

Explanation: The client issued a request to IMS Policy Services with an invalid function request. The variable function_code is the function code passed to Policy Services. This error is an internal problem with the IMS tool that made the request.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1611E  POLICY DATA STORE FUNCTION (func_code) HAS FAILED, RC=nn RSN=nn.

Explanation: A policy data store (PDS) func_code call was requested while processing a request to list policies.

Where:

func_code

The PDS function code is either:

- LSTP: Autonomics Director has requested a list of policies be returned
- LSTT: Autonomics Director has requested a list of policies be terminated

RC=nn PDS return code

RSN=nn PDS reason code

System action: The original request, either LSTP or LSTT, is terminated and control is returned to the client. System processing continues.

User response: No action is required.

Module: BSNASM00

BSN1612E  NO POLICY NAME WAS PASSED ON THE BNSC FUNC=ASLK CALL.

Explanation: An IMS tool attempted to make a Policy Services lookup request but failed. This error is an internal problem with the IMS tool that made the request.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The lookup process completes with an error, and system processing continues.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1614E  AN INVALID POLICY NAME PREFIX OF "IBM" WAS SPECIFIED FOR THE POLICY NAME policy_name.

Explanation: An IMS tool made an IMS Policy Services request and passed a policy policy_name with IBM as a prefix, which is invalid for any client request. This error is an internal problem with the IMS tool that made the request.

System action: Policy Services rejects the call from the
client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNASM00

---

**BSN1626E**  
**THE RESOURCE LIST WAS NOT RETURNED BY POLICY DATA STORE.**

**Explanation:** The client made a request to Policy Services for a policy lookup function. While the lookup function was processing, an internal request was made to list the supported resource type. This internal request failed.

This error is an internal problem with the IMS tool that made the request.

**System action:** Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNASM00

---

**BSN1628E**  
**THE RESOURCE TYPE (resource_type) THAT WAS DEFINED ON THE CALL DOES NOT MATCH THE RESOURCE TYPES THAT WERE DEFINED FOR THE SELECTED POLICY (policy_name).**

**Explanation:** While a client lookup function was processing, the resource_type that was passed was determined to be invalid for policy_name. The resource type that was specified by the IMS tool is incorrect or has not been added to the policy.

**System action:** Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

**User response:** If the resource type is correct, add resource_type to policy_name.

If the resource type is incorrect, configure the IMS tool to specify a valid resource type.

**Module:** BSNASM00

---

**BSN1630E**  
**THE source LOCALE ID (mmmmmm) IS INVALID OR IS NOT DEFINED TO ITKB.**

**Explanation:** An invalid locale ID mmmmm was specified or has not been defined to the IMS Tools Knowledge Base (ITKB) as a valid RECON ID.

The variable source is INTERNAL or EXTERNAL, which refers to either the internal or external RECONID value.
System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: If the locale ID is BSNGLOBL, use the ITKB service process to automatically generate this locale.

If the locale ID is not BSNGLOBL, this error is an internal IMS tools error. Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1634E THE LEVEL CHANGE REQUEST IS INVALID. THE SYSTEM IS NOT IN A MAINTENANCE ENVIRONMENT.

Explanation: While the system was not in the maintenance environment, a request to change the environment level was made to Policy Services. However, this request is valid only in the maintenance environment.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: A request to change the environment level is normally made only by a Policy Services dialogue session while in maintenance environment. If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1636E THE DOMAIN NAME (domain_name) THAT WAS PASSED IS UNKNOWN TO THE SYSTEM FOR FUNCTION REQUEST func.

Explanation: The current operation or maintenance environment does not contain domain_name. The domain either has not installed the required items in Policy Services or is currently still in the initial maintenance environment that was created during the installation process.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: Verify that the following tasks were completed during the installation of domain_name:

- Maintenance was applied to the Policy Domain Table Definition (BSNPDNT0).
- The Policy Domain Table was added for the domain name (BSNnnnnn), where nnnnn is the domain name that is supplied by the IMS tool.
- New policies and rules that are required by the new IMS tool were added.

If domain_name has not been installed, complete the installation.

If domain_name has been installed, promote domain_name out of the maintenance environment.

Module: BSNASM00

BSN1637E THE OPERATION ENVIRONMENT DOES NOT CONTAIN THE DOMAIN domain_name.

Explanation: domain_name has been recognized by Policy Services, but the domain has not been fully installed or is currently in the initial maintenance environment that was created during the installation process.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: Verify that the following tasks were completed during the installation of domain_name:

- Maintenance was applied to the Policy Domain Table Definition (BSNPDNT0).
- The Policy Domain Table was added for the domain name (BSNnnnnn), where nnnnn is the domain name that is supplied by the IMS tool.
- New policies and rules that are required by the new IMS tool were added.

If domain_name has not been installed, complete the installation.

If domain_name has been installed, promote domain_name out of the maintenance environment.

Module: BSNASM00

BSN1638E THE POLICY DOMAIN ENVIRONMENT RECORDS ARE NOT PRESENT.

Explanation: No domains have been defined to Policy Services in the BSNPDNT0 table.

System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: Verify that the following tasks were completed during the installation of domain_name:

- Maintenance was applied to the Policy Domain Table Definition (BSNPDNT0).
• The Policy Domain Table was added for the domain name (BSNnnnmm), where nnnn is the domain name that is supplied by the IMS tool.
• New policies and rules that are required by the new IMS tool were added.

If the IMS tool or tools have not been installed, complete the installation.

If the installation is complete and if the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNASM00

BSN1640I THE DOMAIN domain_name IS IN THE MAINTENANCE ENVIRONMENT.
Explanation: A maintenance environment for domain_name was requested, but domain_name is currently in a maintenance environment.
System action: System processing continues.
User response: No action is required.
Module: BSNASM00

BSN1642E THE REQUEST TO SELECT A NEW ENVIRONMENT WAS REJECTED. THE DOMAIN domain_name IS CURRENTLY IN THE MAINTENANCE ENVIRONMENT.
Explanation: A request was made to select an existing history environment as the new operation environment. The request was rejected because a new operation environment cannot be selected if the domain has an active maintenance environment.
System action: Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.
User response: Commit the maintenance environment, and then resubmit your request to make the specified history environment the new operation environment.
Module: BSNASM00

BSN1644E THE REQUEST TO DELETE DOMAIN domain_name FROM THE MAINTENANCE ENVIRONMENT WAS REJECTED. DOMAIN domain_name IS NOT PART OF THE MAINTENANCE ENVIRONMENT.
Explanation: domain_name cannot be deleted from the maintenance environment because it is not part of the existing maintenance environment.
System action: Policy Services rejects the call from the client, and a return code and a reason code that define

User response: If domain_name is the domain that you wanted to delete, no action is required. The domain_name does not exist.
If domain_name is not the domain that you want to delete, select the correct domain that is in the maintenance environment to be deleted.

Module: BSNASM00

BSN18011 THE ETV MODULE module_name RECEIVED CONTROL WITH FUNC=function_code, RC=nn, RSN=nn.
Explanation: This message is a email/texting variable (ETV) message that indicates the module flow with the return code and the reason code for each module.
System action: None.
User response: None. This message is informational.
Module: BSNETVA0, BSNETVG0, BSNETVH0, BSNETVL0, BSNETVR0, BSNETVT0, BSNETVU0

BSN1803E ETV HAS A CRITICAL ERROR IN MODULE module_name.
FUNCTION=function_code, RC=nn, RSN=nn.
Explanation: An error occurred in the email/texting variable (ETV) module. This is an internal IMS Tools error.
System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.
User response: See the ETV return code and reason code to determine and correct the problem. If the problem persists, contact IBM Software Support, and notify them of the IMS Tools product that encountered this problem.
Module: BSNETVA0, BSNETVG0, BSNETVH0, BSNETVL0, BSNETVR0, BSNETVT0, BSNETVU0, BSNETVU0

BSN1806E THE ETV REPOSITORY FUNCTION FAILED: DOMAIN=domain_name, LEVEL=environment_level, LOCALE=recon_ID, VAR=var_name. THE FPQSRV FUNCTION function_code FAILED IN MODULE module_name WITH RC=nn, RSN=nn, THE FPQSRV DIAGNOSTIC FEEDBACK= WORD1=word1_first_halfword1_second_half, WORD2=word2, WORD3=word3.
Explanation: A repository server function failed in the email/texting variable (ETV) module for
environment_level, recon_ID, and var_name because of a repository server function failure. The FPQ function code specifies the repository function name.

The feedback field includes IBM diagnostic and debugging information. This error is an internal IMS Tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the repository service return code and reason code to determine and correct the problem. If the problem persists, contact IBM Software Support, and notify them of the IMS Tools product that encountered this problem.

Module: BSNETVA0, BSNETVG0, BSNETVL0, BSNETVR0, BSNETV0, BSNETVU0

BSN1811I THE VARIABLE TABLE LIST HAS STARTED LISTING OBJECTS FOR
DOMAINDomain=domain_name.

Explanation: The email/texting variable (ETV) process started listing for domain_name.

System action: None.

User response: None. This message is informational.

Module: BSNETVL0

BSN1812I THE VARIABLE function PROCESS HAS
ENDED FOR: DOMAIN=domain_name,
LEVEL=environment_level,
LOCALE=locale, VAR=UPDATE, RC=nn, RSN=nn.

Explanation: The email/texting variable (ETV) process (function) has ended for domain_name, environment_level, and locale, where locale is the RECON ID that has been defined to the repository or BSNGLOBL.

System action: None.

User response: None. This message is informational.

Module: BSNETVR0

BSN1813I THE VARIABLE DELETE BY RECON
recon_name HAS ENDED FOR THE:
RC=nn, RSN=nn.

Explanation: The email/texting variable (ETV) process ended by recon_name.

System action: None.

User response: None. This message is informational.

Module: BSNETVR0

BSN1814I THE VARIABLE TABLE LIST HAS
ENDED FOR: DOMAIN=domain_name.

Explanation: The email/texting variable (ETV) process ended listing for domain_name.

System action: None.

User response: None. This message is informational.

Module: BSNETVL0

BSN2002E STORAGE FOR block_name BLOCK
COULD NOT BE OBTAINED.

Explanation: The internal storage block or table cannot be obtained. This error is an internal Policy Services error.

System action: Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCI00

BSN2004E THE POLICY SERVICES MODULE
module_name COULD NOT BE
LOADED.

Explanation: A module that is loaded by the Policy Services initialization function failed the LOAD request. This error is an internal Policy Services error.

System action: Policy Services fails initialization, and
a return code and a reason code that define the failure are returned to the client.

**User response:** Add the module that failed the LOAD request to the hlq.SHKTLOAD load library.

If the module is in the library, you might have an install problem. Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNSCI100

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**BSN2006E**

**THE REQUESTED INIT/STRT OF THE FACILITY FAILED.**

**Explanation:** The Policy Services initialization function failed. This error is an internal Policy Services error.

**System action:** The requested initialization function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** This error message is always preceded by another message that defines a specific initialization failure. See the preceding message to fix this initialization failure.

**Module:** BSNSCI100

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**BSN2008E**

**THE REPOSITORY DOES NOT CONTAIN ANY RECON CONTAINER ITEMS.**

**Explanation:** RECON data sets must be defined to the repository. This error is a repository environment error.

During Policy Services initialization, the Policy Services calls the repository to obtain the list of user-defined RECON data sets that have been defined to the repository. Policy Services requires that at least a global (BSNGLOBL) RECON exists within the repository.

**System action:** The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Define the required RECON data sets to the repository, and then verify that the RECON definitions are in the repository by using the IMS tools Knowledge Base interface dialog.

**Module:** BSNSCI100

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**BSN2009E**

**THE BSNGLOBL RECON ID IS NOT REGISTER WITH THE ITKB REPOSITORY.**

**Explanation:** The global RECON ID (BSNGLOBL locale) is not registered with the IMS Tools Knowledge Base (ITKB). The user might have deleted the BSNGLOBL RECON ID using the ITKB user interface.

**System action:** Initialization of Policy Services is halted and termination is forced.

**User response:** Register the global RECON ID (BSNGLOBL).

See the IBM Tools Base for z/OS IMS Tools Knowledge Base User’s Guide and Reference for procedures on how to reinstate BSNGLOBL as a RECON ID.

**Module:** BSNSCI100

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**BSN2010I**

**THE services_name SERVICES v.r.m INITIALIZED.**

**Explanation:** The service has been successfully initialized. The IMS Tools product that is to use the services can proceed to process requests.

The variable services_name is one of the following services:

- Policy Services - includes all components for processing the IMS Tools product client policy services request or the TSO client policy services request.
- Data dictionary services - includes all components for processing the IMS Tools product client data dictionary request or the TSO client data dictionary request.
- Stand-alone notification services - includes all components that process the IMS Tools product client notification manager message requests.

For variable v.r.m, v is the product version, r is the product release, and m is the mod level.

**System action:** The service is activated and ready to process client requests.

**User response:** No action is required.

**Module:** BSNSCI100

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**BSN2011E**

**THE service_name SERVICES INIT REQUEST HAS FAILED. service_name IS NOT INITIALIZED.**

**Explanation:** The service initialization function failed. The variable service_name is one of the following services:

- IMS Policy Services, which includes all components for processing the IMS tools client policy services request or the TSO client policy services request.
- Data dictionary services, which includes all components for processing the IMS tools client data dictionary request or the TSO client data dictionary request.

This error is an internal IMS Policy Services error.

**System action:** The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** This error message is always preceded by another message that defines a specific initialization
failure. See the preceding message to fix this initialization failure.

**Module:**  BSNSCI00

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**BSN2012I**  
THE service_name TERMINATED.

**Explanation:** The service service_name was terminated. The variable service_name is one of the following services:

- IMS Policy Services, which includes all components for processing the IMS tools client policy services request or the TSO client policy services request.
- Data dictionary services, which includes all components for processing the IMS tools client data dictionary request or the TSO client data dictionary request.

**System action:** The server service_name is terminated

**User response:** No action is required.

**Module:**  BSNSCT00

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**BSN2014E**  
A CALL TO THE REPOSITORY TO OBTAIN RECON INFORMATION HAS FAILED.

**Explanation:** During Policy Services initialization, the Policy Services call to obtain the list of RECON data sets that have been defined to the repository failed. This error is an internal Policy Services error or an internal repository error.

**System action:** The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Define the required RECON data sets by using the IMS Tools Knowledge Base (ITKB) dialog. You must at least define BSNGLOBL.

**Module:**  BSNSCI00

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**BSN2015I**  
POLICY SERVICES PHASE 1 EXCEPTION MESSAGE SYSTEM DEFAULT IS setting.

**Explanation:** The Policy Services phase 1 exception message default value was set to setting. The Policy Services phase 1 exception message default value was set to setting. You can set the phase 1 exception message system default value from the main menu of the Policy Services ISPF client. If you do not choose a value, the system default is set to N (DISABLED). The variable setting is one of the following values:

**DISABLED**  
Exception messages that are generated during phase 1 of a policy evaluation are not sent to the directory entries defined in the policy notification list.

**Important:** During a policy evaluation, phase 1 exception messages are those messages that are generated prior to a recommended process action, such as a reorganization.

**System action:** The service is activated and ready to process client requests.

**User response:** No action is required.

**Module:**  BSNSCI00

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**BSN2016I**  
POLICY SERVICES PHASE 1 EXCEPTION MESSAGE FOR THIS EXECUTION IS CURRENTLY setting.

**Explanation:** The Policy Services phase 1 exception message option was set to setting for this client. If the setting value in this message is different from the setting value in message BSN2015I, the IMS Tool requested an override of the phase 1 exception message default value for this client only. The default value remains the system default.

You can set the phase 1 exception message system default value from the main menu of the Policy Services ISPF client. If you do not choose a value, the system default is set to N (DISABLED). The variable setting is one of the following values:

**DISABLED**  
Exception messages that are generated during phase 1 of a policy evaluation are not sent to the directory entries defined in the policy notification list.

**Important:** During a policy evaluation, phase 1 exception messages are those messages that are generated prior to a recommended process action, such as a reorganization.

**System action:** The service is activated and ready to process client requests.

**User response:** No action is required.

**Module:**  BSNSCI00
BSN2021E  THE component_name SERVICES COULD NOT BE INITIALIZED: RC=nn, RSN=nn, R15=hhhhhhhh.

Explanation: During Policy Services initialization, component_name failed to initialize. This error is an internal Policy Services error.

The return code and the reason code are returned by component_name, where component_name is one of the following components:
- DATA DICTIONARY
- JOURNAL MANAGER
- POLICY DATA STORE
- POLICY ENVIRONMENT
- RULE DATA STORE

System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

Register 15 defines the internal call that failed. The return and reason code values refer to the failed call.

User response: See Register 15 return code and reason codes to determine and correct the problem.

Module: BSNSCI100

BSN2022E  A SECOND BSNSC FUNC=INIT CALL WAS ISSUED. THIS INITIALIZATION CALL FORCED TERMINATION OF POLICY SERVICES.

Explanation: A second INIT call was issued before a TERM call was issued, or the client was restarted and a second INIT call was issued after the first INIT call was terminated in error. This error is caused by the IMS tools client.

System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

The second INIT call is not processed, and Policy Services terminates the Policy Services environment. The environment is terminated because the first environment must be terminated to ensure that all processes are terminated and that all locks are released.

User response: Restart the client, which is either the IMS tools client or the dialogue client.

Module: BSNSCI100

BSN2023E  THE service_name SERVICES COULD NOT BE TERMINATED.

Explanation: The notification list data store service failed to terminate. The IMS tool that uses the policy or the data dictionary services can proceed to process requests.

The variable service_name is one of the following services:
- NOTIFICATION LIST DATA STORE
- RULE DATA STORE
- POLICY DATA STORE
- JOURNAL DATA STORE
- POLICY ENVIRONMENT

System action: Policy Services terminates.

User response: If the problem persists, contact IBM Software Support.

Module: BSNSCI100

BSN2024E  A FUNC=TERM CALL WAS ISSUED. THIS TERMINATION REQUEST COULD NOT BE PROCESSED.

Explanation: A second TERM function request was made and then rejected because the environment has already terminated. This error is a client error.

System action: The requested TERM function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Restart the IMS tools client or the dialog client. If the problem persists, contact IBM Software Support.

Module: BSNSCI100

BSN2026E  A BSNSC FUNC=STRT CALL WAS ISSUED BEFORE A BSNSC FUNC=INIT CALL WAS ISSUED. THE STRT CALL WAS IGNORED.

Explanation: A STRT call was issued before issuing an INIT call. This error is a call sequence error by the client code and is an internal client call sequence error.

System action: The requested STRT function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Restart the client, which is either the IMS tools client or the dialogue client and issue the INIT call before a STRT call.

Module: BSNSCI100

BSN2027E  THE POLICY ENVIRONMENT STATUS COULD NOT BE OBTAINED: RC=nn, RSN=nn.

Explanation: During Policy Services initialization, the call to Policy Environment Services to retrieve the environment status failed. This error is an internal Policy Services error. RC=nn and RSN=nn are the return and reason codes returned by Policy Environment Services (PES).
System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the description of the return code and reason code in the reference section (Return/reason codes: Policy Environment Services (BSN150-1599) of this user's guide to determine and correct the problem.

Module: BSNSCI00

BSN2028E THE POLICY ENVIRONMENT CONTROL BLOCKS COULD NOT BE OBTAINED.

Explanation: During Policy Services initialization, a request for the Policy Environment Control Block (PDEB) failed. This error is an internal Policy Services error.

System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCI00

BSN2030I POLICY SERVICES HAS INITIALIZED THE BPE SERVICES.

Explanation: The Base Primitive Environment Services is initialized.

System action: The Policy Services initialization process continues.

User response: No action is required.

Module: BSNSCI00

BSN2031E BPE SERVICES COULD NOT BE INITIALIZED.

Explanation: The Base Primitive Environment failed initialization. This error is an internal Policy Services or IMS tools error.

System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNSCI00

BSN2032I POLICY SERVICES HAS TERMINATED THE BPE SERVICES.

Explanation: The Base Primitive Environment of Policy Services has been terminated.

System action: Policy Services is terminated.

User response: No action is required.

Module: BSNSCI00

BSN2033E THE BPE SERVICES COULD NOT BE TERMINATED.

Explanation: The Policy Services Base Primitive Environment failed to terminate.

System action: The Base Primitive Environment is not terminated, and Policy Services continues termination.

User response: If the problem persists, contact IBM Software Support.

Module: BSNSCI00

BSN2040I POLICY SERVICES HAS CONNECTED TO THE REPOSITORY.

Explanation: The initialization process connected to the repository.

System action: The Policy Services initialization process continues.

User response: No action is required.

Module: BSNSCI00

BSN2041E POLICY SERVICES COULD NOT CONNECT TO THE ITKB REPOSITORY: RC=nnn, RSN=nnn.

Explanation: During Policy Services initialization, a connection request to the IMS tools Knowledge Base repository failed.

This error is an internal Policy Services error. The return code and the reason code are returned by the IMS tools Knowledge Base repository.

A common failure (RC=00000008, RSN=0000000A) results if the RACF setting for the Input repository is defined as UPDATE or READ and the User_ID does not have READ access authority or higher. If this is the problem, correct the RACF setting for the Input repository or the User_ID, whichever is in error.

System action: The requested INIT function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Start the IMS tools Knowledge Base server and request that the IMS tools client restarts Policy Services. See the IMS tools Knowledge Base return and reason codes to determine and correct the problem.

Module: BSNSCI00

BSN2033E THE BPE SERVICES COULD NOT BE TERMINATED.
BSN2042I  POLICY SERVICES HAS DISCONNECTED FROM THE REPOSITORY.

Explanation: Policy Services disconnected from the repository.

System action: Policy Services continues termination.

User response: No action is required.

Module: BNSNCT00

BSN2043E  POLICY SERVICES COULD NOT DISCONNECT FROM THE REPOSITORY: RC=nn, RSN=nn.

Explanation: Policy Services failed to disconnect from the repository.

System action: Policy Services continues termination.

User response: See the FPQ return codes and reason codes to determine and correct the problem.

Module: BNSNCT00

BSN2044E  POLICY SERVICES COULD NOT FORCE TERMINATION AFTER AN INITIALIZATION FAILURE.

Explanation: During Policy Services initialization, a failure resulted in the forced termination of Policy Services. However, the termination failed.

System action: Policy Services and data dictionary terminate.

User response: See the previously issued messages in the MVS console output to determine the initialization and termination failure.

Module: BNSNSCI00

BSN2045E  POLICY SERVICES COULD NOT BE INITIALIZED. POLICY SERVICES HAS FORCED TERMINATION.

Explanation: During Policy Services initialization, a failure resulted in the forced termination of Policy Services.

System action: Policy Services and data dictionary terminate.

User response: See the previously issued messages in the MVS console output to determine the initialization and termination failure.

Module: BNSNSCI00

BSN2800I  GENERAL STATUS:
RESOURCE=resource_name
ACTION_NAME=action_name
EXECUTION_STATUS=status

Explanation: This message is an informational message.

System action: None.

User response: No action is required.

Module: BSNAMT00

BSN2801E  STORAGE COULD NOT BE OBTAINED FOR AMCB

Explanation: Storage could not be obtained for the action manager control block (AMCB) on the action manager initialization call (FUNC=AMIT). The REGION parameter does not have enough memory for the job. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

Module: BSNAMI00

BSN2802E  STORAGE COULD NOT BE OBTAINED FOR ADCB

Explanation: Storage could not be obtain for the action manager descriptor control block (ADCB) on the action manager initialization call (FUNC=AMIT). The REGION parameter does not have enough memory for the job. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

Module: BSNAMI00

BSN2803E  STORAGE COULD NOT BE OBTAINED FOR MTCB

Explanation: Storage could not be obtained for the action message text control block (MTCB) on the action manager initialization call (FUNC=AMIT). The REGION parameter does not have enough memory for the job. This error is an internal IMS tools error.

System action: The requested function is rejected, and
a return code and a reason code that define the failure are returned to the client.

**User response:** Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

**Module:** BSNAMI00

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**BSN2804E**  
**STORAGE COULD NOT BE OBTAINED FOR ANRB**

**Explanation:** Storage could not be obtained for the action notification request block (ANRB) on the action manager initialization call (FUNC=AMIT). The REGION parameter does not have enough memory for the job. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

**Module:** BSNAMI00

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**BSN2805E**  
**STORAGE COULD NOT BE OBTAINED FOR NLIST**

**Explanation:** Storage could not be obtained for the action manager notification list (NLIST) on the action manager initialization call (FUNC=AMIT). The REGION parameter does not have enough memory for the job. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

**Module:** BSNAMI00

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**BSN2806E**  
**THE PHASE NUMBER phase_number IS INVALID**

**Explanation:** An invalid phase number was passed in the call to the action manager call (FUNC=AMP2). The valid phase number is 2.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNAMI00

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**BSN2807E**  
**NO ACTION LIST WAS PASSED WITH AN AMIT**

**Explanation:** No action list was passed to the action manager on the action manager initialization call (FUNC=AMIT). This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNAMD00

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**BSN2900I**  
**The message text is one of the BBE2900I through BBE2910I summary messages**

**Explanation:** This message is an informational message that is written to the Journal.

**System action:** System processing continues. The BBE29nnI message is written to the Policy Services Journal, in the following format:

```plaintext
2010-07-14 11:09:17 5@AM module_name: function_code: RC=nn, RS=nn.
```

**User response:** No action is required. See the latest version of the **IMS Database Reorganization Expert for z/OS User’s Guide** for further information about the BBE29nnI messages.

**Module:** BSNAMT00

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**BSN3401I**  
**THE JOURNAL MANAGER MODULE module_name RECEIVED CONTROL WITH FUNCTION function_code: RC=nn, RS=nn.**

**Explanation:** This message is a journal manager (JM) message that indicates the module flow with the return code and the reason code for each module.

**System action:** None.

**User response:** No action is required.

**Module:** BSNJMSH0, BSNJMSR0, BSNJMSU0, BSNJMSW0, BSNJUOW0

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**BSN3403E**  
**THE JOURNAL MANAGER HAD A CRITICAL ERROR IN MODULE module_name: FUNCTION=function_code, RC=nn, RS=nn.**

**Explanation:** An error occurred in the journal manager (JM) module. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and
BSN3405E • BSN3409E

BSN3405E  PRODID=product_ID, REPTID=report_ID, RELEASE=ITKB_release
HKTXACC HKT_function_code FAILED
IN MODULE module_name, RC=nn, RS=nn.

Explanation: An error occurred in the journal manager (JM) module because of a failure in the IMS Tools KB report service function. Where:

product_ID
  The product ID of the product using the IMS Tools KB report service.

report_ID
  The report ID that JM is processing.

ITKB_release
  The release of the IMS Tools KB server that is running.

HKT_function_code
  The IMS Tools KB report service function name.

System action: The request to the IMS Tools KB report service is rejected. A return code and a reason code that define the failure are returned to the client. System processing continues.

User response: See the "Request services return and reason codes (HKT)" topic in IBM Tools Base for z/OS IMS Tools Knowledge Base User's Guide and Reference to determine and correct the problem. If the problem persists, contact IBM Software Support and notify them of the IMS tool that encountered this problem.

Module: BSNJMSH0, BSNJMSR0, BSNJMSU0, BSNJMSW0, BSNJUOW0

BSN3407E  A CLOSE DATA SET FAILED IN
MODULE module_name, FOR DD
NAME=ddname, RC=nn, RS=nn.

Explanation: An error occurred in the journal manager (JM) module because of a CLOSE function failure. The ddname is the name of the DD statement that failed to open. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the JM return code and reason code to determine and correct the problem. For more detailed information, see the MVS MESSAGE IECnnnn and check the data set that is indicated by the ddname.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNJMSH0

BSN3408E  A DYNAMIC ALLOCATION FAILED
IN MODULE module_name, RC=nn, RS=nn.

Explanation: An error occurred in the journal manager (JM) module because of a DYNAMIC ALLOCATION function failure. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the JM return code and reason code to determine and correct the problem. For more detailed information, see the MVS MESSAGE IECnnnn and check the data set that is indicated by the ddname.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNJMSH0

BSN3406E  AN OPEN DATA SET FAILED IN
MODULE module_name, FOR DD
NAME=ddname, RC=nn, RS=nn.

Explanation: An error occurred in the journal manager (JM) module because of an OPEN function failure. The ddname is the name of the DD statement that failed to open. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the JM return code and reason code to determine and correct the problem. For more detailed information, see the MVS MESSAGE IECnnnn and check the data set that is indicated by the ddname.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNJMSH0

BSN3409E  JOURNAL MANAGER ENCOUNTERED AN ERROR WHEN WRITING TO A DATA SET.

Explanation: An error occurred in the journal manager (JM) module because of a PUT function failure.
System action: Journal manager stops the function, and no more reports are written to the journal.

User response: See the MVS MESSAGE IECnnn and check the data set that is indicated by the ddname. The data set might have been full.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNJMSR0

BSN4000I THE POLICY VALIDATION PROCESS HAS STARTED FOR THE RESOURCE resource_name.

Explanation: The policy validation process has started.

System action: The policy validation process continues.

User response: No action is required.

Module: BSNPAI00

BSN4001I THE POLICY VALIDATION PROCESS HAS ENDED FOR THE RESOURCE resource_name: RC=nn, RSN=nn.

Explanation: The policy validation process ended.

System action: Processing continues.

User response: See the return and reason codes for PVE. If the return code is zero, other error messages might accompany this message. Correct the errors, and rerun the job.

If no messages are accompanied with a return code of zero, contact IBM Software Support.

Module: BSNPAI00

BSN4002I THE POLICY EVALUATION PROCESS HAS STARTED FOR THE RESOURCE resource_name.

Explanation: The policy evaluation process started.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPAI00

BSN4003I THE POLICY EVALUATION PROCESS HAS ENDED FOR THE RESOURCE resource_name: RC=nn, RSN=nn.

Explanation: The policy evaluation process ended.

System action: Processing continues.

User response: See the return and reason codes for PVE. If the return code is zero, other error messages might accompany this message. Correct the errors and rerun the job.

If no messages are accompanied with a return code of zero, contact IBM Software Support.

Module: BSNPAI00

BSN4004E STORAGE COULD NOT BE OBTAINED FOR THE REQUESTED LENGTH=nnnnnnnn: RC=nn, RSN=nn.

Explanation: The policy validation or the policy evaluation process could not obtain a storage.

System action: The requested function is rejected, and a return code and reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPASM0


Explanation: The policy validation process or the policy evaluation process could not obtain a module EP address by using the CSVQUERY macro. The module_name variable indicates the module name that failed to obtain the address. The return code is from CSVQUERY.

System action: The requested function is rejected, and a return code and reason code that define the failure are returned to the client.

User response: See the z/OS MVS Programming: Assembler Services Reference for more information about the return code. Correct the error, then rerun the job.

If the problem persists, contact IBM Software Support.

Module: BSNPAI00

BSN4008W THE BPE STRING PRINT FORMATTING SERVICE DETECTED AN ERROR: RC=nn.

Explanation: The internal messaging service detected an error during the policy validation process or the policy evaluation process.

System action: The policy validation or the policy evaluation process stops to issue messages, and then the process continues.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPAMS0
BSN4009W  THE BPE WTO PRINT FORMATTING SERVICE DETECTED AN ERROR: RC=nn.

Explanation: The internal messaging service detected an error during the policy validation or policy evaluation process.

System action: The policy validation or policy evaluation process stops and issues messages, and then continues the process.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPAMS0

BSN4010I  A CONDITION WAS MET FOR THE RULE rule_name.

Explanation: The policy evaluation process detected an exception condition that met the condition for rule_name.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPEDC0

BSN4011I  AN EXCEPTION WAS DETECTED DURING THE POLICY EVALUATION PROCESS FOR THE RULE rule_name WITH EXCEPTION MESSAGE=exception_message, EXCEPTION_CLASS=exception_class, EXCEPTION_LEVEL=exception_level, AND SELECTED ACTION=action_name.

Explanation: An exception was detected during the policy evaluation process.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPEM00

BSN4012I  NO EXCEPTION WAS DETECTED DURING THE POLICY EVALUATION PROCESS.

Explanation: An exception was not detected during the policy evaluation process.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPEM00

BSN4013I  EVALUATION WAS SKIPPED FOR THE RULE rule_name: RSN=reason

Explanation: The policy evaluation process did not evaluate rule_name because of reason.

The following list explains the two possible reasons:

- RESOURCE TYPE WAS INCONSISTENT WITH THIS RULE. rule_name was incompatible with the processing resource type.
- NO DATA ELEMENTS FOR THE RULE EVALUATION WERE PROVIDED. All data elements specified in the Boolean operators were not provided as the input of the policy evaluation.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPAMS0

BSN4014I  THE EVALUATION PROCESS WAS DIRECTED BECAUSE OF A MISSING DATA ELEMENT FOR RULE NAME rule_name AND DATA ELEMENT NAME data_element_name. THE DIRECTION [GENERATE AN EXCEPTION/SKIP EVALUATION] WAS REQUESTED.

Explanation: The policy evaluation process detected a missing data element that is specified in the ONMISSING expression. The second parameter of the ONMISSING expression directs the rule evaluation.

The two directions are described in the following list:

- GENERATE AN EXCEPTION, which means that the policy evaluation process generates an exception for the rule.
- SKIP EVALUATION, which means that the policy evaluation process skips evaluation for the rule.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPAMS0

BSN4015I  THE DATA ELEMENT data_element_name IS NOT IN THE DATA RECORD.

Explanation: The policy evaluation process detected that data_element_name is missing in the data record.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPECP0
THE DOMAIN NAMES ARE INCONSISTENT. THE DOMAIN NAME THAT WAS SPECIFIED BY THE CLIENT PRODUCT IS domain_name_1, BUT THE DOMAIN NAME THAT WAS SPECIFIED IN THE POLICY IS domain_name_2.

**Explanation:** The policy domain name domain_name_2 that is described in the policy is inconsistent with the policy domain name domain_name_1 that was specified by the client product.

**System action:** The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify the domain name so that it is consistent with the domain in the policy, then rerun the job.

**Module:** BSNVPM0

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A RESOURCE TYPE THAT WAS DEFINED IN A RULE IS INAPPROPRIATE FOR THE POLICY RULE NAME rule_name.

**Explanation:** All resource types that are specified by the RESOURCE_REF expressions of a rule are not defined as the resource type in the policy.

**System action:** The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify the rule resource type so that it is consistent with the policy resource type, then rerun the job.

**Module:** BSNVPM0

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A POLICY DEFINITION DOES NOT MATCH THE POLICY DOMAIN DEFINITION FOR THE FOLLOWING LOCATION: [POLICY LEVEL | RULE LEVEL] [POLICY NAME | RULE NAME] policy_name/rule_name WITH DATA ATTRIBUTE= [EXCEPTION CLASS | EXCEPTION LEVEL | ACTION NAME] AND DATA VALUE= value.

**Explanation:** A data value that is defined in a policy or a rule does not match the policy domain definition.

The data value value is the data value of the exception class, exception level, or action name.

The policy_name or rule_name is the name of the policy or rule that has the data value that does not match the domain definition.

**System action:** The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify valid values for the exception class, exception level, and action name, then rerun the job. The valid values are given in the policy domain.

**Module:** BSNVPM0

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THE DATA ELEMENT THAT WAS SPECIFIED BY THE ONMISSING EXPRESSION WAS NOT FOUND IN CONDITION EXPRESSION RULE NAME: rule_name AND DATA ELEMENT NAME: data_element_name.

**Explanation:** The data element that is specified in the ONMISSING expression of a RULE expression is not defined in the CONDITION expression of the RULE expression.

**System action:** The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify the data element that is defined in the ONMISSING expression in the CONDITION expression then rerun the job.

**Module:** BSNVPM0

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**Explanation:** The BPE parsing service detected an error in the policy definition. The variable function_name indicates the function name of the BPE parsing service.

**System action:** The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** If the function name is PARSE, see the BPE0003E message for the details of this error.

For any other function name, see the policy definition to correct any errors in the definition then rerun the job.

**Module:** BSNPPPS0
BSN4021E • BSN4025E

BSN4021E  A SYNTAX ERROR WAS FOUND IN
THE POLICY DEFINITION STREAM
FOR RULE NAME rule_name,
BOOLEAN EXPRESSION #nn IN NEST LEVEL nn,
OPERATOR: operator,
COMPARISON EXPRESSION #nn,
AND THE POSITION OF THE
OPERAND WITH THE ERROR: IS nn.
SEE THE BSNnnnnE MESSAGE FOR
THE REASON OF THIS ERROR.

Explanation:  The policy validation process detected a syntax error in the policy definition. The subsequent error message BSNnnnnE describes the error.

System action:  The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response:  See the BSNnnnnE message. Correct the error then rerun the job.

Module:  BSNPPHE0, BSNPES0, BSNPGV0, BSNPVDM0

BSN4022E  THE THRESHOLD DEFINITION IS
INVALID FOR THE RESOURCE
DEFINITION DATA ELEMENT NAME
data_element_name.

Explanation:  A threshold definition that is specified by the IF expression is invalid. The definition is invalid for the resource definition in the rule that is specified by the RESOURCE_REF expression.

System action:  The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response:  Specify the data element name that is valid for the resources defined in the rule, then rerun the job. A valid data element name is given in the policy domain.

Module:  BSNPVDM0

BSN4023E  INVALID CHARACTERS WERE
SPECIFIED IN invalid_content FOR
expression.

Explanation:  An expression contains invalid content. For example, specifying "CI/CA_SPLITS" for the EXCEPTION_CLASS is invalid because slashes (/) cannot be used.

The expression variable is the expression that includes the invalid content and can be one of the following expressions:
• POLICY NAME
• POLICY ORIGINAL NAME
• RULE NAME
• NOTIFICATION LIST NAME
• ACTION NAME

BSN4024E  THE MAXIMUM ALLOWABLE
NUMBER OF OCCURRENCES WAS
EXCEEDED FOR EXPRESSION NAME
expression_name.

Explanation:  The expression expression_name exceeded the maximum allowable number of occurrences.

System action:  The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response:  Specify an expression name that is within the allowable number of occurrences then rerun the job.

For the NTFLIST_REF expression, the maximum number of occurrences is 10.

For the IF expression, the maximum number of occurrences is 5.

All other expressions do not have a maximum number of occurrences.

Module:  BSNPGV0, BSNPPHE0

BSN4025E  THE MAXIMUM NEST LEVEL WAS
EXCEEDED.

Explanation:  The nest level from the CONDITION expression exceeded the maximum allowable nest level.

System action:  The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response:  Remove any nest that exceeds the maximum allowable nest level of 3 then rerun the job.

Module:  BSNPPEH0
BSN4026E  THE ARRAYED BOOLEAN OPERATOR CONTAINS A NON-ARRAYED DATA ELEMENT data_element_name.

Explanation: The Boolean operator for arrayed data (AAND or AOR) contains a data element that is not treated as arrayed data.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify an arrayed data element for the arrayed Boolean operator then rerun the job.

Module: BSNPVDM0

BSN4027E  THE NON-ARRAYED BOOLEAN OPERATOR CONTAINS AN ARRAYED DATA ELEMENT data_element_name.

Explanation: The Boolean operator for non-arrayed data (AND or OR) contains a data element that is treated as arrayed data.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify a non-arrayed data element for the non-arrayed Boolean operator then rerun the job.

Module: BSNPVDM0


Explanation: A notification list, which is specified in the policy or rule expression, was not found in the IMS tools Knowledge Base repository.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify the notification lists that are stored in the input repository then rerun the job.

Module: BSNPVNL0

BSN4031E  AN ACTION COULD NOT BE ASSOCIATED WITH THE EXCEPTION CLASS AND LEVEL FOR THE RULE NAME rule_name.

Explanation: The policy validation process could not associate an action with the EXCEPTION_CLASS and the EXCEPTION_LEVEL for a rule that is defined in the policy.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Replace the AAND or AOR expression with the AND or OR expression. Alternatively, you can remove the suffix from the data element that is specified in the arrayed Boolean operator.

After replacing or removing the expression, rerun the job.

Module: BSNPPEH0

BSN4032E  THE SPECIFIED RESOURCE TYPE IS INCORRECT FOR THE POLICY DOMAIN domain_name AND THE RESOURCE TYPE resource_type.

Explanation: The resource type that was specified for the policy validation process is incompatible for domain_name.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Define the resource type that is evaluated for the policy domain then rerun the job.

Module: BSNPECP0

BSN4033E  THE THRESHOLD DEFINITION IS INCORRECT FOR THE THRESHOLD NAME threshold_name.

Explanation: The syntax of the threshold definition that is in the IF expression is incorrect.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify the correct threshold definition in the IF expression then rerun the job.

Module: BSNPPEH0

BSN4034E  THE BOOLEAN EXPRESSION IS INCORRECT FOR THE THRESHOLD NAME threshold_name.

Explanation: The suffixed data element was incorrectly specified as AAND or AOR in the arrayed Boolean operator.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Replace the AAND or AOR expression with the AND or OR expression. Alternatively, you can remove the suffix from the data element that is specified in the arrayed Boolean operator.

After replacing or removing the expression, rerun the job.

Module: BSNPPEH0

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BSN4035I  AN EXPRESSION THAT REFERS TO
data_element_name IS EVALUATED AS
[TRUE | FALSE | IGNORE]. THE
FOLLOWING EXPRESSION WAS
EVALUATED: COMPARISON
EXPRESSION #nn OF BOOLEAN
EXPRESSION #nn IN NEST LEVEL n
(OPERATOR: operator) IN THE RULE
rule_name.

Explanation: The data element data_element_name is
missing in the data record. The variable rule_name
indicates the CONDITION expression that contains
comparison operators for data_element_name.

The data_element_name is evaluated as one of the
following conditions:
• TRUE: the comparison expression contains the
  missing data is true.
• FALSE: the comparison expression contains the
  missing data is false.
• IGNORE: the comparison expression contains
  the missing data is ignored.

System action: The policy evaluation process
continues.

User response: No action is required.
Module: BSNPECP0

BSN4036E  THE COMPARISON OPERATOR
operator CANNOT BE USED FOR THE
DATA ELEMENT data_element_name.

Explanation: The comparison operator operator for the
IF expression cannot be used for the data element
data_element_name.

System action: The policy validation process is
rejected, and a return code and a reason code that
define the failure are returned to the client.

User response: Specify the correct comparison
operator for the IF expression, then rerun the job.

Use the following comparison operators for data
elements when the physical format is a character type:
• IS
• ISNOT

Use the following comparison operators for data
elements when the physical format is not a character
type:
• GT
• LT
• GE
• LE
• EQ
• NE

Module: BSNPVDI0

BSN4037W  DATA ELEMENT data_element_name IS
MISSING IN THE SENSOR DATA
RECORD.

Explanation: The policy evaluation process detected
that the value for the data_element_name is missing in
the sensor data record set.

System action: The policy evaluation process
continues, and a return code of 4 and a reason code of
X'10' are returned to the Policy Services API.

User response: Check if a correct sensor data record
set was read and that a correct policy was specified
for the policy evaluation. If there is a problem, correct the
error, and rerun the job; otherwise, no action is
required.
Module: BSNPEMS0

BSN4038E  DATA ELEMENT data_element_name IS
MISSING IN THE SENSOR DATA
RECORD.

Explanation: The policy evaluation process detected
that the value for the data_element_name is missing from
the sensor data record set.

System action: The policy evaluation process is
rejected, and a return code of 8 and a reason code of
X'10' are returned to the Policy Services API.

User response: Check if a correct sensor data record
set was read and the correct policy was specified for
the policy evaluation. Correct the error, and rerun the job.
Module: BSNPEMS0

BSN4041E  THE INPUT DATA RECORD LIST IS
INVALID FOR THE POLICY
EVALUATION PROCESS. SINGLE
AND ARRAYED DATA VALUES WERE
MIXED IN A DATA RECORD.

Explanation: Single data values and arrayed data
values were contained in a single data record.

System action: The policy evaluation process is
rejected, and a return code and a reason code that
define the failure are returned to the client.

User response: Specify the correct load module library
for IMS Policy Sensor Services. If the problem persists,
contact IBM Software Support, and notify them of the
IMS tool that encountered this problem.
Module: BSNPECP0

BSN4043E  THE INPUT DATA RECORD LIST IS
INVALID FOR THE POLICY
EVALUATION PROCESS. THE DATA
RECORD LIST ADDRESS WAS NULL.
Explanation: The data record list was not provided for policy evaluation.

System action: The policy evaluation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify the correct load module library for IMS Policy Sensor Services. If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPECP0

BSN4051E THE DATA DICTIONARY SERVICE DETECTED PROBLEMS WHILE RUNNING. AN INVALID THRESHOLD VALUE THRESHOLD NAME (TRC=nmm TRSN=mnn) WAS SPECIFIED FOR FUNCTION FUNCTION CODE: FRC=nmm, FRSN=mnn.

Explanation: One or more errors were detected when the data dictionary function function_code was run.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPVDI0

BSN4052E THE DATA DICTIONARY SERVICE DETECTED PROBLEMS WHILE RUNNING. AN INVALID THRESHOLD VALUE THRESHOLD NAME (TRC=nmm TRSN=mnn) WAS SPECIFIED FOR FUNCTION FUNCTION CODE: FRC=nmm, FRSN=mnn.

Explanation: The threshold name threshold_name is incorrect or not defined in the data dictionary.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify the correct data element name in the CONDITION expression that is defined in the data dictionary then rerun the job.

Module: BSNPVDI0

BSN4053E THE DATA DICTIONARY SERVICE DETECTED PROBLEMS WHILE RUNNING. AN INVALID THRESHOLD VALUE THRESHOLD NAME (TRC=nmm TRSN=mnn) WAS SPECIFIED FOR THRESHOLD VALUE THRESHOLD NAME IN FUNCTION FUNCTION CODE: FRC=nmm, FRSN=mnn.

Explanation: The threshold value threshold_value is incorrect for threshold_name.

System action: The policy validation process is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify a valid threshold value that does not exceed the range in the CONDITION expression then rerun the job.

Module: BSNPVDI0

BSN4600I THE MESSAGE NOTIFICATION PROCESS HAS STARTED FOR THE DESTINATION TYPE destination_type.

Explanation: The message notification process has started.

The destination_type variable specifies where these notification messages are being sent. Possible destination types include the TSO USER, where messages are sent to a TSO user ID, and the SYSTEM CONSOLE, where messages are sent to an operator console.

System action: The message notification process continues.

User response: No action is required.

Module: BSNNM00

BSN4601I THE MESSAGE NOTIFICATION PROCESS HAS ENDED FOR THE DESTINATION TYPE destination_type.

Explanation: The message notification process ended.

The destination_type variable specifies where these notification messages were being sent. Possible

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destination types include the TSO USER, where messages are sent to a TSO user ID, and the SYSTEM CONSOLE, where messages are sent to an operator console.

**System action:** The message notification process continues.

**User response:** No action is required.

**Module:** BSNNMM00

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**BSN4602E**  STORAge COULD NOT BE OBTAINED FOR THE REQUESTED LENGTH=nnnnnnn: RC=nnn, RSN=dd.

*Explanation:* The message notification process could not obtain a storage. The LENGTH variable is the requested length. The return code nn and reason code dd are hexadecimal values that are returned by Policy Services Storage management.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNNMM00

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**BSN4603I**  THE TSO/E SEND COMMAND IS BEING USED FOR THE NOTIFICATION PROCESS.

*Explanation:* The message notification process uses the TSO/E SEND command to issue notification messages to TSO users.

**System action:** The message notification process continues.

**User response:** No action is required.

**Module:** BSNNMM00

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**BSN4604I**  THE WTO SERVICE IS BEING USED FOR THE NOTIFICATION PROCESS.

*Explanation:* The message notification process uses the z/OS WTO service to issue notification messages to the system console.

**System action:** The message notification process continues.

**User response:** No action is required.

**Module:** BSNNMM00

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**BSN4607E**  THE CURRENT LEVEL OF THE MESSAGE NOTIFICATION PROCESS DOES NOT SUPPORT THE DESTINATION TYPE FOR THE DESTINATION NAME destination_name.

*Explanation:* The current level of the message notification process does not support the destination type that is associated with the destination name.

Policy Services supports only two destinations: the TSO user and the system console. If any other destination is specified, this message is issued.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Specify the correct destination type for the message notification by using the Policy Dialog, then rerun the job.

**Module:** BSNNMM00

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**BSN4608W**  BPE STRING PRINT FORMATTING SERVICE DETECTED AN ERROR DURING THE MESSAGE NOTIFICATION PROCESS: RC=nnn.

*Explanation:* Internal messaging service detected an error during the message notification process. The return code nn is a hexadecimal value that is returned by BPE message processing.

**System action:** The message notification process stops and issues messages, and then continues the notification process.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNNMM00

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**BSN4609W**  BPE WTO PRINT FORMATTING SERVICE DETECTED AN ERROR DURING THE MESSAGE NOTIFICATION PROCESS: RC=nnn.

*Explanation:* Internal messaging service detected an error during the message notification process. The return code nn is a hexadecimal value that is returned by BPE message processing.

**System action:** The message notification process aborts by issuing messages, and then continues the process.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNNMM00
BSN4610E  THE MESSAGE NOTIFICATION PROCESS COULD NOT READ THE NOTIFICATION LIST

notification_list_name: FUNC=nnnn, RC=nn, RSN=nnnn.

Explanation: The message notification process failed to read a notification list from the repository.

The nnnn notification list function variable indicates the 4-byte function code. The return code and the reason code are hexadecimal values that are returned by the repository read service. The notification_list_name variable indicates the name of the notification list that could not be read.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: Specify the correct notification list name in the policy, then rerun the job.

Module: BSNNMNL0

BSN4611I  THE FOLLOWING MESSAGES WERE RETURNED: message_text.

Explanation: The message notification process received one or more messages by using the notification service.

System action: The message notification process continues.

User response: No action is required.

Module: BSNNM00

BSN4612I  THE TSO/E SEND COMMAND WAS SUCCESSFUL: RC=nn

Explanation: The message notification process issued notification messages to TSO users by using the TSO/E SEND command. The return code is a hexadecimal value that is returned by the TSO SEND command.

System action: The message notification process continues.

User response: No action is required.

Module: BSNNM00

BSN4613E  THE TSO/E SEND COMMAND WAS UNSUCCESSFUL: RC=nnnnnnnn.

Explanation: The message notification process called the TSO notifier but failed to issue notification messages to TSO users by using the TSO/E SEND command. The variable nnnnnnnn indicates the hexadecimal return code of the TSO SEND command.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: If you have one of the following return codes, complete the accompanying steps for that return code. If you do not have one of the following return codes, contact IBM Software Support.

Module: BSNNM00

BSN4614E  A SYSTEM ERROR OCCURRED DURING THE TSO NOTIFICATION PROCESS: RC=nnnn, RSN=nnnnnnnn.

Explanation: An environmental error occurred when the message notification process called the TSO notifier to issue notification messages to TSO users. The return code is a hexadecimal value that is returned by Policy Services Notification management. The following list shows possible return codes:

- X'000C': The TSO notifier failed to obtain storage. The reason code is for the z/OS STORAGE macro.
- X'0010': The TSO notifier failed to open a data set that is used internally. The reason code is for the z/OS OPEN macro.
- X'0014': The TSO notifier failed to dynamically allocate a data set that is used internally. The reason code is for the z/OS DYNALLOC macro (S99RSC).
- X'0018': The TSO notifier failed to load a module. The first four bytes of the nnnnnnnn variable show the system completion code and the last four bytes show the reason code.
- X'001C': The task that called the TSO notifier was not an APF-authorized task. The variable nnnnnnnn is always the hexadecimal reason code 00000004.
- X'0020': Policy Services does not support sending notification messages to TSO clients for the requesting IMS Tool because the IMS Tool is not executing in Key 8. The variable nnnnnnnn is the key of the caller.
- X'00FF': The TSO notifier ended abnormally. The reason code shows the system completion code.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: If you have one of the following return codes, complete the accompanying steps for that return code. If you do not have one of the following return codes, contact IBM Software Support.

Module: BSNNM00

X'000C': See the z/OS MVS Programming: Assembler Services Reference for more information about the return code for the STORAGE OBTAIN macro. Correct any errors, then rerun the job.

X'0010': See the z/OS DFSMS Macro Instructions for Data Sets for more information about the
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return code for the OPEN macro. Correct any
errors, then rerun the job.

X'0014' See the z/OS MVS Programming Authorized
Assembler Services Guide for more information
about the return code for the DYNALLOC
macro. Correct any errors, then rerun the job.

X'0018' See the z/OS MVS System Codes for more
information about the system completion code.
Correct any errors, then rerun the job.

X'001C' APF-authorize the task that called the TSO
notifier, then rerun the job.

X'0020' Change the notification list to send messages
to the email directory entry, the texting
directory entry, or both directory entries.

X'00FF' Contact IBM Software Support.
Module: BSNNM00

BSN4615I THE Z/OS WTO SERVICE
SUCCESSFULLY ISSUED
NOTIFICATION MESSAGES:
RC=nnnnnnnn.

Explanation: The message notification process issued
notification messages to the system console by using
the z/OS WTO service. The return code is a
hexadecimal value that MVS returned for the WTO.

System action: The message notification process
continues.
User response: No action is required.
Module: BSNNM00

BSN4616E THE Z/OS WTO SERVICE FAILED TO
ISSUE NOTIFICATION MESSAGES:
RC=nnnnnnnn.

Explanation: The message notification process failed
to issue notification messages to the system console by
using the z/OS WTO service. The return code is a
hexadecimal value returned by MVS for the WTO.

System action: The requested function is rejected, and
a return code and a reason code that define the failure
are returned to the client.
User response: See the MVS programming assembler
services reference for more information about the WTO
return code. Correct the error then rerun the job.
Module: BSNNM00

BSN5201I THE NLDS MODULE module_name
RECEIVED CONTROL WITH
FUNCTION function_code: RC=nn,
RSN=nn.

Explanation: This message is a notification list data
store (NLDS) message that indicates the module flow
with the return code and the reason code for each
module.

System action: None.
User response: No action is required.
Module: BSNNL0, BSNL0, BSNLD0, BSNLDP0, BSNLDE0, BSNLDA0

BSN5203E NLDS HAD A CRITICAL ERROR IN
MODULE module_name:
FUNCTION=function_code RC=nn, RSN=nn.

Explanation: An error occurred in the notification list
data store (NLDS) module. This error is an internal IMS
tools error.

System action: The requested function is rejected, and
a return code and a reason code that define the failure
are returned to the client.
User response: See the NLDS return code and reason
code to determine and correct the problem.
If the problem persists, contact IBM Software Support,
and notify them of the IMS tool that encountered this
problem.
Module: BSNNL50, BSNL0, BSNL0, BSNLD0, BSNLDP0, BSNLDE0, BSNLDA0

BSN5206E A NLDS REPOSITORY FUNCTION
FAILED: LEVEL=environment_level,
LOCALE=recon_ID,
LIST=notification_list_name, THE
FPQSrv FPQ_function_code FAILED IN
MODULE module_name WITH RC=nn,
RSN=nn, THE FPQSrv DIAGNOSTIC
FEEDBACK= WORD1=word1_first_half-
word1_second_half, WORD2=word2,
WORD3=word3.

Explanation: A repository server function failed in the
notification list data store (NLDS) module for
environment_level, recon_ID, and notification_list_name.
The FPQ function code specifies the repository function
name.
The feedback field includes IBM diagnostic and
debugging information. This error is an internal IMS
tools error.

System action: The requested function is rejected, and
a return code and a reason code that define the failure
are returned to the client.
User response: See the repository service return code
and reason code to determine and correct the problem.
If the problem persists, contact IBM Software Support
and notify them of the IMS tool that encountered this
problem.
Module: BSNNLDI0, BSNNLDU0, BSNNLDL0, BSNNLDP0, BSNNLPD0, BSNNLDA0

BSN5207E  A NLDS REPOSITORY FUNCTION FAILED FOR NLDS PENDING DELETE TABLE FOR ENVIRONMENT LEVEL=environment_level. THE FPQSRV FPQ_function_code FAILED IN MODULE module_name WITH RC=nn, RSN=nn. THE FPQSRV DIAGNOSTIC FEEDBACK= WORD1=word1_first_half-word1_second_half, WORD2=word2, WORD3=word3.

Explanation: A repository server function failed in the notification list data store (NLDS) module. The function failed for the pending delete table for environment_level. The FPQ function code specifies the repository function name.

The feedback field includes IBM diagnostic information. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the repository service return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNNLDI0, BSNNLDU0, BSNNLDL0, BSNNLDP0, BSNNLPD0, BSNNLDA0

BSN5208E  THE NOTIFICATION LIST: notification_list_name, COULD NOT BE DELETED BECAUSE IT IS BEING REFERENCED BY DOMAIN referenced_policy_domain_name: LOCAL=referenced_policy_recon_ID, POLICY=referenced_policy_name.

Explanation: A request to delete the notification list failed because it is being referenced by a policy.

System action: The requested function is rejected, and another error message BSN5203E with return code (X'08') and reason code (X'70') is returned to the caller.

User response: To delete the notification list, remove the reference to the notification list from the policy.

Module: BSNNLPD0

BSN5217I  THE NOTIFICATION LIST function BY RECON recon_name HAS STARTED

Explanation: The notification list data store (NLDS) process is started by recon_name. The variable function is one of the following actions:

- DELETE
- QUERY

System action: None.

User response: None. This message is informational.

Module: BSNNLDN0

BSN5215I  THE NOTIFICATION LIST has ENDED LISTING OBJECTS: RC=nn, RSN=nn.

Explanation: The notification list process ended.

System action: None.

User response: No action is required.

Module: BSNNLDI0

BSN5212I  FOR LEVEL=environment_level, LOCALE=locale, AND NOTIFICATION LIST=notification_list_name, THE NOTIFICATION LIST list_action STARTED.

Explanation: The notification list process (list_action) has started for environment_level, recon_ID, and notification_list_name.

The variable list_action is one of the following actions:

- UPDATE
- DELETE
- IMPORT

System action: None.

User response: No action is required.

Module: BSNNLDU0, BSNNLDL0, BSNNLDP0

BSN5211I  NLDS HAS STARTED LISTING OBJECTS.

Explanation: The notification list process started listing.

System action: None.

User response: No action is required.

Module: BSNNLDN0
User response: No action is required.
Module: BSNNLDI0

BSN5216I FOR LEVEL=environment_level, LOCALE=locale, AND NOTIFICATION LIST=notification_list_name, THE NOTIFICATION LIST list_action HAS ENDED.

Explanation: The notification list process (list_action) has ended for environment_level, recon_ID, and notification_list_name.
The variable list_action is one of the following actions:
- UPDATE
- DELETE
- IMPORT

System action: None.
User response: No action is required.
Module: BSNNLDU0, BSNNLDL0, BSNNLDP0

BSN5222W NO DELEGATE NAME WAS FOUND IN THE DIRECTORY ENTRY directory_entry_name.

Explanation: The directory entry does not have a delegate name that is specified, but the delegate option was set.

System action: Normal processing continues.
User response: If the directory entry requires a delegate name, add a delegate name by updating the directory entry.
If a delegate name is not required, request that the delegate option be turned off.

Module: BSNNLDL0

BSN5223W NO DELEGATE OPTION WAS FOUND IN THE DIRECTORY ENTRY directory_entry_name.

Explanation: The directory entry does not have a delegate option that is specified. A delegate name was specified, but the delegate option is not set. This condition is valid, but the rerouting to an alternate destination cannot occur until the delegate option is set.

System action: Normal processing continues.
User response: If you want to reroute to an alternate destination, set the delegate option. Otherwise, no action is required.

Module: BSNNLDL0

BSN5224W THE DIRECTORY ENTRY directory_entry_name DOES NOT EXIST IN THE REPOSITORY.

Explanation: The directory entry directory_entry_name does not exist in the repository. A request for the named directory does not exist.

System action: Normal processing continues.
User response: If directory_entry_name is a valid directory name, add the directory entry into the system. Otherwise, no action is required.

Module: BSNNLDL0

BSN5801I THE PDDS MODULE module_name RECEIVED CONTROL WITH FUNC=function_code: RC=nn, RSN=nn.

Explanation: This message is a policy domain data store (PDDS) message that indicates the module flow with the return code and the reason code for each module.

System action: None.
User response: No action is required.
Module: BSNPDDH0, BSNPDDI0

BSN5803E PDDS HAS A CRITICAL ERROR IN MODULE module_name: FUNCTION=function_code, RC=nn, RSN=nn.

Explanation: An error occurred in the policy domain data store (PDDS) module. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.
User response: See the PDDS return code and reason code to determine and correct the problem.
If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPDDS0, BSNPDDH0, BSNPDDI0

BSN6401I THE RDS MODULE module_name RECEIVED CONTROL WITH FUNC=function_code: RC=nn, RSN=nn.

Explanation: This message is a rule data store (RDS) message that indicates the module flow with the return code and the reason code for each module.

System action: None.
User response: No action is required.
Module: BSNRDST0, BSNRDSL0, BSNRDSS0,
BSNRDSU0, BSNRDSR0, BSNRDS0, BSNRDSA0

BSN6402I  THE RULE STREAM (rule_stream_name) HAS BEEN DELETED

Explanation: The rule data store (RDS) process deleted rule_stream_name.

System action: None.

User response: No action is required.

Module: BSNRDS0

BSN6403E  RDS HAS A CRITICAL ERROR IN

MODULE module_name:
FUNCTION=function_code, RC=nn,
RSN=nn, FOR RULE=rule_name,
LOCAL=locale_name.

Explanation: An error occurred in the rule data store (RDS) module. The output for RULE=rule_name and LOCAL=locale_name are displayed only if rule and locale names are known. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the RDS return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNRDST0, BSNRDL0, BSNRDS0, BSNRSU0, BSNRDS0, BSNRSC0, BSNRDSA0, BSNRSD0, BSNRD0, BSNRSH0

BSN6405E  THE THRESHOLD WAS NOT

DELETED, IT'S REFERENCED BY

POLICY policy_name:
LOCAL=locale_name.

Explanation: A request to delete a rule threshold set or rule failed because the set or rule is being referenced by a policy.

System action: The requested function to delete a threshold set (TDTS), update a rule (UPWT), or delete a rule template (RTDL) is rejected, and a return code that defines the failure is returned to the client.

User response: To delete the threshold set or rule, remove the reference to the threshold set or rule from the policy.

Module: BSNRDST0, BSNRDSU0, BSNRDS0

BSN6406E  THE RDS REPOSITORY FUNCTION

FAILED: DOMAIN=domain_name,
LEVEL=environment_level,
LOCAL=locale_name,
RSN=nn. THE FPQSRV FUNCTION code FAILED
IN MODULE module_name WITH
RC=nn, RSN=nn. THE FPQSRV
DIAGNOSTIC FEEDBACK=
WORD1=word1_first_half-
word1_second_half, WORD2=word2,
WORD3=word3.

Explanation: A repository server function failed in the rule data store (RDS) module for environment_level, locale_name, and rule_name because of a repository server function failure. The FPQ function code specifies the repository function name.

The feedback field includes IBM diagnostic and debugging information. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

User response: See the repository service return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNRDST0, BSNRDL0, BSNRDS0, BSNRSU0, BSNRDS0, BSNRSH0

BSN6411I  THE RULE TEMPLATE/STREAM LIST

HAS STARTED LISTING OBJECTS

FOR DOMAIN=domain_name.

Explanation: The rule data store (RDS) process started listing for domain_name.

System action: None.

User response: No action is required.

Module: BSNRDL0

BSN6412I  THE RULE TEMPLATE function

PROCESS HAS STARTED FOR

DOMAIN=domain_name,
LEVEL=environment_level,
LOCAL=locale, RULE=rule_name.

Explanation: The rule data store (RDS) process (function) has started for domain_name, environment_level, and locale, where locale is the RECON ID that has been defined to the repository or BSNGLOBAL. The output for RULE=rule_name is displayed only if the rule name is known.

The variable function is one of the following actions:

• COPY UPDATE
BSN6415I  THE RULE TEMPLATE/STREAM LIST HAS ENDED FOR THE:  
DOMAIN=domain_name: RC=nn, RSN=nn.

Explanation: The rule data store (RDS) process ended listing for domain_name.

System action: None.
User response: No action is required.
Module: BSNRDST0, BSNRDSU0

BSN6416I  THE RULE TEMPLATE function PROCESS HAS ENDED FOR:  
DOMAIN=domain_name, LEVEL=environment_level, 
LOCALE=locale, RULE=rule_template_name, RC=nn, RSN=nn.

Explanation: The rule data store (RDS) process ended for domain_name, 
environment_level, and locale, where LOCALE is the RECON ID that has 
been defined to the repository or BSNGLOBAL.

The variable function is one of the following actions:
• IMPORT
• DELETE
• UPDATE

System action: None.
User response: No action is required.
Module: BSNRDSL0

BSN6417I  THE RULE function BY RECON recon_name HAS STARTED

Explanation: The rule data store (RDS) process is started by recon_name. The variable function is one of the following actions:
• DELETE
• QUERY

System action: None.
User response: None. This message is informational.
Module: BSNRDSN0

BSN6418I  THE RULE function BY RECON recon_name HAS ENDED FOR THE:  
RC=nn, RSN=nn.

Explanation: The rule data store (RDS) process is ended by recon_name. The variable function is one of the following actions:
• DELETE
• QUERY

System action: None.
User response: None. This message is informational.
Module: BSNRDST0, BSNRDSU0

BSN7001I  THE MODULE module_name RECEIVED CONTROL WITH FUNC function_code:  
RC=nn, RS=nn.

Explanation: This message is a policy data store (PDS) message that indicates the module flow with the return code and the reason code for each module.

System action: None.
User response: No action is required.
Module: BSNPDSDL0, BSNPDST0, BSNPDSS0, BSNPDUSU0, BSNPDSA0, BSNPDSP0, BSNPDSV0, BSNPDSC0

BSN7002I  THE POLICY WAS FOUND IN THE GLOBAL LOCALE

Explanation: Policies exist in the global locale.

System action: None.
User response: No action is required.
Module: BSNPDST0, BSNPDSS0

BSN7003E  PDS HAS A CRITICAL ERROR IN MODULE module_name:  
FUNCTION=function_code RC=nn, RS=nn.

Explanation: An error occurred in the policy data store (PDS) module. This error is an internal IMS tools error.

System action: The requested function is rejected, and a return code and reason code that define the failure are returned to the client.

User response: See the PDS return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNPDSDL0, BSNPDST0, BSNPDSS0, BSNPDUSU0, BSNPDSA0, BSNPDSP0, BSNPDSV0, BSNPDSC0

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**BSN7005I**

**Explanation:** No notification list has been specified in the policy template.

**System action:** None.

**User response:** No action is required.

**Module:** BSNPDSU0

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**BSN7006E**

**Explanation:** A repository server function failed for policy data store (PDS) module for `domain_name`, `environment_level`, `recon_ID`, and `policy_name`. The FPQ function code specifies the repository function name.

The feedback field includes words for IBM diagnostic information. This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** See the repository service return code and reason code to determine and correct the problem.

If the problem persists, contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNPDSL0, BSNPDST0, BSNPDS0, BSNPDSU0, BSNPDSA0, BSNPDS0

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**BSN7007E**

**Explanation:** The global RECON ID is not registered.

This error is an internal IMS tools error.

**System action:** The requested function is rejected, and a return code and a reason code that define the failure are returned to the client.

**User response:** Register the global RECON ID by using the IMS Tools Knowledge Base.

**Module:** BSNPDS0

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**BSN7008I**

**Explanation:** The policy was not found in the RECON locale. Will continue to search the global locale.

**System action:** The policy lookup process continues.

**User response:** None.

**Module:** BSNPDSS0

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**BSN7011I**

**Explanation:** The listing of the policy template/stream processing has started for `domain_name`.

**System action:** None.

**User response:** No action is required.

**Module:** BSNPDSL0

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**BSN7012I**

**Explanation:** The policy data store (PDS) services process (`action`) has started for `domain_name`, `environment_level`, `recon_ID`, and `policy_name`.

The variable `action` is one of the following actions:

- `TEMPLATE IMPORT`
- `TEMPLATE DELETE`
- `STREAM IMPORT`
- `STREAM DELETE`
- `TEMPLATE UPDATE`

**System action:** None.

**User response:** No action is required.

**Module:** BSNPDST0, BSNPDS0, BSNPDSU0

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**BSN7015I**

**Explanation:** The policy data store (PDS) services
process ended listing for domain_name.

System action: None.

User response: No action is required.

Module: BSNPDSL0

BSN7016I THE POLICY action PROCESS HAS ENDED FOR POLICY=policy_name IN DOMAIN domain_name.

LEVEL=environment_level, LOCALE=locale, RC=nn, RSN=nn.

Explanation: The policy data store (PDS) services process (action) has ended for domain_name, environment_level, recon_ID, and policy_name.

The variable action is one of the following actions:
• TEMPLATE IMPORT
• TEMPLATE DELETE
• STREAM IMPORT
• STREAM DELETE
• TEMPLATE UPDATE

System action: None.

User response: No action is required.

Module: BSNPDST0, BSNPDSS0, BSNPDSU0

BSN7017I THE POLICY function BY RECON recon_name HAS STARTED

Explanation: The policy data store (PDS) process is started by recon_name. The variable function is one of the following actions:
• DELETE
• QUERY

System action: None.

User response: None. This message is informational.

Module: BSNPDSN0

BSN7018I THE POLICY function BY RECON recon_name HAS ENDED FOR THE:

RC=nn, RSN=nn.

Explanation: The policy data store (PDS) process is ended by recon_name. The variable function is one of the following actions:
• DELETE
• QUERY

System action: None.

User response: None. This message is informational.

Module: BSNPDSN0

BSN7600E AN INVALID FUNCTION WAS REQUESTED.

Explanation: The client issued a request to the IMS Policy Services Data Dictionary component with an invalid function request. This error is an internal problem with the IMS tool that made the request.

System action: IMS Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. System processing continues.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNDDMI00

BSN7601E STORAGE FOR DDES BLOCK COULD NOT BE OBTAINED.

Explanation: An internal storage block or table could not be obtained. This error is an internal IMS Policy Services Data Dictionary component error.

System action: IMS Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNDDMI00

BSN7602E THE DATA DICTIONARY MODULE module_name COULD NOT BE LOADED.

Explanation: A module that is loaded by the initialization function of the IMS Policy Services Data Dictionary component failed the LOAD request. This error is an internal IMS Policy Services error.

System action: IMS Policy Services Data Dictionary fails initialization, and a return code and a reason code that define the failure are returned to the client.

User response: Add the module that failed the LOAD request to the hlq.SHKTLOAD load library.

If the module is in the library, you might have an install problem. Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNDDMI00

BSN7603E THE CREATE NAME/TOKEN FUNCTION FAILED.

Explanation: The MVS request to create a name-token pair failed. This error is an internal IMS Policy Services Data Dictionary component error.
**BSN7604E** THE DICTIONARY DEFINITIONS COULD NOT BE LOADED.

**Explanation:** The Dictionary Definitions Table that is loaded by the IMS Policy Services Data Dictionary component failed the LOAD request. This error is an internal IMS Policy Services error.

**System action:** IMS Policy Services Data Dictionary initialization fails.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNDDMI00

**BSN7605E** STORAGE FOR DDDS BLOCK COULD NOT BE OBTAINED.

**Explanation:** An internal storage block or table could not be obtained. This error is an internal IMS Policy Services Data Dictionary component error.

**System action:** IMS Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNDDMI00

**BSN7606E** STORAGE FOR DDIS BLOCK COULD NOT BE OBTAINED.

**Explanation:** An internal storage block or table could not be obtained. This error is an internal IMS Policy Services Data Dictionary component error.

**System action:** IMS Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNDDMI00

**BSN7607E** STORAGE FOR DDIS BLOCK COULD NOT BE OBTAINED.

**Explanation:** An internal storage block or table could not be obtained. This error is an internal IMS Policy Services Data Dictionary component error.

**System action:** IMS Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNDDMI00

**BSN7608E** STORAGE FOR DDNS BLOCK COULD NOT BE OBTAINED.

**Explanation:** An internal storage block or table could not be obtained. This error is an internal IMS Policy Services Data Dictionary component error.

**System action:** IMS Policy Services fails initialization, and a return code and a reason code that define the failure are returned to the client.

**User response:** Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

**Module:** BSNDDMI00

**BSN7609E** STORAGE FOR DDDS BLOCK COULD NOT BE RELEASED.

**Explanation:** The request to release an internal control block failed.

**System action:** IMS Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The base rule, policy, or notification list processing completes with an error. System processing continues.

**User response:** The REGION parameter does not have enough specified memory for the job. Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

**Module:** BSNDDMI00

**BSN7610E** STORAGE FOR DDIS BLOCK COULD NOT BE RELEASED.

**Explanation:** The request to release an internal control block failed.

**System action:** IMS Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The base rule, policy, or notification list processing completes with an error. System processing continues.

**User response:** The REGION parameter does not have enough specified memory for the job. Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

**Module:** BSNDDMI00
BSN7611E  STORAGE FOR DDNS BLOCK COULD NOT BE RELEASED.

Explanation:  The request to release an internal control block failed.

System action:  IMS Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The base rule, policy, or notification list processing completes with an error. System processing continues.

User response:  The REGION parameter does not have enough specified memory for the job. Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

Module:  BSNDDMI00

BSN7612E  THE DICTIONARY DEFINITIONS COULD NOT BE DELETED.

Explanation:  The Dictionary Definitions Table that is loaded by the IMS Policy Services Data Dictionary component failed the DELETE request. This error is an internal IMS Policy Services error.


User response:  Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module:  BSNDDMI00

BSN7614E  THE DELETE NAME/TOKEN FUNCTION FAILED.

Explanation:  The MVS request to delete a name-token pair failed. This error is an internal IMS Policy Services Data Dictionary component error.


User response:  Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module:  BSNDDMI00

BSN7615E  THE DATA DICTIONARY MODULE module_name COULD NOT BE DELETED.

Explanation:  A module that is loaded by the termination function of the IMS Policy Services Data Dictionary component failed the DELETE request. This error is an internal IMS Policy Services error.


User response:  Correct the EXEC parameter, and rerun the job.

Module:  BSNDDMI00

BSN7616E  STORAGE FOR DDES BLOCK COULD NOT BE RELEASED.

Explanation:  The request to release an internal control block failed.

System action:  IMS Policy Services rejects the call from the client, and a return code and a reason code that define the failure are returned to the client. The base rule, policy, or notification list processing completes with an error. System processing continues.

User response:  The REGION parameter does not have enough specified memory for the job. Specify more memory for the REGION parameter, and then restart the job.

For example, you can specify REGION=0M so that the parameter can use all the main storage that it requires.

Module:  BSNDDMI00

BSN7618E  TERMINATION HAS OCCURRED WITH ACTIVE CONNECTS.

Explanation:  Data Dictionary has processed the termination request from the last active client. However, some clients failed to issue a disconnect request, and if any of those clients attempt any Data Dictionary call, that call could result in a system failure. This error is an internal problem with the IMS tools client.

System action:  The request to terminate Data Dictionary is completed.

User response:  Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module:  BSNDDMI00

BSN8000E  INCORRECT EXEC PARAMETER IS SPECIFIED.

Explanation:  An incorrect EXEC parameter is specified for the Policy Services batch utility interface (BSNUTIL0).

System action:  Processing ends with a return code of 8.

User response:  Correct the EXEC parameter, and rerun the job.
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BSN8001I  THE utility_name PROCESS HAS STARTED.

Explanation: The Policy Services utility named utility_name has started.
System action: Processing continues.
User response: None. This message is informational.

BSN8002I  THE utility_name PROCESS HAS ENDED NORMALLY.

Explanation: The Policy Services utility named utility_name has ended normally.
System action: Processing continues.
User response: None. This message is informational.

BSN8003W  THE utility_name PROCESS HAS ENDED WITH WARNING.

Explanation: The Policy Services utility named utility_name has ended with warnings.
System action: Processing ends with a return code of 8.
User response: Check another message whose suffix is w. If this is not the expected result, correct the error, and rerun the job.

BSN8004E  THE utility_name PROCESS HAS ENDED WITH ERROR.

Explanation: The Policy Services utility named utility_name has ended with errors.
System action: Processing ends with a return code of 8.
User response: Check another message whose suffix is e. Correct the error, and rerun the job.

BSN8005E  STORAGE OBTAIN FAILED.
RC=return_code, SIZE=size, MOD=module,
ERROR_ID=error_id.

Explanation: The Policy Services utility failed to obtain storage.

return_code  Shows the return code (in hexadecimal) that is returned from the STORAGE macro.
size  Shows the size of the storage that could not be obtained.
module  Shows the name of the failed module.
error_id  Shows the error ID that is associated with the module.
System action: Processing ends with a return code of 8.
User response: Increase the REGION size on the JOB statement in the JCL, and rerun the utility.

BSN8006E  STORAGE RELEASE FAILED.
RC=return_code, SIZE=size, MOD=module,
ERROR_ID=error_id.

Explanation: The Policy Services utility failed to release storage. In the message text,

return_code  Shows the return code (in hexadecimal) that is returned from the STORAGE macro.
size  Shows the size of the storage that could not be released.
module  Shows the name of the failed module.
error_id  Shows the error ID that is associated with the module.
System action: Processing ends with a return code of 8.
User response: None. This message is informational.

BSN8007E  OPEN FAILED. DDNAME=ddname.
RC=return_code.

Explanation: The Policy Services utility failed to open the data set that is specified by the ddname DD. The hexadecimal value return_code is the return code from the OPEN macro.
System action: Processing ends with a return code of 8.
User response: See z/OS DFSMS Macro Instructions for Data Sets to determine the meaning of the return code. If the problem persists, contact IBM Software Support.

BSN8008W  SNAP FAILED. RC=return_code.
SNAP SERVICE TERMINATED DUE TO PREVIOUS ERROR.

Explanation: The Policy Services utility failed to create a snap dump. The hexadecimal value return_code is the return code from the SNAP macro. The Policy Services utility terminated the snap service due to the error.
System action: Processing continues with a return code of 4.
User response: Correct the error, and rerun the job.

BSN8009E  DYNALLOC SERVICE FAILED FOR
FUNC=[ALLOC | UNALLOC],
[DDNAME=ddname ]
[DSNAME=dsname], RC=return_code,
RSN=reason_code.

Explanation: The Policy Services utility failed to allocate or unallocate the data set for DD name ddname
or the data set named dsname. The hexadecimal value return_code is the return code from SVC99. The hexadecimal value reason_code is the S99ERROR and S99INFO contents.

System action: Processing ends with a return code of 8.

User response: Look up the dynamic allocation (SVC99) code in z/OS MVS Programming Authorized Assembler Services Guide. Correct the problem, and rerun the job.

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BSN8010E  UTILITY ENDED WITH ERROR.
RC=return_code, RSN=reason_code.

Explanation: The Policy Services batch utility interface (BSNUTIL0) ended with an error. Hexadecimal values return_code and reason_code indicate the return and reason codes from the requested function, respectively.

System action: Processing ends with a return code of 8.

User response: Correct the error, and rerun the job.

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BSN8011E  ERRORS DETECTED WHILE xxxxxxx

Explanation: The Policy Services utility encountered errors during its processing.

xxxxxxx Indicates one of the following:
ANALYZING INPUT PARAMETERS
EXTRACTING SENSOR DATA ELEMENTS
GENERATING REPORTS

System action: Processing ends with a return code of 8.

User response: Check the message whose suffix is E in the journal data set. Correct the error, and rerun the job.

---

BSN8012E  LOAD FAILED. MODULE=modname,
SC=rcode, RSN=reason_code.

Explanation: The Policy Services utility failed to load the module named modname. The hexadecimal value code is the abend code, and the hexadecimal value reason_code is the reason code associated with the abend.

System action: Processing ends with a return code of 8.

User response: Check if the correct load module library is specified in the STEPLIB DD statement.

---

BSN8013E  CONNECTION TO THE ITKB SERVER FAILED. NAME=servername.

Explanation: The connection to the IMS Tools KB server failed. This message might be issued for the following reasons:

• The server configuration is incomplete.
• The server is not started.
• The server name that is specified by the ITKBSRVR keyword is incorrect.
• Insufficient access authority to the repository.

System action: Processing ends with a return code of 8.

User response: Complete the following steps:
1. Ensure that the server name specified on the ITKBSRVR keyword is correct.
2. Ensure that the IMS Tools KB server is configured and started without any errors. For configuration steps, see the topic “Configuring IMS Tools Knowledge Base” in IBM Tools Base for z/OS Configuration Guide for IMS.

If the problem persists, contact your system administrator to obtain the required level of authorization.

---

BSN8014E  SPECIFIED RECON ID IS NOT DEFINED IN REPOSITORY. RECON ID=recon_id.

Explanation: The Policy Services utility failed to retrieve the RECON ID of recon_id from the IMS Tools KB Input repository.

System action: Processing ends with a return code of 8.

User response: Ensure that the RECONID keyword specifies the correct RECON ID. Also, ensure that the RECON data set name is registered with IMS Tools KB.

---

BSN8015E  UNABLE TO OBTAIN RECON ID FROM REPOSITORY. RECON ID=recon_id, RC=return_code,
RSN=reason_code.

Explanation: The Policy Services utility failed to retrieve the RECON ID of recon_id from the IMS Tools KB Input repository. Hexadecimal values return_code and reason_code are the return code and the reason code from the RECON ID retrieval module.

System action: Processing ends with a return code of 8.

User response: Ensure that the RECONID keyword specifies the correct RECON ID. Also, ensure that the RECON data set name is registered with IMS Tools Knowledge Base. If the problem persists, contact IBM Software Support.

---

BSN8016E  UNSUPPORTED DOMAIN.
DOMAIN=domain_name.
or UNSUPPORTED DATABASE TYPE.
DBTYPE=database_type.
BSN8019E  •  BSN8024W

**Explanation:** The Sensor Data Extractor does not have the definition of the requested domain `domain_name` or database type `database_type`.

**System action:** Processing ends with a return code of 8.

**User response:** This error might be an internal system error. Contact IBM Software Support.

---

BSN8019E  ESTAE FAILED. RC=return_code, MOD=modname.

**Explanation:** The ESTAE request issued by the Policy Services utility failed. The hexadecimal value `return_code` is the return code of the ESTAE macro.

**System action:** Processing ends with a return code of 8.

**User response:** Correct the error, and rerun the job.

---

BSN8020E  INTERNAL ERROR OCCURRED IN MODULE modname, CODE=code

**Explanation:** The Policy Services utility encountered an internal error. `modname` is the name of the module that encountered the error. `code` is the information code associated with the error.

**System action:** Processing ends with a return code of 8.

**User response:** This error might be an internal system error. Contact IBM Software Support.

---

BSN8021E  SENSOR DATA SERVICE FAILED FOR FUNC=function, RC=return_code, RSN=reason_code.

**Explanation:** The Sensor Data Extractor failed to extract sensor data by using the Sensor Data Service API. `function` is the function code of the Sensor Data Service API. Hexadecimal values `return_code` and `reason_code` are the return code and the reason code from the Sensor Data Service API.

**System action:** Processing ends with a return code of 8.

**User response:** Correct the error, and rerun the job.

---

BSN8022I  REQUESTED SENSOR DATA WAS NOT FOUND IN THE REPOSITORY.

- DOMAIN=domain, RECONID=recon_id, DBD=dbdname. [PARTITION=partname.]

**Explanation:** Sensor data of the specified policy domain `domain`, RECON ID `recon_id`, DBD name `dbdname`, partition name `partname`, and area name `areaname` is not stored in the IMS Tools KB Sensor Data repository.

**System action:** The Sensor Data Extractor skipped extracting the requested sensor data from the requested policy domain. Processing continues.

**User response:** If this is not the expected result, check the following, and rerun the job.

- The policy domain name specified by the DOMAIN keyword is correct.
- The RECON ID specified by the RECONID keyword is correct.
- The DBD name specified by the DBDNAME keyword is correct.
- If the database is a HALDB, the partition name specified by the PARTNAME keyword is correct.
- If the database is a DBD, the area name specified by the AREANAME keyword is correct.
- Sensor data of the requested database was actually stored in the IMS Tools KB Sensor Data repository by DB Sensor.

---

BSN8023E  DATA DICTIONARY SERVICE FAILED FOR FUNC=function, RC=overall_return_code, RSN=overall_reason_code.

- DATA ELEMENT: data_element_name, RC=return_code, RSN=reason_code.

**Explanation:** An error was detected when the indicated function `function` of the Data Dictionary Service was running. Hexadecimal values `overall_return_code` and `overall_reason_code` indicate the return and reason codes from the Data Dictionary Service, respectively. If the error was detected in specific data elements, the second BSN8023E message is issued.

**System action:** Processing ends with a return code of 8.

**User response:** Correct the error, and rerun the job.

---

BSN8024W  DATA DICTIONARY SERVICE FAILED FOR FUNC=function, RC=overall_return_code, RSN=overall_reason_code.

- DATA ELEMENT: data_element_name, RC=return_code, RSN=reason_code.

**Explanation:** An error was detected when the indicated function `function` of the Data Dictionary Service was running. Hexadecimal values `overall_return_code` and `overall_reason_code` indicate the return and reason codes from the Data Dictionary Service, respectively. If the error was detected in the following, and rerun the job.

- The policy domain name specified by the DOMAIN keyword is correct.
- The RECON ID specified by the RECONID keyword is correct.
- The DBD name specified by the DBDNAME keyword is correct.
- If the database is a HALDB, the partition name specified by the PARTNAME keyword is correct.
- If the database is a DBD, the area name specified by the AREANAME keyword is correct.
- Sensor data of the requested database was actually stored in the IMS Tools KB Sensor Data repository by DB Sensor.
specific data elements, the second BSN8024W message is issued.

data_element_name is the name of the data element that caused the error. Hexadecimal values return_code and reason_code indicate the return and reason codes associated with the data element, respectively.

System action: Processing continues with a return code of 4.

User response: Correct the error, and rerun the job.

BSN8026W THERE ARE NO DATA ELEMENTS THAT MATCH THE LASTDATE SPECIFICATION. DOMAIN=domain

Explanation: Sensor data of all generations is not extracted from the policy domain domain because the collection date of the latest sensor data is older than the date specified by the LASTDATE keyword.

System action: Processing continues with a return code of 4.

User response: Check if the LASTDATE keyword parameter is correct.

BSN8027W SENSOR DATA FOR dbname WAS NOT EXTRACTED.

Explanation: No sensor data for database dbname is extracted from any of the requested domains.

System action: Processing continues with a return code of 4.

User response: Check if the database name specified by the DBDNAME keyword and the RECON ID specified by the RECONID keyword are correct.

BSN8030E AN ERROR WAS DETECTED WHILE ANALYZING THE CONTROL STATEMENT. RC=return_code, FUNC=function. DETAIL OF THE ERROR IS AS FOLLOWS:

Explanation: The control statement analysis process detected a syntax error in the control statement. Review the other generated message, BPE0003E, which explains the details of the error.

System action: Processing ends with a return code of 8.

User response: Correct the control statement, and rerun the job.

BSN8031I THE FOLLOWING OPTIONS ARE USED FOR THE SENSOR DATA EXTRACTOR:
- keyword_name1 ... value1
- keyword_name2 ... value2
...

Explanation: This message shows individual processing options of the Policy Services utility on each line. This message is for informational purposes only.

System action: Processing continues.

User response: None. This message is informational.

BSN8033E DBDNAME KEYWORD OR CAGRPM KEYWORD MUST BE SPECIFIED.

Explanation: Neither the DBDNAME keyword nor the CAGRPM keyword is specified.

System action: Processing ends with a return code of 8.

User response: Specify either the DBDNAME keyword or the CAGRPM keyword, and rerun the job.

BSN8034E keyword1 KEYWORD MUST BE SPECIFIED WITH [keyword2 | keyword2(parameter)].

Explanation: The keyword keyword1 was specified. However, the keyword keyword2 or the parameter keyword2(parameter), which is required for keyword1, was not specified.

System action: Processing ends with a return code of 8.

User response: Correct the control statement, and rerun the job.

BSN8035E keyword1 KEYWORD AND keyword2 KEYWORD ARE MUTUALLY EXCLUSIVE.

Explanation: The keyword keyword1 was specified with the keyword keyword2. These keywords cannot be specified simultaneously.

System action: Processing ends with a return code of 8.

User response: Correct the control statement, and rerun the job.

BSN8036E MULTIPLE [PARTITION | AREA] NAMES CANNOT BE SPECIFIED.

Explanation: Multiple HALDB partition names were specified by the PARTNAME keyword, or multiple DEDB area names were specified by the AREANAME keyword. Currently, multiple partitions or areas are not supported.
BSN8041I SENSOR DATA HISTORY REPORT HAS BEEN GENERATED.
REPORT_TYPE=[SHORT | LONG | CSV].
- DOMAIN=domain, THE NUMBER OF GENERATIONS TO BE REPORTED IS generation_number

Explanation: The Sensor Data History report of the requested type was generated successfully. domain shows the policy domain of the sensor data.

System action: Processing continues.
User response: None. This message is informational.

BSN8037E INCORRECT VALUE IS SPECIFIED FOR THE LASTDATE KEYWORD.
RC=return_code.

Explanation: The parameter value specified by the LASTDATE keyword was not in a correct format. The parameter value must be in yyyyymmdd or yyyymmddhhmmss format.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8038E MULTIPLE DOMAINS CANNOT BE SPECIFIED WHEN REPORT_TYPE(CSV) IS SPECIFIED.

Explanation: REPORT_TYPE(CSV) was specified with DOMAIN(ALL) or multiple parameters for the DOMAIN keyword. REPORT_TYPE(CSV) must be specified with a single policy domain.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8040I SENSOR DATA FOR dbdname HAS BEEN EXTRACTED.
- DOMAIN=domain, THE NUMBER OF EXTRACTED GENERATIONS IS generation_number

Explanation: The requested sensor data was extracted successfully. dbdname shows the DBD name whose sensor data was extracted. domain shows the policy domain of the sensor data. generation_number shows how many generations of sensor data were extracted.

System action: Processing continues.
User response: None. This message is informational.

BSN8041I SENSOR DATA HISTORY REPORT HAS BEEN GENERATED.
REPORT_TYPE=[SHORT | LONG | CSV].
- DOMAIN=domain, THE NUMBER OF GENERATIONS TO BE REPORTED IS generation_number

Explanation: The Sensor Data History report of the requested type was generated successfully. domain shows the policy domain of the sensor data.

System action: Processing continues.
User response: Correct the control statement, and rerun the job.

BSN8042E MULTIPLE DOMAINS CANNOT BE SPECIFIED WHEN REPORT_TYPE(CSV) IS SPECIFIED.

Explanation: REPORT_TYPE(CSV) was specified with DOMAIN(ALL) or multiple parameters for the DOMAIN keyword. REPORT_TYPE(CSV) must be specified with a single policy domain.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8037E INCORRECT VALUE IS SPECIFIED FOR THE LASTDATE KEYWORD.
RC=return_code.

Explanation: The parameter value specified by the LASTDATE keyword was not in a correct format. The parameter value must be in yyyyymmdd or yyyymmddhhmmss format.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8038E MULTIPLE DOMAINS CANNOT BE SPECIFIED WHEN REPORT_TYPE(CSV) IS SPECIFIED.

Explanation: REPORT_TYPE(CSV) was specified with DOMAIN(ALL) or multiple parameters for the DOMAIN keyword. REPORT_TYPE(CSV) must be specified with a single policy domain.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8040I SENSOR DATA FOR dbdname HAS BEEN EXTRACTED.
- DOMAIN=domain, THE NUMBER OF EXTRACTED GENERATIONS IS generation_number

Explanation: The requested sensor data was extracted successfully. dbdname shows the DBD name whose sensor data was extracted. domain shows the policy domain of the sensor data. generation_number shows how many generations of sensor data were extracted.

System action: Processing continues.
User response: None. This message is informational.

BSN8041I SENSOR DATA HISTORY REPORT HAS BEEN GENERATED.
REPORT_TYPE=[SHORT | LONG | CSV].
- DOMAIN=domain, THE NUMBER OF GENERATIONS TO BE REPORTED IS generation_number

Explanation: The Sensor Data History report of the requested type was generated successfully. domain shows the policy domain of the sensor data.

System action: Processing continues.
User response: Correct the control statement, and rerun the job.

BSN8042E MULTIPLE DOMAINS CANNOT BE SPECIFIED WHEN REPORT_TYPE(CSV) IS SPECIFIED.

Explanation: REPORT_TYPE(CSV) was specified with DOMAIN(ALL) or multiple parameters for the DOMAIN keyword. REPORT_TYPE(CSV) must be specified with a single policy domain.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8037E INCORRECT VALUE IS SPECIFIED FOR THE LASTDATE KEYWORD.
RC=return_code.

Explanation: The parameter value specified by the LASTDATE keyword was not in a correct format. The parameter value must be in yyyyymmdd or yyyymmddhhmmss format.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.

BSN8038E MULTIPLE DOMAINS CANNOT BE SPECIFIED WHEN REPORT_TYPE(CSV) IS SPECIFIED.

Explanation: REPORT_TYPE(CSV) was specified with DOMAIN(ALL) or multiple parameters for the DOMAIN keyword. REPORT_TYPE(CSV) must be specified with a single policy domain.

System action: Processing ends with a return code of 8.
User response: Correct the control statement, and rerun the job.
BSN8805E • BSN8813E

BSN8805E  AN INVALID TEST OPTION WAS SPECIFIED. THE OPTION MUST BE 'Y', 'N', OR BLANK.

Explanation: The TEST option has an invalid option for testing valid record set handles.

The TEST option allows for automatic queuing of all outstanding records for a given record set.

System action: The program returns an error.

User response: Specify Y for automatic queuing or N for no automatic queuing. By default the TEST option is set to N.

Module: BSNSDSD0

BSN8806E  THE SENSOR DATA PROCESSING TASK IS INVALID.

Explanation: The task that is used to create an instance of sensor data is different from the current processing function.

System action: The program returns an error.

User response: During initialization, start all functions to a specific sensor data instance within the same task.

In a multitasking environment, you must specify each task to create its own instance or instances of sensor data.

Module: BSNSDSD0

BSN8807E  THE SENSOR DATA HISTORY COULD NOT BE FOUND.

Explanation: In the sensor data repository, a setting for the sensor data product and type is incorrect.

During the initialization of a sensor data instance, a validation is performed to verify that the sensor data history for the sensor data product and type exists.

System action: The program returns an error.

User response: Use the log file to determine the problem, and then set the correct history settings with a control function.

If the error persists, contact the system administrator.

Module: BSNSDSD0

BSN8808E  THE APPLICATION NAME application_name IS INVALID.

Explanation: A bad or null application name was passed.

System action: The program returns an error.

User response: Specify an application name as one of the input parameters for the BSNSDSM macro.

Module: BSNSDSD0

BSN8809E  POLICY SERVICES FAILED TO BROWSE THE SENSOR DATA REPOSITORY.

Explanation: An error occurred when the sensor data repository was browsed internally.

System action: The program returns an error.

User response: Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8810E  THE RECORD SET RSI VALUE IS INVALID.

Explanation: A required non-null record set indicator (RSI) was passed as part of a sensor data function.

System action: The program returns an error.

User response: Specify a non-null RSI on the BSNSDSM macro. The sensor data must receive a non-null RSI for the sensor data function.

Module: BSNSDSD0

BSN8811E  THE CONNECTION TO THE SENSOR DATA REPOSITORY FAILED FOR THE GROUP group_name AND REPOSITORY repository_name.

Explanation: The connection to the sensor data repository failed.

System action: The program returns an error.

User response: Specify the correct group or server name and ensure that the server is active, for example, by using SDSF. Also, see the log file to determine other possible errors.

Module: BSNSDSD0

BSN8812E  THE ELEMENT LIST IS INVALID.

Explanation: An invalid element was detected while data dictionary was processing.

System action: The program returns an error.

User response: View the returned status control block or the log file, and correctly define the data elements, such as the data type and value.

Module: BSNSDSD0

BSN8813E  THE ENVIRONMENT IS NOT INITIALIZED.

Explanation: The first call to a sensor data instance was not an INIT or a TERM call.

System action: The program returns an error.
User response: Issue an INIT call as the first call to the sensor data for initialization.

If a partial environment was created and must be terminated, issue a TERM call as the first call to the sensor data. The TERM call deletes the partial sensor data environment.

Module: BNSNSDSD0

BSN8814E A FUNCTION WAS PROCESSED WITHOUT A CONNECTION TO THE SENSOR DATA REPOSITORY.

Explanation: After initialization, a function failed because no connection to the server exists.

System action: The program returns an error.

User response: Verify that all input data tags and the associated data length are valid.

Module: BNSNSDSD0

BSN8815E THE DATA TAG IN AN INPUT ELEMENT IS INVALID.

Explanation: During the front-end validation process, sensor data detected an invalid data tag in an input element.

System action: The program returns an error.

User response: Specify the correct application name and major key name.

If the names are correct, ensure that the member has been created or was not deleted.

Module: BNSNSDSD0

BSN8816E AN INVALID HANDLE TYPE WAS PASSED TO THE SENSOR DATA REPOSITORY.

Explanation: A null or invalid handle type (record handle or record set handle) was passed to sensor data.

System action: The program returns an error.

User response: Specify a valid handle type that represents an active record for the given function. For example, do not specify a record set handle when a record handle is required.

Module: BNSNSDSD0

BSN8817E THE KEY FOR A SENSOR DATA REPOSITORY IS INVALID.

Explanation: The major key for a sensor data repository is invalid or missing.

System action: The program returns an error.

User response: Specify a valid major key for the sensor data function. Any combination of characters (printable or non-printable) are valid.

Module: BNSNSDSD0

BSN8818E THE LENGTH FOR A KEY IS INVALID.

Explanation: The required key length for a sensor data major key is missing or invalid.

System action: The program returns an error.

User response: Specify a key length for the major key of the sensor data that is greater than zero.

Module: BNSNSDSD0

BSN8819E THE MEMBER member_name WAS NOT FOUND IN THE REPOSITORY.

Explanation: A sensor data member in the repository could not be read because the member was not found.

System action: The program returns an error.

User response: Specify the correct application name.

Module: BNSNSDSD0

BSN8820E THE STORAGE ADDRESS IS INVALID.

Explanation: The required storage address for the record elements is missing.

System action: The program returns an error.

User response: Specify the required area for storage elements, which is provided by data dictionary, in the IMS tools client.

Module: BNSNSDSD0

BSN8821E THE PACKED DATA AREA IS INVALID.

Explanation: A required packed data area is missing for an unpack elements operation.

System action: The program returns an error.

User response: Specify an area with packed elements for unpacking. The packed area of elements must be consistent with the data dictionary specifications.

Module: BNSNSDSD0

BSN8822E AN INVALID LENGTH FOR PACKED DATA WAS SPECIFIED.

Explanation: Within an element tag, an invalid length for pack data and for the data length was specified.

System action: The program returns an error.
User response: View the output in the log file and correct all of the supplied lengths for packed elements and element tags.

Module: BSNSDSD0

BSN8823E  A SET CLOCK ERROR OCCURRED WHILE THE TIME AND DATE WAS PROCESSING.
Explanation: An undefined error occurred while a time and date was processed.
System action: The program returns an error.
User response: Rerun the user program. If the problem persists, contact the system administrator.
Module: BSNSDSD0

BSN8824E  AN OPTION COMMAND WAS CALLED THAT CONTAINS AN INVALID OPTION.
Explanation: An option command function was called with a null or invalid option.
System action: The program returns an error.
User response: Specify a valid option in the user program.
Module: BSNSDSD0

BSN8825E  THE HISTORY VALUES COULD NOT BE SET.
Explanation: The server failed to set the history values (retention days or versions).
System action: The program returns an error.
User response: If the problem persists, contact the system administrator.

If the problem persists, contact the system administrator.
Module: BSNSDSD0

BSN8826E  THE SUPPLIER ID FOR AN ADD RECORD IS INVALID.
Explanation: A required supplier ID field for an add record is missing.
System action: The program returns an error.
User response: Specify a supplier ID specification for adding a record.
Module: BSNSDSD0

BSN8827E  THE SUPPLIER PROGRAM FOR AN ADD RECORD IS INVALID.
Explanation: A required supplier program for an add record is missing.
System action: The program returns an error.
User response: Specify a supplier program specification for adding a record.
Module: BSNSDSD0

BSN8828E  THE RECORD HANDLE HAS AN INVALID OWNER.
Explanation: The handle of a record indicates an inconsistent owner for the set.
System action: The program returns an error.
User response: Specify the correct record handle and ensure that the record handle has not been corrupted. If the handle is corrupted, contact the system administrator.
Module: BSNSDSD0

BSN8829E  NO RECORD POSITION WAS SET FOR RETRIEVING RECORD ELEMENTS.
Explanation: Before elements can be accessed in a record, a record position must be set.
System action: The program returns an error.
User response: Specify a valid record that is referenced in a read function before you access elements.
Module: BSNSDSD0

BSN8830E  THE RECORD SET HANDLE IS INVALID.
Explanation: The handle of a record set is invalid.
System action: The program returns with an error.
User response: If the record set handle is null, specify a valid non-null handle.
If the record set handle is not null, contact the system administrator.
Module: BSNSDSD0

BSN8831E  THE RECORD SET TYPE IS INVALID.
Explanation: The type associated with a record set is invalid.
System action: The program returns an error.
User response: Pass a record set handle that is for a record set and not for some other entity, such as a record.
Module: BSNSDSD0
Module: BSNSDSD0

BSN8832E AN INVALID RECORD HANDLE WAS PASSED TO A RECORD.

Explanation: An invalid record handle was passed to a record.

System action: The program returns with an error.

User response: If the record handle is null, specify a valid non-null handle.
If the record handle is not null, contact the system administrator.

Module: BSNSDSD0

BSN8833E THE RECORD TYPE IS INVALID.

Explanation: The type associated with a record is invalid.

System action: The program returns with an error.

User response: Pass a record handle that is for a record and not for some other entity, such as a record set.

Module: BSNSDSD0

BSN8834E THE RECORD OR RECORD SET COULD NOT BE DELETED.

Explanation: The affiliated record or record set could not be deleted after the write operation.

System action: The program returns an error. The record or record set are not written and remain in the memory.

User response: View the log file to determine the problem. The record or record set might have already been written, and therefore, could not be written again. If the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8835E THE SENSOR DATA REPOSITORY COULD NOT BE QUERIED.

Explanation: The sensor data repository history could not be queried.

System action: The program returns an error.

User response: Rerun the job with a log file and fix any repository access errors. If the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8836E NO LOG FILE WAS OPENED FOR THE DATA DUMP.

Explanation: The data dump to the log file failed because no log file was open.

System action: The program returns with an error.

User response: Rerun the sensor data with a valid log file.

Module: BSNSDSD0

BSN8837W NO LOG FILE WAS OPENED TO SNAP OR PRINT.

Explanation: A request for a snap or print to the log file failed because no active log file is open.

System action: The program continues with an optional return of a warning.

User response: If you want debug to a problem, specify a log file to collect processing information. Otherwise, no action is required.

Attention: Using a log file can increase the amount of output that can negatively affect performance and spool space.

Module: BSNSDSD0

BSN8838E THE CONTROL HISTORY COULD NOT BE SET.

Explanation: The control history (maximum days or versions) could not be set.

System action: The program returns an error.

User response: Rerun the job with a log file and fix any repository access errors. If the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8839W NO MEMBERS WERE FOUND IN THE REPOSITORY.

Explanation: No members were found in the repository during a search to dump members to the log file.

System action: The program continues with a warning to the log file.

User response: Ensure that the search criteria is correct. If the search criteria is correct, no member matched the criteria, and no action is required. If the criteria is incorrect, specify the correct criteria, then rerun the job.

Module: BSNSDSD0
**BSN8840E**  THE STATUS CONTROL BLOCK IS UNDEFINED.

**Explanation:** The required status control block for a function is missing.

**System action:** The program returns an error.

**User response:** Specify a status area control block for the function.

**Module:**  BSNSDSD0

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**BSN8841E**  THE SENSOR DATA HISTORY SETTING COULD NOT BE DELETED.

**Explanation:** The sensor data history setting could not be deleted.

**System action:** The program returns an error.

**User response:** Rerun the job with a log file and fix any repository errors in the log file. If the problem persists, contact the system administrator.

**Module:**  BSNSDSD0

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**BSN8842W**  A RECORD MEMBER WAS NOT QUEUED.

**Explanation:** Each record member that you want to write to the repository must be queued. A record set that is to be written to the repository had at least one record member that was not queued.

Records might not be queued either because of application program logic or because the application program bypasses a record that is being queued. A record is bypassed if it is not queued by a BSNSDSM queue record request.

**System action:** The program returns with a warning.

**User response:** Review the log file to help determine if the members were written. If the members were not written, issue a BSNSDSM QREC function to queue the record, and then rerun the job. If the members were written, no action is required.

**Module:**  BSNSDSD0

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**BSN8843E**  AN INVALID STARTING LOCATION WAS SPECIFIED. THE LOCATION MUST BE 'N' OR 'O'.

**Explanation:** The starting location for reading sensor data members is invalid.

**System action:** The program returns with an error.

**User response:** Specify the starting location of the read begin process as either N to process the records from the newest to the oldest, or specify 0 to the process records from the oldest to the newest.

**Module:**  BSNSDSD0

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**BSN8844E**  THE ELEMENT COUNT IS INVALID FOR THE ELEMENTS FUNCTION.

**Explanation:** The element count that is passed to the add elements function is invalid.

**System action:** The program returns an error.

**User response:** Specify a positive value for the element count. The element count must be a positive value in the data dictionary image block that was specified for the add elements function.

**Module:**  BSNSDSD0

---

**BSN8845E**  THE TAG LENGTH IS INVALID FOR THE ADD ELEMENTS FUNCTION.

**Explanation:** The element tag length supplied by the version is invalid.

**System action:** The program returns an error.

**User response:** For the add elements function, specify a valid version setting for all elements specified.

**Module:**  BSNSDSD0

---

**BSN8846E**  A RECORD WAS QUEUED MORE THAN ONCE.

**Explanation:** A record was attempted to be queued more than once. A record that is already queued cannot be queued again.

**System action:** The program returns an error.

**User response:** Queue a record to a record set only once.

**Module:**  BSNSDSD0

---

**BSN8847E**  THE SENSOR DATA KEY FIELDS COULD NOT BE FOUND.

**Explanation:** The repository did not return consistent information. The sensor data key fields might be corrupted.

**System action:** The program returns an error.

**User response:** Contact the system administrator.

**Module:**  BSNSDSD0

---

**BSN8848E**  AN INVALID READING LOCATION WAS SPECIFIED. THE LOCATION MUST BE 'R', 'M', OR 'B'.

**Explanation:** The specified location from where members are being read is invalid.

**System action:** The program returns an error.

**User response:** Specify R, M, or B as the location from
where the members are read. The location indicator is for the BSNSDSM macro when the macro attempts to read a repository member.

- Specify R to read members from the repository.
- Specify M to read members from the current memory.
- Specify B to read members first from the memory. If the members are not found, the members are then read from the repository.

Module: BSNSDSD0

BSN8849E  THE REGION DUMP TYPE IS INVALID.

Explanation: The dump region to log file option was invalid. This error is an internally generated error.

System action: The program returns an error.

User response: Rerun the job, and if the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8850E  THE DUMP FUNCTION ENCOUNTERED AN ERROR.

Explanation: The requested dump function encountered an error.

System action: The program returns an error.

User response: Specify valid dump storage parameters for the dump function, such as storage, length, and label.

Module: BSNSDSD0

BSN8851E  THE PRINT FUNCTION ENCOUNTERED AN ERROR.

Explanation: The requested print function encountered an error.

System action: The program returns an error.

User response: Specify valid print text parameters for the print function, such as storage and length.

Module: BSNSDSD0

BSN8852W  THE CRITERIA DOES NOT MATCH ANY SENSOR DATA MEMBER.

Explanation: The application program failed to find a sensor data member that matched all the requested criteria.

System action: The program returns a warning.

User response: You can change the criteria and rerun the job. If the criteria are correct, no action is required.

Module: BSNSDSD0

BSN8853E  AN INVALID KEEP VALUE WAS SPECIFIED. THE VALUE MUST BE 'Y' OR 'N'.

Explanation: The specified KEEP value is invalid.

System action: The program returns with an error.

User response: The KEEP value determines whether records or a record set remain in the memory after being read or written. Specify Y to keep records in the memory for future processing, or specify N to release the record images. By default the KEEP value is set to N.

Module: BSNSDSD0

BSN8854E  A REPOSITORY MEMBER COULD NOT BE ACCESSED FOR READING.

Explanation: A repository member was inaccessible for reading.

System action: The program returns an error.

User response: Rerun the job at a later time because another user might be exclusively accessing the member. If the problem persists, contact the system administrator.

Module: BSNSDSD0

BSN8855E  THE RETURN DATA AREA IS UNDEFINED.

Explanation: A required return data area for the requested function is missing.

System action: The program returns an error.

User response: Specify the required return area for the current function.

Module: BSNSDSD0

BSN8856E  THE LENGTH OF A RETURN AREA IS INVALID.

Explanation: The length of the associated return area is missing or invalid.

System action: The program returns an error.

User response: Specify a valid length along with the return area. A valid length is a length greater than zero.

Module: BSNSDSD0

BSN8857E  AN INVALID READ OPTION WAS SPECIFIED. THE VALUE MUST BE 'H' OR 'D'.

Explanation: The READ option for reading records into memory has an invalid value.
BSN8858W • BSN8864E

System action: The program returns with an error.
User response: Specify the READ option as either H for header only or 0 for header and data. By default the READ option is set to H.

Important: Use option D only to snap out the elements that might have a formatting problem in the repository. Option D returns data that is in raw form, and data elements in raw form do not have verification or translation.

Module: BSNSDSD0

BSN8858W THE RETURN LENGTH WAS TRUNCATED.

Explanation: The supplied read length for the input read buffer is too small to hold all the record data.

System action: The program returns with a warning.
User response: Increase the input buffer size. The length is passed by the BSNSDSM macro.

Module: BSNSDSD0

BSN8859W THE MEMBER COULD NOT BE FOUND IN THE MEMORY.

Explanation: The request to read a member from memory failed because no member was found in the memory.

If the initial request to the memory fails, this warning message is sent and then a request is made to the repository. The request to read a member is always made to the memory first, and then, if specified, to the repository.

System action: The program returns a warning.
User response: Set the read members option to be read from both the memory and the repository.

Module: BSNSDSD0

BSN8860E THE READ BEGIN FUNCTION COULD NOT FIND THE REQUESTED SENSOR DATA MEMBER.

Explanation: The requested sensor data member was not found. The sensor data member is the application and the major key.

The memory, repository, or both are scanned for the requested member on a read begin function. If the member is not found within the requested location, this error is returned.

System action: The program returns an error.
User response: Specify the correct member name and read location. The read location can be R (repository), M (memory), or B (both).

If you specified N (no) for the KEEP option, the member is not retained in the memory, so you must specify either R or B for the read location.

Module: BSNSDSD0

BSN8861E AN INVALID TIME SEQUENCE SETTING WAS SPECIFIED.

Explanation: The specified system or user time is invalid for record retrieval.

System action: The program returns with an error.
User response: Specify a valid begin time in the BSNSDSM macro.

Ensure that the begin time is not later than the associated end time, and that the time value is in the correct time format. For example, March 5, 2009 might be specified as 05032009, but the value might need to be 03052009.

Module: BSNSDSD0

BSN8862E AN INVALID TIME LOCALE WAS SPECIFIED FOR DATE AND TIME PROCESSING.

Explanation: The LOCALE that was specified for date and time processing is invalid.

System action: The program returns with an error.
User response: Specify S, U, or L for the time locale.

The LOCALE indicates the location that a specified date and time are derived from. The LOCALE value S is for STCK form, U is for coordinated universal time, and L is for local time.

Module: BSNSDSD0

BSN8863E AN INVALID TIME ZONE FACTOR WAS SPECIFIED.

Explanation: An invalid time zone factor was specified.

System action: The program returns with an error.
User response: Depending on the specified time type, specify a time specification that is plus or minus the number of quarter hours from UTC or a value between -95 and +95.

Module: BSNSDSD0

BSN8864E INVALID LEAP SECONDS WERE SPECIFIED.

Explanation: For the specified date and time, leap seconds were not specified. The number of leap seconds is required for date and time calculations.

System action: The program returns with an error.
User response: Specify the correct number of leap
seconds. Certain specified date and time values require that you specify the number of leaps seconds between UTC and STCK form.

**Module:** BSNSDSD0

---

**BSN8865E** AN INVALID TIME TYPE WAS SPECIFIED.

**Explanation:** An invalid time type for date and time interpretation was specified.

**System action:** The program returns an error.

**User response:** Specify the date and time in one of the following allowable formats:
- STCK-8 byte STCK image
- STCKE-16 byte STCKE image
- PICGREG-20 character YYYYMMDDHHMMSSSTHMIJU
- PICJULI-20 character YYYYDDD0HHMMSSTHMIJU
- IMSGREG-12 byte packed YYYYMMDDHHMMSSSTHMIJUFFFFQS
- IMSJULI-12 byte packed YYYYDDD0HHMMSSTHMIJUFFFFQS
- DECREG-12 byte packed YYYYMMDDHHMMSSSTHMIJUXXXX
- DE CJULI-12 byte packed YYYYDDD0HHMMSSTHMIJUXXXX

**Module:** BSNSDSD0

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**BSN8866E** AN INVALID TIME VALUE WAS SPECIFIED.

**Explanation:** The specified DATE value was invalid because it did not match the date and time format.

**System action:** The program returns an error.

**User response:** Specify a DATE value in the correct date and time format.

**Module:** BSNSDSD0

---

**BSN8867E** AN INVALID GET ELEMENTS COUNT WAS SPECIFIED.

**Explanation:** A specified elements count in a GET ELEMENTS process is negative.

**System action:** The program returns an error.

**User response:** Specify a valid GET ELEMENTS count for the function call. A valid GET ELEMENTS count must be zero or greater.

**Module:** BSNSDSD0

---

**BSN8868W** THE GET ELEMENTS PROCESS COULD NOT FIND ANY DATA ELEMENTS.

**Explanation:** No data elements were found on the specified read record.

**System action:** The program returns with a warning.

**User response:** Member records can be created without any associated data fields. If the record is valid, no action is required.

If the record is not valid, contact the system administrator.

**Module:** BSNSDSD0

---

**BSN8869E** AN INVALID TAG WAS SPECIFIED IN A GET ELEMENTS OPERATION.

**Explanation:** A tag that was specified in a GET ELEMENTS operation is invalid.

**System action:** The program returns an error.

**User response:** Specify tags for the GET ELEMENTS in the correct format and version.

**Module:** BSNSDSD0

---

**BSN8870E** THE START OPERATION COULD NOT ACQUIRE A MEMBER LIST FROM THE SENSOR DATA REPOSITORY.

**Explanation:** An error occurred when acquiring a member list from the sensor data repository.

**System action:** The program returns an error.

**User response:** Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

**Module:** BSNSDSD0

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**BSN8871E** THE GET OPERATION COULD NOT GET A LIST OF THE SENSOR DATA REPOSITORY MEMBERS.

**Explanation:** An error occurred when attempting to get a list of sensor data repository members.

**System action:** The program returns an error.

**User response:** Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

**Module:** BSNSDSD0
BSN8872E POLICY SERVICES COULD NOT FIND MATCHING MEMBER NAMES IN THE SENSOR DATA REPOSITORY.

Explanation: Policy Services failed to find matching member names (application and major key) in the sensor data repository.

System action: The program returns an error.

User response: In the BSNDSM macro, specify the correct application and major key.

Module: BSNDSD0

BSN8873W THE END OF THE REPOSITORY LIST WAS ISSUED.

Explanation: The end of the repository list has been issued.

System action: The program continues processing.

User response: No action is required.

Module: BSNDSD0

BSN8874E THE PUT OPERATION COULD NOT WRITE A MEMBER TO THE SENSOR DATA REPOSITORY.

Explanation: An error occurred when writing a member to the sensor data repository.

System action: The program returns an error.

User response: Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

Module: BSNDSD0

BSN8875E A NULL RECORD CANNOT BE WRITTEN TO THE SENSOR DATA REPOSITORY.

Explanation: An attempt was made to write a null record to the repository. A null record does not have a header or data.

System action: The program returns an error.

User response: The sensor data program storage might have been corrupted. Contact the system administrator.

Module: BSNDSD0

BSN8876E DATA DICTIONARY COULD NOT BE INITIALIZED.

Explanation: Data dictionary for sensor data failed to initialize.

System action: The program returns an error.

User response: Ensure that you are accessing the correct version of sensor data by checking the load library concatenation.

Rerun the job with a log file, and then view the log file to determine the problem. If the log file indicates a data dictionary initialization error, ensure that the sensor data and the data dictionary versions are compatible.

If the problem persists, contact the system administrator.

Module: BSNDSD0

BSN8877E THE SENSOR DATA REPOSITORY COULD NOT CONNECT TO DATA DICTIONARY.

Explanation: Sensor data and data dictionary failed to initialize a connection.

System action: The program returns an error.

User response: Ensure that you are accessing the correct version of sensor data by checking the load library concatenation.

Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

Module: BSNDSD0

BSN8878E THE ENDLIST OPERATION ENCOUNTERED AN ERROR WHEN TERMINATING ACQUISITION OF THE REPOSITORY MEMBERS.

Explanation: An error occurred when terminating the acquisition of the sensor data repository members that were requested.

System action: The program returns an error.

User response: Rerun the job with a log file, and then view the log file to determine the problem. If the problem persists, contact the system administrator.

Module: BSNDSD0

BSN8879E AN INVALID RECORD TYPE WAS SPECIFIED. THE RECORD TYPE MUST BE NONULL AND CANNOT BEGIN WITH AN UNDERSCORE.

Explanation: A record with a record type that begins with an underscore (_) cannot be written.

System action: The program returns an error.

User response: Specify a different first character for the record type when writing records. The underscore is reserved for the system and special usage.

Module: BSNDSD0
BSN8880E  AN INVALID ELEMENT VALUE LENGTH WAS SPECIFIED IN THE ELEMENT TAG.

Explanation: In the element tag, the length of an element for a GET ELEMENTS operation is negative.

System action: The program returns an error.

User response: Specify a valid element value length in the element tags. A valid element value must be zero or greater.

Module: BNSNSD0

BSN8881E  DATA DICTIONARY COULD NOT TRANSFORM THE RECORD ELEMENTS.

Explanation: Transformation of record elements by using data dictionary failed.

System action: The program returns an error.

User response: Specify the correct target types and areas for returned elements, and verify that the record elements in the repository are of the correct format based on the data definition.

Module: BNSNSD0

BSN8882W  THE REPOSITORY SEARCH FIELDS FOR KEY FIELDS COULD NOT BE FOUND.

Explanation: The repository key fields could not be found. The key field might not be defined to the repository.

System action: The current sensor data process continues.

User response: If you are authorized, define the key fields by using a sensor data CNTL request before requesting sensor data.

If you are not authorized, contact the system administrator.

Module: BNSNSD0

BSN8901E  BSNIN OR BSNPRINT WAS NOT DEFINED CORRECTLY.

Explanation: OPEN files failed. At least one of the required files, BSNIN or BSNPRINT, was not defined or was defined with incompatible attributes.

System action: The program returns an error with a return code of 16 and a reason code of 1.

User response: Ensure that the BSNIN and BSNPRINT files are defined correctly in the JCL for the delete utility job step.

- For BSNIN, use LRECL=80 and RECFM=FB
- For BSNPRINT, use LRECL=125 and RECFM=VBA

Module: BNSNSD0

BSN8902E  THE INPUT COMMANDS FOR PROCESSING ARE MISSING.

Explanation: The input commands for processing were missing from the input file or the user memory buffer.

System action: The program returns an error.

User response: Verify that the correct input media for the input commands have been specified. Specify the input file for the batch interface and either the input file or the input buffer for the API.

Module: BNSNSD0

BSN8903E  THE INPUT COMMAND LENGTH FOR THE BNSNSD0 MACRO IS MISSING.

Explanation: The length of the input command buffer specified on the BNSNSD0 macro is missing.

System action: The program returns an error.

User response: Set the value of INLEN on the BNSNSD0 macro to the length of the input command buffer.

Module: BNSNSD0

BSN8904E  THE INPUT LINE COUNT FOR AN INPUT COMMAND FILE WAS EXCEEDED.

Explanation: The maximum number of input command lines from an input command file has been exceeded.

System action: The program returns an error.

User response: Verify that the correct input command file is being used and delete any extra blank lines. The maximum number of input command lines that can be defined is 1000.

Module: BNSNSD0

BSN8905E  AN INVALID COMMAND LENGTH WAS SPECIFIED.

Explanation: An invalid length was specified for the length of the input command buffer.

System action: The program returns an error.

User response: Specify the length for the input command buffer that is used with the API, then rerun the job. The length value must be the length of the buffer and a non-negative value.

Module: BNSNSD0
BSN8906E  THE SPECIFIED INPUT COMMANDS CONTAIN INVALID SYNTAX.

Explanation:  An error occurred in the BPE parser. The input commands included invalid syntax.

System action:  The program returns an error.

User response:  Examine the input commands and correct any invalid syntax. Input commands must conform to the standard BPE parser syntax.

Module:  BSNSDDL0

BSN8907E  THE BPE CSCD COULD NOT BE ACCESSED FOR PARSING.

Explanation:  The CSCD entity that is needed for parsing was not obtained by the program.

System action:  The program returns an error.

User response:  Specify all of the required BPE execution libraries, and then rerun the BSNSDDL0 delete utility. If the problem persists, contact the system administrator.

Module:  BSNSDDL0

BSN8908E  BOTH AN INPUT FILE AND AN INPUT BUFFER CANNOT BE SPECIFIED.

Explanation:  Both an input file and an input buffer were specified as the media for input commands, which is not valid. The input file and the input buffer are mutually exclusive.

System action:  The program returns an error.

User response:  Specify an input file or an input buffer but not both.

Module:  BSNSDDL0

BSN8909E  THE INPUT FILE OR INPUT COMMAND BUFFER DID NOT CONTAIN COMMANDS TO PARSE.

Explanation:  The media (input file or input command buffer) of the input commands was present. However, the media did not include any commands to parse.

System action:  The program returns an error.

User response:  For an input file, ensure that the file is not a dummy or empty.

For an input buffer, specify a positive value for the buffer length.

Module:  BSNSDDL0

BSN8910E  THE PROCESSING MODULE COULD NOT BE LOADED.

Explanation:  The attempt to load a required delete utility processing module, such as the RECON translation program, failed.

System action:  The program returns an error.

User response:  If the log file is present, check the file for any MVS link or load error. The required linked or loaded program might not have been found. If you find a link or load error, check that the program library, such as STEPLIB, includes all the required libraries in the concatenation.

If you have determined that all the required libraries are present in the concatenation, this error might be caused by another link or load MVS system error. Contact the system administrator.

Module:  BSNSDDL0

BSN8911E  THE RECON LOG COULD NOT BE OPENED.

Explanation:  A log file for login RECON translation could not be opened.

System action:  The program returns an error.

User response:  Verify that the correct RECON log file has the correct attributes and that the correct ddname was specified.

Module:  BSNSDDL0

BSN8912E  THE RECON TRANSLATION FAILED.

Explanation:  The external RECON ID could not be translated for internal use.

System action:  The program returns an error.

User response:  Verify that the correct RECON ID was specified. Also verify that the external RECON ID is correctly defined in the RECON registry repository.

Module:  BSNSDDL0

BSN8913E  THE CONNECTION TO THE SERVER server_name AND TO THE REPOSITORY repository_name FAILED.

Explanation:  The attempted connection to the sensor data repository server failed.

System action:  The program returns an error.

User response:  Verify that the correct server and sensor data repository are correctly specified and active.

Module:  BSNSDDL0
BSN8914E  AN UNDEFINED SET CLOCK ERROR OCCURRED.

Explanation: An undefined set clock error occurred during the date and time calculation.

System action: The program returns an error.

User response: Rerun the program. If the problem persists, contact the system administrator.

Module: BSNSSDDL0

BSN8915E  THE APPLICATION NAME COULD NOT BE FOUND.

Explanation: The base application name for members to be deleted was not found. An incorrect application member name might have been specified.

System action: The program returns an error.

User response: Verify that the specified application member name is correct. If the application member name is incorrect, specify the correct application name.

If the application member name is correct, the application name is not in the sensor data, and no action is required.

Module: BSNSSDDL0

BSN8916E  AN INVALID FUNCTION function_name WAS PASSED TO THE DELETE UTILITY.

Explanation: An invalid function was passed for processing the delete utility.

System action: The program returns an error.

User response: Verify that a valid function is being passed to the delete utility. The only allowable values are DELETE to delete members and REPORT to report only affected members.

Module: BSNSSDDL0

BSN8917E  A TIME VALUE OR DATE VALUE COULD NOT BE CONVERTED TO A TIME OF DAY.

Explanation: A time value or a date value failed to convert to a time of day.

System action: The program returns an error.

User response: Specify a date or time value that is in the correct form and in the allowable range.

Module: BSNSSDDL0

BSN8918E  A TIME VALUE OR DATE VALUE COULD NOT BE CONVERTED TO A STORE CLOCK FORMAT.

Explanation: A time value or a date value failed to convert to a store clock form.

System action: The program returns an error.

User response: Specify a date or time value that is in the correct form and in the allowable range.

Module: BSNSSDDL0

BSN8920E  BOTH THE DATE AND THE AGE WERE SPECIFIED.

Explanation: Both the date and the age were specified as deletion criteria.

System action: The program returns an error.

User response: Specify only one criterion for deletion. The date and the age are mutually exclusive as criteria for determining which members are deleted.

Module: BSNSSDDL0

BSN8921E  AN INVALID AGE TYPE WAS SPECIFIED.

Explanation: The specified age is an invalid type.

System action: The program returns an error.

User response: Specify an age that is a valid numeric value that represents the number of days. The age must be within the range from 0 to 9999.

Module: BSNSSDDL0

BSN8922E  THE DATE OR THE AGE WAS NOT SPECIFIED.

Explanation: The date or the age was not specified.

System action: The program returns an error.

User response: Specify either the date or the age.

Module: BSNSSDDL0

BSN8923E  AN INVALID DATE VALUE WAS SPECIFIED.

Explanation: The specified DATE value was not a numeric value or an asterisk.

System action: The program returns an error.

User response: Specify the DATE value either as an asterisk (*) for all dates or as a Gregorian date (YYYYMMDD).

Module: BSNSSDDL0
THE SERVER NAME CANNOT BE SPECIFIED.

Explanation: When the delete utility with the batch interface was called, the name of the server was specified. This error is also typically reported by the BSNDSL macro.

System action: The program returns an error.

User response: Remove the server name specification. You can specify a server name for the delete utility only in the API interface.

Module: BSNSDDL0

THE APPLICATION NAME CANNOT BE SPECIFIED.

Explanation: When the delete utility with the batch interface was called, the name of the application was specified. The BATCH interface cannot be used to specify an application name on the BSNSDSL macro.

System action: The program returns an error.

User response: Remove the application reference from the macro, or switch to the BSNSDSL API interface that does not reference INCMDs or INFILE.

Module: BSNSDDL0

THE RECON ID CANNOT BE SPECIFIED.

Explanation: When the delete utility with the batch interface was called, the RECON ID was specified. This error is also typically reported by the BSNSDSL macro.

System action: The program returns an error.

User response: Remove the RECON ID specification. You can specify a RECON ID for the delete utility only in the API interface.

Module: BSNSDDL0

THE DATABASE CANNOT BE SPECIFIED.

Explanation: When the delete utility with the batch interface was called, the database was specified. This error is also typically reported by the BSNSDSL macro.

System action: The program returns an error.

User response: Remove the database specification. You can specify a database for the delete utility only in the API interface.

Module: BSNSDDL0

THE DELETION OF A MEMBER OR THE VERSION OF A MEMBER FAILED.

Explanation: The attempt to delete at least one member or the version of a member failed.

System action: The program returns an error.

User response: Rerun the process with the log file option to obtain additional information. Also, this error might have been accompanied with a BSN8940E message that includes repository extended error information.

If the problem cannot be resolved by analyzing the log and repository information, contact the system administrator.

Module: BSNSDDL0

THE DELETION CRITERIA DID NOT MATCH ANY SENSOR DATA MEMBERS.

Explanation: No members in the sensor data repository matched the criteria for deletion.

System action: The program returns with a warning return code.

User response: Verify that the requested members, the date range, and other criteria for deletion were specified correctly.

If the criteria are correct, no action is required.

Module: BSNSDDL0

AN INVALID TIME LOCALE WAS SPECIFIED.

Explanation: The locale that was specified for date and time processing is invalid. The locale is always fixed to local time.

System action: The program returns an error.

User response: Contact the system administrator.

Module: BSNSDDL0

AN INVALID TIME ZONE WAS PROVIDED.

Explanation: An invalid time zone factor was supplied for time and date calculations. The time zone factor is determined internally.

System action: The program returns an error.

User response: Contact the system administrator.

Module: BSNSDDL0
BSN8935E  INVALID LEAP SECONDS WERE SPECIFIED.
Explanation: Based on the specified date and time values, the number of leap seconds required for date and time calculations was not specified.
System action: The program returns an error.
User response: Contact the system administrator.
Module: BSNSDDL0

BSN8936E  AN INVALID TIME TYPE WAS SPECIFIED.
Explanation: The specified time type for date and time interpretation was invalid.
System action: The program returns an error.
User response: For the DATE command, specify a valid value for the time. The time must be in the HHMMSS format. If you do not specify a time value, the time defaults to 000000.
Module: BSNSDDL0

BSN8937E  AN INVALID TIME VALUE WAS SPECIFIED.
Explanation: The specified DATE value was invalid.
System action: The program returns an error.
User response: Specify the DATE value in the input commands either as an asterisk (*) for all dates or as a Gregorian date that can optionally be followed by the time (YYYYMMDDHHMMSS).
Module: BSNSDDL0

BSN8940E  THE DELETE FUNCTION FAILED.
Explanation: The delete function for deleting a member or the version of a member failed.
System action: The program returns an error.
User response: Rerun the process with the log file option to obtain additional information. Also, this error might have been accompanied with a BSN8930E message that includes repository extended error information.
If the problem cannot be resolved by analyzing the log and repository information, contact the system administrator.
Module: BSNSDDL0

BSN9000E  THE HIGH LEVEL QUALIFIER WAS NOT SPECIFIED.
Explanation: The high-level qualifier (HLQ) was not given.
System action: The EXEC is not executed.
User response: Specify the HLQ keyword parameter, for example, HLQ(user.name). You can also set the HLQ by changing the assignment statement of the HLQ at the beginning of the EXEC.
Module: Not applicable

BSN9002E  THE DATA SET data_set_name WAS NOT FOUND.
Explanation: The high-level qualifier (HLQ) for the ISPF IMS Policy Services Dialog library data sets was not given or was invalid.
System action: The EXEC was not executed.
User response: Correct the HLQ keyword for the ISPF Policy Services Dialog EXEC library. The HLQ was specified during the IMS Tool Base installation.
Module: Not applicable
Chapter 29. RECOVERY domain summary messages (IRO)

IROnnnnx messages are summary messages for the RECOVERY domain.

Message format

Summary messages for the RECOVERY domain adhere to the following format:
IROnnnnx

Where:
IRO Indicates that the message is a summary message for the RECOVERY domain.
nnnn Indicates the message identification number
x Indicates the severity of the message:
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:

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.

IRO4962I resource_name IN RECONID=recon_id HAS WARNING EXCEPTIONS IN THE RECOVERY DOMAIN.

Explanation: Policy Services detected exceptions in the DBRC-managed resource resource_name. All the exceptions were warning-level exceptions. recon_id shows the 8 byte RECON ID of the RECON environment to which the resource belongs.

System action: Policy Services continues processing.

User response: Check the exceptions that were reported by Policy Services and identify whether any of those exceptions need to be addressed.

IRO4965I resource_name IN RECONID=recon_id HAS CRITICAL EXCEPTIONS IN THE RECOVERY DOMAIN. USER ACTION IS REQUIRED.

Explanation: Policy Services detected one or more critical-level exceptions in the DBRC-managed resource resource_name. recon_id shows the 8 byte RECON ID of the RECON environment to which the database resource belongs.

System action: Policy Services continues processing.

User response: Check the critical-level exceptions that were reported and any accompanying exceptions that are in lower severity, and plan an action or actions to resolve the exceptional state of the reported resource.
Explanation: Policy Services detected one or more severe-level exceptions in the DBRC-managed resource resource_name. However, no critical level exception was reported. recon_id shows the 8 byte RECON ID of the RECON environment to which the resource belongs.

System action: Policy Services continues processing.

User response: Check the severe-level exceptions that were detected by Policy Services and any accompanying warning-level exceptions and identify whether any of those exceptions need to be addressed.

Explanation: Policy Services detected one or more critical-level exceptions in the DBRC-managed resource resource_name and recommends the action action for the resource. recon_id shows the 8 byte RECON ID of the RECON environment to which the resource belongs.

System action: Policy Services continues processing.

User response: Take one of the following actions depending on the action in the message.

<table>
<thead>
<tr>
<th>action</th>
<th>Recommended action</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKOUT</td>
<td>Perform the backout process for the database updates. You can use IMS Batch Backout utility.</td>
</tr>
<tr>
<td>IMAGECOPY</td>
<td>Take an image copy of each data set of the database resource. You can use IMS Database Image Copy utilities or IBM IMS High Performance Image Copy.</td>
</tr>
<tr>
<td>CHANGEACCUM</td>
<td>Create a new change accumulation for the change accumulation group. You can use IMS Database Change Accumulation utility or IMS High Performance Change Accumulation in IBM IMS Recovery Solution Pack for z/OS.</td>
</tr>
<tr>
<td>DBRECOVERY</td>
<td>Perform the recovery process for the database resource. You can use IMS Database Recovery utility or IMS Database Recovery Facility in IBM IMS Recovery Solution Pack for z/OS.</td>
</tr>
<tr>
<td>ADDTOCAGRP</td>
<td>Add all the data sets of the database resource to a DBRC CAGRP. You can use the ADD sub command of the IMS DBRC CHANGE.CAGRP command.</td>
</tr>
</tbody>
</table>
Chapter 30. Return and reason codes

The information provided in this return and reason code reference can help you diagnose, troubleshoot, and solve Policy Services problems.

Topics:

- “Return/reason codes: Client API interface (BSN1000-1009) (BSN2000-2099)” on page 528
- “Return/reason codes: Policy Environment Services (BSN1500-1599)” on page 534
- “Return/reason codes: Association Manager (BSN1600-1799)” on page 537
- “Return/reason codes: Email/Texting Variable (BSN1800-1899)” on page 538
- “Return/reason codes: Storage Manager (BSN2200-2399)” on page 539
- “Return/reason codes: Action Manager (BSN2800-2999)” on page 540
- “Return/reason codes: Journal Manager (BSN3400-3499)” on page 541
- “Return/reason codes: Parser, Validation, Evaluation (BSN4000-4199)” on page 542
- “Return/reason codes: Notification Manager (BSN4600-4799)” on page 543
- “Return/reason codes: Notification List Data Store (BSN5200-5399)” on page 544
- “Return/reason codes: Policy Domain Data Store (BSN5800-5999)” on page 547
- “Return/reason codes: Rules Data Store (BSN6400-6599)” on page 548
- “Return/reason codes: Policy Data Store (BSN7000-7199)” on page 552
- “Return/reason codes: Data Dictionary (BSN7600-7799, BBE1450E)” on page 553
- “Return/reason codes: Sensor Data read/write (BSN8800-8999, BBE1451E)” on page 566
- “Return/reason codes: Sensor Data delete (BSN8800-8999)” on page 570
- “Return codes: Sensor Data Extractor” on page 572
Return/reason codes: Client API interface (BSN1000-1009) (BSN2000-2099)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Client API interface in messages BSN1000-1009 and BSN2000-2099.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td></td>
<td>Call successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td></td>
<td>Unable to obtain PSCB storage</td>
</tr>
<tr>
<td>X'08'</td>
<td></td>
<td>Unable to load policy module</td>
</tr>
<tr>
<td>X'0C'</td>
<td></td>
<td>BPE initialization failed</td>
</tr>
<tr>
<td>X'10'</td>
<td></td>
<td>Unable to obtain IFCB storage</td>
</tr>
<tr>
<td>X'14'</td>
<td></td>
<td>RECON container call failed</td>
</tr>
<tr>
<td>X'18'</td>
<td></td>
<td>No RECON container data</td>
</tr>
<tr>
<td>X'1C'</td>
<td></td>
<td>Unable to obtain RECON table</td>
</tr>
<tr>
<td>X'20'</td>
<td></td>
<td>Data Dictionary INIT failed</td>
</tr>
<tr>
<td>X'24'</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'28'</td>
<td></td>
<td>No valid RECON in container</td>
</tr>
<tr>
<td>X'2C'</td>
<td></td>
<td>Unable to obtain POCB storage</td>
</tr>
<tr>
<td>X'08' (cont’d)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td></td>
<td>No resource passed</td>
</tr>
<tr>
<td>X'34'</td>
<td></td>
<td>No PDSP returned on PDS PTRD call</td>
</tr>
<tr>
<td>X'38'</td>
<td></td>
<td>No resource list returned on PDS GETC call</td>
</tr>
<tr>
<td>X'3C'</td>
<td></td>
<td>No match on resource name from PDDS open</td>
</tr>
<tr>
<td>X'40'</td>
<td></td>
<td>No policy name passed</td>
</tr>
<tr>
<td>X'44'</td>
<td></td>
<td>Invalid policy name; prefix is &quot;IBM.&quot;</td>
</tr>
<tr>
<td>X'48'</td>
<td></td>
<td>Unable to obtain PDEB control block</td>
</tr>
<tr>
<td>X'4C'</td>
<td></td>
<td>Invalid level change request</td>
</tr>
<tr>
<td>X'50'</td>
<td></td>
<td>Invalid domain name specified</td>
</tr>
<tr>
<td>X'54'</td>
<td></td>
<td>Set no PDED's defined to system</td>
</tr>
<tr>
<td>X'58'</td>
<td></td>
<td>No PDEB defined for specified domain name</td>
</tr>
<tr>
<td>X'5C'</td>
<td></td>
<td>Domain already in maintenance mode</td>
</tr>
<tr>
<td>X'60'</td>
<td></td>
<td>Policy Services have not been initialized</td>
</tr>
<tr>
<td>X'64'</td>
<td></td>
<td>BSNGLOBL locale not defined to IMS Tools KB</td>
</tr>
<tr>
<td>X'68'</td>
<td></td>
<td>Unable to obtain LISTAREA storage</td>
</tr>
<tr>
<td>X'70'</td>
<td></td>
<td>Domain is not in operation environment</td>
</tr>
</tbody>
</table>
Table 153. Return and reason codes reported by Policy Services client API interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Critical error</td>
</tr>
<tr>
<td>X'04'</td>
<td>X'0C'</td>
<td>Invalid INIT call issued by client (second or greater INIT call)</td>
</tr>
<tr>
<td>X'08'</td>
<td>X'0C'</td>
<td>Invalid TERM call issued by client, either a second TERM call or INIT call failed and this TERM call was issued; or TERM call was issued with no preceding INIT call</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Component call failed</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>X'0C'</td>
<td>Invalid STRT call issued by client, no INIT call issued first</td>
</tr>
<tr>
<td>X'14'</td>
<td>X'0C'</td>
<td>Initialization request failed for either Policy Services or Data Dictionary Services</td>
</tr>
<tr>
<td>X'18'</td>
<td>X'0C'</td>
<td>Internal failure caught by Policy Services ESTAE routine; retry can be attempted</td>
</tr>
<tr>
<td>X'1C'</td>
<td>X'0C'</td>
<td>Load library is not APF authorized</td>
</tr>
<tr>
<td>X'20'</td>
<td>X'20'</td>
<td>Component not active (Policy initialization not requested)</td>
</tr>
</tbody>
</table>

Register 15 high byte values

Calls made using the Client API and some of the calls made using the Association Manager API can result in multiple calls to other Policy Services components. The call can fail when being processed by the Client API component, or the Association Manager component or in one of the other Policy Services components.

Register 15 is used to identify the Policy Services component when a failure occurs. The high byte of register 15 is set to define the exact component of Policy Services that failed. The remaining three bytes of register 15 contain the return code for the component. The RETCODE= and RSNCODE= parameters of the Client API call are set to the failing component return/reason codes.

The following example shows the results of a BSNSC FUNC=ASLK call on return from processing:

- If register 15 contains X'22000008', then the call failed in the Client API component that was processing a FUNC=ASLK call:
  X'22' Client API call function being made was for FUNC=ASLK
  The resulting RETCODE would be X'08' and the RSNCODE would be one of the valid Client API reason codes.

- If register 15 contains X'32000008', then the call failed in the Association Manager component that was processing a FUNC=ASLK call:
  X'32' Association Manager call function being made was for FUNC=ASLK
  The resulting RETCODE would be X'08' and the RSNCODE would be one of the valid Association Manager reason codes.

- If register 15 contains X'61000008', then the call failed in the Policy Data Store component that was processing a FUNC=PTRD call:
  X'61' Policy Data Store call function being made was for FUNC=PTRD
  The resulting RETCODE would be X'08' and the RSNCODE would be one of the valid Policy Data Store reason codes.
Table 154. Register 15 high byte values for Action Manager interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Action Manager (BSNAM FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'10'</td>
<td>Action Manager call function being made was for FUNC=AMIT</td>
</tr>
<tr>
<td>X'11'</td>
<td>Action Manager call function being made was for FUNC=AMGA</td>
</tr>
<tr>
<td>X'12'</td>
<td>Action Manager call function being made was for FUNC=AMUS</td>
</tr>
<tr>
<td>X'13'</td>
<td>Action Manager call function being made was for FUNC=AMP2</td>
</tr>
<tr>
<td>X'19'</td>
<td>Action Manager call function being made was for FUNC=AMTM</td>
</tr>
</tbody>
</table>

Note: See Action Manager return code (same as register 15 three-byte return code) and reason code values.

Table 155. Register 15 high byte values for Client API interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Client API (BSNSC FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'01'</td>
<td>Client API call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'15'</td>
<td>Client API call function being made was for FUNC=LSTP</td>
</tr>
<tr>
<td>X'16'</td>
<td>Client API call function being made was for FUNC=LSTT</td>
</tr>
<tr>
<td>X'17'</td>
<td>Client API call function being made was for FUNC=PAEV</td>
</tr>
<tr>
<td>X'18'</td>
<td>Client API call function being made was for FUNC=PACU</td>
</tr>
<tr>
<td>X'20'</td>
<td>Client API call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'21'</td>
<td>Client API call function being made was for FUNC=STRT</td>
</tr>
<tr>
<td>X'22'</td>
<td>Client API call function being made was for FUNC=ASLK</td>
</tr>
<tr>
<td>X'26'</td>
<td>Client API call function being made was for FUNC=ASGP</td>
</tr>
<tr>
<td>X'27'</td>
<td>Client API call function being made was for FUNC=ASFP</td>
</tr>
<tr>
<td>X'28'</td>
<td>Client API call function being made was for FUNC=ASUP</td>
</tr>
<tr>
<td>X'29'</td>
<td>Client API call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

Note: See Client API return code (same as register 15 three-byte return code) and reason code values.

Table 156. Register 15 high byte values for Association Manager interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Association Manager (BSNAS FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'32'</td>
<td>Association Manager call function being made was for FUNC=ASLK</td>
</tr>
<tr>
<td>X'33'</td>
<td>Association Manager call function being made was for FUNC=ASVT</td>
</tr>
<tr>
<td>X'34'</td>
<td>Association Manager call function being made was for FUNC=ASVS</td>
</tr>
<tr>
<td>X'35'</td>
<td>Association Manager call function being made was for FUNC=ASPT</td>
</tr>
<tr>
<td>X'36'</td>
<td>Association Manager call function being made was for FUNC=ASGP</td>
</tr>
<tr>
<td>X'37'</td>
<td>Association Manager call function being made was for FUNC=ASFP</td>
</tr>
<tr>
<td>X'38'</td>
<td>Association Manager call function being made was for FUNC=ASUP</td>
</tr>
</tbody>
</table>

Note: See Association Manager return code (same as register 15 three-byte return code) and reason code values.
Table 157. Register 15 high byte values for Journal Manager interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Journal Manager (BSNJM FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'40'</td>
<td>Journal Manager call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'41'</td>
<td>Journal Manager call function being made was for FUNC=STAU</td>
</tr>
<tr>
<td>X'42'</td>
<td>Journal Manager call function being made was for FUNC=WRIT</td>
</tr>
<tr>
<td>X'43'</td>
<td>Journal Manager call function being made was for FUNC=CMTU</td>
</tr>
<tr>
<td>X'49'</td>
<td>Journal Manager call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Journal Manager return code (same as register 15 three-byte return code) and reason code values.

Table 158. Register 15 high byte values for Policy Domain Data Store interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Policy Domain Data Store (BSNPDDS FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'50'</td>
<td>Policy Domain Data Store call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'51'</td>
<td>Policy Domain Data Store call function being made was for FUNC=OPEN</td>
</tr>
<tr>
<td>X'52'</td>
<td>Policy Domain Data Store call function being made was for FUNC=CLSE</td>
</tr>
<tr>
<td>X'59'</td>
<td>Policy Domain Data Store call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Policy Domain Data Store return code (same as register 15 three-byte return code) and reason code values.

Table 159. Register 15 high byte values for Policy Data Store interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Policy Data Store (BSNPDS FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'60'</td>
<td>Policy Data Store call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'61'</td>
<td>Policy Data Store call function being made was for FUNC=PTRD</td>
</tr>
<tr>
<td>X'62'</td>
<td>Policy Data Store call function being made was for FUNC=GETC</td>
</tr>
<tr>
<td>X'63'</td>
<td>Policy Data Store call function being made was for FUNC=PTRL</td>
</tr>
<tr>
<td>X'64'</td>
<td>Policy Data Store call function being made was for FUNC=PSRD</td>
</tr>
<tr>
<td>X'65'</td>
<td>Policy Data Store call function being made was for FUNC=PSRL</td>
</tr>
<tr>
<td>X'66'</td>
<td>Policy Data Store call function being made was for FUNC=PSFT</td>
</tr>
<tr>
<td>X'67'</td>
<td>Policy Data Store call function being made was for FUNC=STRL</td>
</tr>
<tr>
<td>X'68'</td>
<td>Policy Data Store call function being made was for FUNC=GETL</td>
</tr>
<tr>
<td>X'69'</td>
<td>Policy Data Store call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Policy Data Store return code (same as register 15 three-byte return code) and reason code values.
### Table 160. Register 15 high byte values for Parser, Validation, Evaluation interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Parser, Validation, Evaluation (BSNPA FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'70'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'71'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=PARS</td>
</tr>
<tr>
<td>X'72'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=VALD</td>
</tr>
<tr>
<td>X'73'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=VALE</td>
</tr>
<tr>
<td>X'78'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=CLUP</td>
</tr>
<tr>
<td>X'79'</td>
<td>Parser, Validation, Evaluation call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Parser, Validation, Evaluation return code (same as register 15 three-byte return code) and reason code values.

### Table 161. Register 15 high byte values for Storage Manager interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Storage Manager (BSNSM FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Storage Manager call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'81'</td>
<td>Storage Manager call function being made was for FUNC=GET</td>
</tr>
<tr>
<td>X'82'</td>
<td>Storage Manager call function being made was for FUNC=FREE</td>
</tr>
<tr>
<td>X'83'</td>
<td>Storage Manager call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Storage Manager return code (same as register 15 three-byte return code) and reason code values.

### Table 162. Register 15 high byte values for Policy Environment Services interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Policy Environment Services (BSNPES FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'85'</td>
<td>Policy Environment Services call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'86'</td>
<td>Policy Environment Services call function being made was for FUNC=STAT</td>
</tr>
<tr>
<td>X'89'</td>
<td>Policy Environment Services call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

**Note:** See Policy Environment Services return code (same as register 15 three-byte return code) and reason code values.

### Table 163. Register 15 high byte values for Data Dictionary interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Data Dictionary (BSNDD FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'90'</td>
<td>Data Dictionary call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'91'</td>
<td>Data Dictionary call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>
Note: See Data Dictionary return code (same as register 15 three-byte return code) and reason code values.

Table 164. Register 15 high byte values for Rule Data Store interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Rule Data Store (BSNRDS FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'92'</td>
<td>Rule Data Store call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'93'</td>
<td>Rule Data Store call function being made was for FUNC=TERM</td>
</tr>
</tbody>
</table>

Note: See Rule Data Store return code (same as register 15 three-byte return code) and reason code values.

Table 165. Register 15 high byte values for Notification List Data Store interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Notification List Data Store (BSNNLDS FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'94'</td>
<td>Notification List Data Store call function being made was for FUNC=INIT</td>
</tr>
<tr>
<td>X'95'</td>
<td>Notification List Data Store call function being made was for FUNC=TERM</td>
</tr>
<tr>
<td>X'96'</td>
<td>ETV call function being made was for FUNC=CONNECT</td>
</tr>
<tr>
<td>X'97'</td>
<td>ETV call function being made was for FUNC=DISCONNECT</td>
</tr>
</tbody>
</table>

Note: See Notification List Data Store return code (same as register 15 three-byte return code) and reason code values.

Table 166. Register 15 high byte values for ITKB interface

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>ITKB (ITKB FUNC=) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'98'</td>
<td>ITKB call function being made was for FUNC=CONNECT</td>
</tr>
<tr>
<td>X'99'</td>
<td>ITKB call function being made was for FUNC=DISCONNECT</td>
</tr>
</tbody>
</table>

Note: See IMS Tools Knowledge Base (ITKB) return code (same as register 15 three-byte return code) and reason code values.

Table 167. Register 15 high byte values for invalid calls

<table>
<thead>
<tr>
<th>High Byte of Register 15</th>
<th>Client API (BSNSC FUNC=invalid_func) Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'01'</td>
<td>Client API call function being made before FUNC=INIT issued</td>
</tr>
</tbody>
</table>
Return/reason codes: Policy Environment Services (BSN1500-1599)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Policy Environment Services interface in messages BSN1500-1599.

Table 168. Return and reason codes reported by Policy Services Policy Environment Services interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>none</td>
<td>PES function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>none</td>
<td>No more data</td>
</tr>
</tbody>
</table>
Table 168. Return and reason codes reported by Policy Services Policy Environment Services interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td>none</td>
<td>FPQSRV call failure</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTAIN</td>
<td>Unable to obtain PES storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTPESA</td>
<td>Unable to obtain PES storage (PESA block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTPESH</td>
<td>Unable to obtain PES storage (PESH block)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELEASE</td>
<td>Unable to release PES storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELPESD</td>
<td>Unable to release PES storage (PESD block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELPESE</td>
<td>Unable to release PES storage (PESE block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELPESA</td>
<td>Unable to release PES storage (PESA block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELPESK</td>
<td>Unable to release PES storage (PESK block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELPESH</td>
<td>Unable to release PES storage (PESH block)</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>PES_ENQ</td>
<td>PES latch failure (ENQ)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PES_DEQ</td>
<td>PES latch failure (DEQ)</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>DOMLOC</td>
<td>Domain latch failure</td>
<td></td>
</tr>
<tr>
<td>X'18'</td>
<td>NDMLOC</td>
<td>Non-domain latch failure</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>NOPESH</td>
<td>No PESH control block</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>NOPESE</td>
<td>No PESE control block</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>NOPOCB</td>
<td>No POCB control block</td>
<td></td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOPESA</td>
<td>No PESA control block</td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td>NOPESD</td>
<td>No PESD control block</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>NODMNM</td>
<td>No domain name provided</td>
<td></td>
</tr>
<tr>
<td>X'38'</td>
<td>NOPESK</td>
<td>No PESK control block</td>
<td></td>
</tr>
<tr>
<td>X'3C'</td>
<td>NOINPT</td>
<td>No input data</td>
<td></td>
</tr>
<tr>
<td>X'50'</td>
<td>INVFUN</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UNKFUN</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td>X'54'</td>
<td>INVMOD</td>
<td>Invalid mode</td>
<td></td>
</tr>
<tr>
<td>X'58'</td>
<td>INVPOL</td>
<td>Invalid policy objects</td>
<td></td>
</tr>
<tr>
<td>X'60'</td>
<td>INVORG</td>
<td>Invalid environment level</td>
<td></td>
</tr>
<tr>
<td>X'68'</td>
<td>INVORG</td>
<td>Invalid origin environment</td>
<td></td>
</tr>
<tr>
<td>X'70'</td>
<td>COPA</td>
<td>BSNPDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DELA</td>
<td>BSNPDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENDL</td>
<td>BSNPDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VALA</td>
<td>BSNPDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RNMA</td>
<td>BSNPDS call failure</td>
<td></td>
</tr>
</tbody>
</table>

continued
Table 168. Return and reason codes reported by Policy Services Policy Environment Services interface (continued)

<table>
<thead>
<tr>
<th>Return code (Hex)</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'74'</td>
<td>DELA</td>
<td>BSNRDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RNMA</td>
<td>BSNRDS call failure</td>
<td></td>
</tr>
<tr>
<td>X'78'</td>
<td>COPA</td>
<td>BSNNLDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DSTY</td>
<td>BSNNLDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DELP</td>
<td>BSNNLDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RNMA</td>
<td>BSNNLDS call failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DELA</td>
<td>BSNNLDS call failure</td>
<td></td>
</tr>
<tr>
<td>X'7C'</td>
<td>OBTRIB</td>
<td>GQSCAN call failure</td>
<td></td>
</tr>
<tr>
<td>X'80'</td>
<td>OBJCON</td>
<td>Objects in contention</td>
<td></td>
</tr>
<tr>
<td>X'84'</td>
<td>MEMFND</td>
<td>Member found in the repository</td>
<td></td>
</tr>
<tr>
<td>X'88'</td>
<td>INVUID</td>
<td>Invalid user ID</td>
<td></td>
</tr>
<tr>
<td>X'8C'</td>
<td>INVPKG</td>
<td>Invalid package ID</td>
<td></td>
</tr>
<tr>
<td>X'90'</td>
<td>INVGTP</td>
<td>Invalid get type</td>
<td></td>
</tr>
<tr>
<td>X'94'</td>
<td>INVUSG</td>
<td>Invalid usage</td>
<td></td>
</tr>
<tr>
<td>X'98'</td>
<td>INVITP</td>
<td>Invalid item type</td>
<td></td>
</tr>
<tr>
<td>X'9C'</td>
<td>INSACC</td>
<td>Insufficient access authorization to the repository</td>
<td></td>
</tr>
</tbody>
</table>
This reference section provides detailed information about the return and reason codes reported by the Policy Services Association Manager interface in messages BSN1600-1799.

Table 169. Return and reason codes reported by Policy Services Association Manager interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td>Call successful</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'18'</td>
<td>No RECON container data</td>
<td></td>
</tr>
<tr>
<td>X'1C'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>No valid RECON in container</td>
<td></td>
</tr>
<tr>
<td>X'2C'</td>
<td>Unable to obtain POCB</td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td>No resource passed</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>No PDSP returned on PDS PTRD call</td>
<td></td>
</tr>
<tr>
<td>X'38'</td>
<td>No resource list returned on PDS GETC call</td>
<td></td>
</tr>
<tr>
<td>X'3C'</td>
<td>No match on resource name from PDDS open</td>
<td></td>
</tr>
<tr>
<td>X'40'</td>
<td>No policy name passed</td>
<td></td>
</tr>
<tr>
<td>X'44'</td>
<td>Invalid policy name; prefix is &quot;IBM.&quot;</td>
<td></td>
</tr>
<tr>
<td>X'48'</td>
<td>Currently not used</td>
<td></td>
</tr>
<tr>
<td>X'4C'</td>
<td>Invalid level change request</td>
<td></td>
</tr>
<tr>
<td>X'50'</td>
<td>Invalid domain name specified</td>
<td></td>
</tr>
<tr>
<td>X'54'</td>
<td>Set no PDED's defined to system</td>
<td></td>
</tr>
<tr>
<td>X'58'</td>
<td>No PDEB defined for specified domain name</td>
<td></td>
</tr>
<tr>
<td>X'5C'</td>
<td>Domain already in maintenance mode</td>
<td></td>
</tr>
<tr>
<td>X'60'</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>X'64'</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>X'68'</td>
<td>Unable to obtain LISTAREA storage</td>
<td></td>
</tr>
<tr>
<td>X'6C'</td>
<td>Invalid POLICYBY= parm</td>
<td></td>
</tr>
<tr>
<td>X'70'</td>
<td>Domain is not in operation environment</td>
<td></td>
</tr>
<tr>
<td>X'74' - X'7C'</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>X'80' - X'90'</td>
<td>Not used by Association Manager</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 30. Return and reason codes  537
## Return/reason codes: Email/Texting Variable (BSN1800-1899)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Email/Texting Variable interface in messages BSN1800-1899.

**Table 170. Return and reason codes reported by Policy Services Email/Texting Variable interface**

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>ETV function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>No more data</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Member found in the repository</td>
</tr>
<tr>
<td></td>
<td>X'20'</td>
<td>Partial delete occurred</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Unable to obtain ETV storage</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>Unable to release ETV storage</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>No SMTP in the RECON</td>
</tr>
<tr>
<td></td>
<td>X'14'</td>
<td>The default global SMTP not modified</td>
</tr>
<tr>
<td></td>
<td>X'20'</td>
<td>No ETVT control block</td>
</tr>
<tr>
<td></td>
<td>X'24'</td>
<td>No ETVH control block</td>
</tr>
<tr>
<td></td>
<td>X'28'</td>
<td>No ETVL control block</td>
</tr>
<tr>
<td></td>
<td>X'2C'</td>
<td>No POCB control block</td>
</tr>
<tr>
<td></td>
<td>X'30'</td>
<td>No variable type provided</td>
</tr>
<tr>
<td></td>
<td>X'34'</td>
<td>No domain name provided</td>
</tr>
<tr>
<td></td>
<td>X'38'</td>
<td>No input data</td>
</tr>
<tr>
<td></td>
<td>X'50'</td>
<td>Invalid function</td>
</tr>
<tr>
<td></td>
<td>X'54'</td>
<td>Invalid mode</td>
</tr>
<tr>
<td></td>
<td>X'58'</td>
<td>Invalid email variable</td>
</tr>
<tr>
<td></td>
<td>X'5C'</td>
<td>Invalid texting variable</td>
</tr>
<tr>
<td></td>
<td>X'64'</td>
<td>Invalid locale</td>
</tr>
<tr>
<td></td>
<td>X'68'</td>
<td>Invalid environment</td>
</tr>
<tr>
<td></td>
<td>X'6C'</td>
<td>Invalid RECON</td>
</tr>
<tr>
<td></td>
<td>X'70'</td>
<td>Member not found in the repository</td>
</tr>
<tr>
<td></td>
<td>X'74'</td>
<td>BSNETV call failure</td>
</tr>
<tr>
<td></td>
<td>X'78'</td>
<td>No change to the repository allowed</td>
</tr>
<tr>
<td></td>
<td>X'7C'</td>
<td>Input string has invalid character</td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td>Member in use</td>
</tr>
<tr>
<td></td>
<td>X'84'</td>
<td>Invalid UOW handle</td>
</tr>
</tbody>
</table>
Return/reason codes: Storage Manager (BSN2200-2399)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Storage Manager interface is messages BSN2200-2399.

Table 171. Return and reason codes reported by Policy Services Storage Manager interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td>SM function was successful</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Cell size not supported</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>CPOOL Manager not INIT</td>
<td></td>
</tr>
</tbody>
</table>
Return/reason codes: Action Manager (BSN2800-2999)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Action Manager interface in messages BSN2800-2999.

Table 172. Return and reason codes reported by Policy Services Action Manager interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td></td>
<td>AM function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'04'</td>
<td></td>
<td>No more data</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04' - X'20'</td>
<td></td>
<td>Not used by Action Manager</td>
</tr>
<tr>
<td>X'24'</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'28' - X'6C'</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>X'80'</td>
<td></td>
<td>No Action Descriptor address</td>
</tr>
<tr>
<td>X'84'</td>
<td></td>
<td>No Action List address</td>
</tr>
<tr>
<td>X'88'</td>
<td></td>
<td>Storage Manager failure</td>
</tr>
<tr>
<td>X'8C'</td>
<td></td>
<td>No Action Manager AMCB control block</td>
</tr>
<tr>
<td>X'90'</td>
<td></td>
<td>Invalid Action Manager Phase</td>
</tr>
</tbody>
</table>
This reference section provides detailed information about the return and reason codes reported by the Policy Services Journal Manager interface in messages BSN3400-3499.

Table 173. Return and reason codes reported by Policy Services Journal Manager interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td>none</td>
<td>JMS function was successful</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'04'</td>
<td>NODATA</td>
<td>No more data</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td>HKTXXLI</td>
<td>HKTXACC call failure</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTJMSH</td>
<td>Unable to obtain JMS storage</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>FREERROR</td>
<td>Unable to release JMS storage (input buffer)</td>
<td></td>
</tr>
<tr>
<td>RELJMSH</td>
<td></td>
<td>Unable to release JMS storage (anchor block storage)</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>NOJMSH</td>
<td>No JMSH control block</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>NOJUOW</td>
<td>No JUOW control block</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>NOPOCB</td>
<td>No POCB control block (no POCB)</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>NOHEAD</td>
<td>No heading block provided</td>
<td></td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOSUBT</td>
<td>No sub title provided</td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td>NOINPT</td>
<td>No input data</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>INVFUN</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td>X'38'</td>
<td>INVMOD</td>
<td>Invalid mode</td>
<td></td>
</tr>
<tr>
<td>X'3C'</td>
<td>NODDCARD</td>
<td>No JM DD card in the JCL</td>
<td></td>
</tr>
<tr>
<td>dd_name</td>
<td>OPEN call failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X'44'</td>
<td>PUTFAIL</td>
<td>PUT call failure</td>
<td></td>
</tr>
<tr>
<td>dd_name</td>
<td>CLOSE call failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X'4C'</td>
<td>ALLOCERR</td>
<td>Dynamic allocation failed</td>
<td></td>
</tr>
</tbody>
</table>
Return/reason codes: Parser, Validation, Evaluation (BSN4000-4199)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Parser, Validation, Evaluation (PVE) interface in messages BSN4000-4199.

Table 174. Return and reason codes reported by Policy Services Parser, Validation, Evaluation (PVE) interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>PVE Function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>Process ended with warning</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>Missing data is found in a policy evaluation processing</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>System error inside PVE</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>System error outside PVE</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>Policy validation error</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>Missing data is found in a policy evaluation processing</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Critical error (Function is missing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>PVE module is not loaded</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Incorrect data record list</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>API sequence error</td>
</tr>
<tr>
<td>X'10'</td>
<td>Any code</td>
<td>Save area obtain failure</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>Cell size not supported</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>CPOOL Manager not INIT</td>
</tr>
<tr>
<td>X'14'</td>
<td>Any code</td>
<td>Invalid Control Blocks passed</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>Policy environment block (PSCB) address was null</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Policy session block (POCB) address was null</td>
</tr>
</tbody>
</table>
This reference section provides detailed information about the return and reason codes reported by the Policy Services Notification Manager interface in messages BSN4600-4799.

Table 175. Return and reason codes reported by Policy Services Notification Manager interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X’00’</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X’00’</td>
<td></td>
<td>Notification Manager function was successful</td>
</tr>
<tr>
<td>X’04’</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X’04’</td>
<td></td>
<td>Notification Manager function completed with information</td>
</tr>
<tr>
<td>X’08’</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X’04’</td>
<td></td>
<td>A system error occurred inside the Notification Manager module</td>
</tr>
<tr>
<td>X’08’</td>
<td></td>
<td>A system error occurred outside the Notification Manager module</td>
</tr>
<tr>
<td>X’10’</td>
<td>Any code</td>
<td>Save area obtain failure</td>
</tr>
<tr>
<td>X’0C’</td>
<td></td>
<td>Cell size not supported</td>
</tr>
<tr>
<td>X’10’</td>
<td></td>
<td>CPOOL Manager not INIT</td>
</tr>
<tr>
<td>X’14’</td>
<td>Any MVS key</td>
<td>Valid MVS KEY</td>
</tr>
<tr>
<td>X’000000M’</td>
<td></td>
<td>Callers KEY</td>
</tr>
</tbody>
</table>

(The TSO SEND call failed. Policy Services does not support sending notification messages to TSO clients for the requesting IMS Tool because the IMS Tool is not executing in key 8. The notification list should be changed to send messages to the email directory entry, the texting directory entry, or both entries.)
# Return/reason codes: Notification List Data Store (BSN5200-5399)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Notification List Data Store interface in messages BSN5200-5399.

## Table 176. Return and reason codes reported by Policy Services Notification List Data Store interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td>none</td>
<td>BSNNLDS function was successful</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'04'</td>
<td>NODATA</td>
<td>No more data provided</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>NOENTR</td>
<td>No entry in notification list</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>NONLPD</td>
<td>No pending delete table</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>FNDLST</td>
<td>Found list in the repository</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>FNDPDR</td>
<td>Found pending delete record</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>PDEMAX</td>
<td>Pending delete record exceeded maximum limit</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>LEEMAX</td>
<td>List entry exceeded maximum limit</td>
<td></td>
</tr>
</tbody>
</table>
Table 176. Return and reason codes reported by Policy Services Notification List Data Store interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td>FPQSVR</td>
<td>FPQSRV call failure</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTNTFI</td>
<td>Unable to obtain NLDS storage (NTFI block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTNTFL</td>
<td>Unable to obtain NLDS storage (NTFL block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTNLCB</td>
<td>Unable to obtain NLDS storage (NLCB block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTAIN</td>
<td>Unable to obtain NLDS storage (NTFL work storage)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTNLPD</td>
<td>Unable to obtain NLDS storage (NLPD table storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELWORK</td>
<td>Unable to release NLDS storage (NTFL work storage)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELNLPD</td>
<td>Unable to release NLDS storage (NLPD table storage)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FREWKAR</td>
<td>Unable to release NLDS storage (work storage)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELNTFL</td>
<td>Unable to release NLDS storage (NTFL block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELNTFI</td>
<td>Unable to release NLDS storage (NTFI block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RELNLCB</td>
<td>Unable to release NLDS storage (NLCB block)</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>PRN_ENQ</td>
<td>PRN lock failure (ENQ failed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRN_DEQ</td>
<td>PRN lock failure (DEQ failed)</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>NOPOCB</td>
<td>No POCB control block</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>NONLCB</td>
<td>No NLCB control block</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>NONTFI</td>
<td>No NTFI control block</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>NONNTFL</td>
<td>No NTFL control block</td>
<td></td>
</tr>
<tr>
<td>X'2C'</td>
<td>NONTFE</td>
<td>No NTFE control block</td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td>NOWKAR</td>
<td>No work area for NTFL control block</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>NOLTNM</td>
<td>No notification list name</td>
<td></td>
</tr>
<tr>
<td>X'38'</td>
<td>NOLTNL</td>
<td>No notification list name length</td>
<td></td>
</tr>
<tr>
<td>X'3C'</td>
<td>NODESC</td>
<td>No description</td>
<td></td>
</tr>
<tr>
<td>X'40'</td>
<td>NODSCL</td>
<td>No description length</td>
<td></td>
</tr>
<tr>
<td>X'44'</td>
<td>NOLNMN</td>
<td>No list name to be copied to</td>
<td></td>
</tr>
</tbody>
</table>
Table 176. Return and reason codes reported by Policy Services Notification List Data Store interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'50'</td>
<td>UNKFUN</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVFUN</td>
<td>Invalid function</td>
<td></td>
</tr>
<tr>
<td>X'54'</td>
<td>INVMOD</td>
<td>Invalid mode</td>
<td></td>
</tr>
<tr>
<td>X'58'</td>
<td>INVNFT</td>
<td>Invalid notification entry</td>
<td></td>
</tr>
<tr>
<td>X'5C'</td>
<td>ASSINT</td>
<td>Short name internally assigned</td>
<td></td>
</tr>
<tr>
<td>X'68'</td>
<td>NOFLST</td>
<td>From list does not exist</td>
<td></td>
</tr>
<tr>
<td>X'6C'</td>
<td>TOLEXT</td>
<td>To list already exists</td>
<td></td>
</tr>
<tr>
<td>X'70'</td>
<td>LSTREF</td>
<td>The list is referred by policy</td>
<td></td>
</tr>
<tr>
<td>X'74'</td>
<td>INVLOC</td>
<td>Invalid locale</td>
<td></td>
</tr>
<tr>
<td>X'78'</td>
<td>INVENV</td>
<td>Invalid environment level</td>
<td></td>
</tr>
<tr>
<td>X'7C'</td>
<td>NOINPT</td>
<td>No input data</td>
<td></td>
</tr>
<tr>
<td>X'80'</td>
<td>INVTEM</td>
<td>Invalid item</td>
<td></td>
</tr>
<tr>
<td>X'84'</td>
<td>FDNLPD</td>
<td>Found NLPD member in repository</td>
<td></td>
</tr>
<tr>
<td>X'88'</td>
<td>NOCHNG</td>
<td>No change to the repository allowed</td>
<td></td>
</tr>
<tr>
<td>X'8C'</td>
<td>INVCHA</td>
<td>Invalid string</td>
<td></td>
</tr>
<tr>
<td>X'90'</td>
<td>DUPTYP</td>
<td>Duplicated entry type added</td>
<td></td>
</tr>
<tr>
<td>X'94'</td>
<td>MISTYP</td>
<td>Mismatch entry type when replace entered</td>
<td></td>
</tr>
<tr>
<td>X'98'</td>
<td>EXCTYP</td>
<td>Mutual Exclusive entry type added</td>
<td></td>
</tr>
<tr>
<td>X'9C'</td>
<td>MEMINU</td>
<td>Member in use</td>
<td></td>
</tr>
</tbody>
</table>
# Return/reason codes: Policy Domain Data Store (BSN5800-5999)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Policy Domain Data Store interface in messages BSN5800-5999.

Table 177. Return and reason codes reported by Policy Services Policy Domain Data Store interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>none</td>
<td>PDDS function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>UNKFUN</td>
<td>PDDS function unknown</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>NOPDDH</td>
<td>Unable to locate PDDH control block</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>NODMNM</td>
<td>No domain name provided</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>INVDMT</td>
<td>Invalid domain type</td>
</tr>
<tr>
<td></td>
<td>X'14'</td>
<td>NOPOCB</td>
<td>No POCB control block</td>
</tr>
<tr>
<td></td>
<td>X'20'</td>
<td>OBTPDDH</td>
<td>Unable to obtain PDDS storage</td>
</tr>
<tr>
<td></td>
<td>X'24'</td>
<td>RELPDDH</td>
<td>Unable to release PDDS storage (PDDH block)</td>
</tr>
<tr>
<td></td>
<td>X'28'</td>
<td>FPQSR</td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td></td>
<td>X'2C'</td>
<td>NOPDNT</td>
<td>No domain name table</td>
</tr>
<tr>
<td></td>
<td>X'30'</td>
<td>NODTDN</td>
<td>No match domain name in the table</td>
</tr>
<tr>
<td></td>
<td>X'34'</td>
<td>NOPDDP</td>
<td>No valid PDDP control block</td>
</tr>
</tbody>
</table>
Return/reason codes: Rules Data Store (BSN6400-6599)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Rules Data Store interface in messages BSN6400-6599.

Table 178. Return and reason codes reported by Policy Services Rules Data Store interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00' ENTRY</td>
<td></td>
<td></td>
<td>The requested function has started successfully.</td>
</tr>
<tr>
<td></td>
<td>none</td>
<td>RDS function was successful</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>NODATA</td>
<td>No more data</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>MEMFND</td>
<td>Member found in the repository</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>TRSFND</td>
<td>Threshold set found in RDSR</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>CTAG</td>
<td>An internal error occurred. A possible reason might be that module BSNREORG or BSNDDO00 is not updated to the latest level and therefore installation of the new rule that was created in the hlq.SHKTTMPL data set failed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXIT</td>
<td>Module exited</td>
<td></td>
</tr>
<tr>
<td>X'04' FPQSVR</td>
<td>FPQSR</td>
<td>FPQSVR call failure</td>
<td></td>
</tr>
<tr>
<td>X'08' OBTAIN</td>
<td></td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTRDSC</td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTRDSDL</td>
<td>Unable to obtain RDS storage (RDSL block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTDDEL</td>
<td>Unable to obtain RDS storage (DELETE TRSD SET NAME TABLE)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTRDSH</td>
<td>Unable to obtain RDS storage (RDSH block)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OBTAIN</td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
</tbody>
</table>
Table 178. Return and reason codes reported by Policy Services Rules Data Store interface  (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>X'0C'</td>
<td>RELRDSH</td>
<td>Unable to release RDS storage (RDSH block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELRDSL</td>
<td>Unable to release RDS storage (RDSL block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELMMSG</td>
<td>Unable to release RDS storage (Message Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELCEXP</td>
<td>Unable to release RDS storage (Condition Expression Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELRTYP</td>
<td>Unable to release RDS storage (Resource Type Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELLEEXP</td>
<td>Unable to release RDS storage (Exception Expression Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELTRSD</td>
<td>Unable to release RDS storage (Threshold Set List storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELULTRSD</td>
<td>Unable to release RDS storage (Original Threshold Set List storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELRCDE</td>
<td>Unable to release RDS storage (Rule Condition Description Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELDAEL</td>
<td>Unable to release RDS storage (Data Element List Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELMSGT</td>
<td>Unable to release RDS storage (Message Template Clause storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DELNMLST</td>
<td>Unable to release RDS storage (Deleted Threshold Name List storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STREAM</td>
<td>Unable to release RDS storage (Rule Stream storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WORKAREA</td>
<td>Unable to release RDS storage (Parsing Work Area storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FREERDSR</td>
<td>Unable to release RDS storage (RDSR Parsing Work Area storage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELRCDE</td>
<td>Unable to release RDS storage (Rule Condition Description Clause storage)</td>
</tr>
<tr>
<td>X'20'</td>
<td></td>
<td>NORDSH</td>
<td>No RDSH control block</td>
</tr>
<tr>
<td>X'24'</td>
<td></td>
<td>INVRDSC</td>
<td>No RDSR control block</td>
</tr>
<tr>
<td>X'28'</td>
<td></td>
<td>NORDSL</td>
<td>No RDSL control block</td>
</tr>
<tr>
<td>X'2C'</td>
<td></td>
<td>NOPOCB</td>
<td>No POCB control block</td>
</tr>
<tr>
<td>X'30'</td>
<td></td>
<td>NORUNM</td>
<td>No rule name provided</td>
</tr>
<tr>
<td>X'34'</td>
<td></td>
<td>NODMNRM</td>
<td>No domain name provided</td>
</tr>
<tr>
<td>X'38'</td>
<td></td>
<td>NOINPT</td>
<td>No input data</td>
</tr>
<tr>
<td>X'50'</td>
<td></td>
<td>INVFUN</td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'54'</td>
<td></td>
<td>INVMOD</td>
<td>Invalid mode</td>
</tr>
</tbody>
</table>
Table 178. Return and reason codes reported by Policy Services Rules Data Store interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X’08’</td>
<td>X’58’</td>
<td>INVRTYP</td>
<td>Parsing error - Invalid resource type in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVTEM</td>
<td>Parsing error - Invalid domain name in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parsing error - Invalid file name in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVEEXP</td>
<td>Parsing error - Invalid exception expression in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVTRSD</td>
<td>Parsing error - Invalid threshold list</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVCEXP</td>
<td>Parsing error - Invalid condition expression in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVDAEEL</td>
<td>Parsing error - Invalid data element List in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INVMSGT</td>
<td>Parsing error - Invalid message in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOCEXP</td>
<td>No exception clause in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NORTYP</td>
<td>No resource type in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTRSD</td>
<td>No threshold list</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOOTRSD</td>
<td>No original threshold list</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOEEXP</td>
<td>No exception expression in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NODAEL</td>
<td>No data element list in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOMSGT</td>
<td>No message in template</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NORCDE</td>
<td>No rule condition description</td>
</tr>
<tr>
<td>X’5C’</td>
<td>INVTRSD</td>
<td>Invalid threshold set</td>
<td></td>
</tr>
<tr>
<td>X’60’</td>
<td>PRN_ENQ</td>
<td>PRN latch failure (ENQ)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRN_DEQ</td>
<td>PRN latch failure (DEQ)</td>
<td></td>
</tr>
<tr>
<td>X’62’</td>
<td>INVLEN</td>
<td>Invalid message template</td>
<td></td>
</tr>
<tr>
<td>X’68’</td>
<td>MEMNFD</td>
<td>Member not found in the repository</td>
<td></td>
</tr>
<tr>
<td>X’6C’</td>
<td>REFPOL</td>
<td>Referencing policy template found</td>
<td></td>
</tr>
<tr>
<td>X’70’</td>
<td>STRL</td>
<td>BSNPDS call failure (STRL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GETL</td>
<td>BSNPDS call failure (GETL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PTRD</td>
<td>BSNPDS call failure (PTRD)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GETC</td>
<td>BSNPDS call failure (GETC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENDL</td>
<td>BSNPDS call failure (ENDL)</td>
<td></td>
</tr>
<tr>
<td>X’72’</td>
<td>INVLOC</td>
<td>No RECON ID provided</td>
<td></td>
</tr>
<tr>
<td>X’78’</td>
<td>INVENV</td>
<td>Invalid environment level</td>
<td></td>
</tr>
<tr>
<td>X’80’</td>
<td>INVRECON</td>
<td>Invalid external RECON ID</td>
<td></td>
</tr>
<tr>
<td>X’88’</td>
<td>NOCHNG</td>
<td>No change to the repository allowed</td>
<td></td>
</tr>
<tr>
<td>X’8C’</td>
<td>TRSDMS</td>
<td>TRSD missing in the replacing template</td>
<td></td>
</tr>
<tr>
<td>X’90’</td>
<td>INVCHAR</td>
<td>Invalid character</td>
<td></td>
</tr>
<tr>
<td>X’94’</td>
<td>UOW</td>
<td>Handle invalid</td>
<td></td>
</tr>
<tr>
<td>Non[8]</td>
<td>DISC</td>
<td>Data Dictionary disconnect failed</td>
<td></td>
</tr>
</tbody>
</table>
### Table 178. Return and reason codes reported by Policy Services Rules Data Store interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>Non:0</td>
<td>CONN</td>
<td>Data Dictionary connect failed</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>VALE</td>
<td>Data Dictionary validation failed</td>
</tr>
</tbody>
</table>

**Note:**

1. The reason codes are displayed in messages without a return code.
This reference section provides detailed information about the return and reason codes reported by the Policy Services Policy Data Store interface in messages BSN7000-7199.

Table 179. Return and reason codes reported by Policy Services Policy Data Store interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code (Hex)</th>
<th>Reason code (Symbolic)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Any code</td>
<td>Successful (Function was successful)</td>
</tr>
<tr>
<td>X'00'</td>
<td>none</td>
<td></td>
<td>PDS function was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td></td>
<td>NODATA</td>
<td></td>
<td>No more data</td>
</tr>
<tr>
<td></td>
<td>FNDTMP</td>
<td></td>
<td>Found template in the repository</td>
</tr>
<tr>
<td></td>
<td>FNDSTR</td>
<td></td>
<td>Found stream in the repository</td>
</tr>
<tr>
<td></td>
<td>FNDCLS</td>
<td></td>
<td>Found clause in the PDSP</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>FPQSRV</td>
<td></td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td></td>
<td>STGGET</td>
<td></td>
<td>Unable to obtain PDS storage</td>
</tr>
<tr>
<td></td>
<td>STGREL</td>
<td></td>
<td>Unable to release PDS storage</td>
</tr>
<tr>
<td></td>
<td>PRNLOC</td>
<td></td>
<td>PRN latch failure</td>
</tr>
<tr>
<td></td>
<td>NOPDPSH</td>
<td></td>
<td>No PDSH control block</td>
</tr>
<tr>
<td></td>
<td>NOPDSP</td>
<td></td>
<td>No PDSP control block</td>
</tr>
<tr>
<td></td>
<td>NOPOCB</td>
<td></td>
<td>No POCB control block</td>
</tr>
<tr>
<td></td>
<td>NOPDSL</td>
<td></td>
<td>No PDSL control block</td>
</tr>
<tr>
<td></td>
<td>NOPLNM</td>
<td></td>
<td>No policy name provided</td>
</tr>
<tr>
<td></td>
<td>NODMNM</td>
<td></td>
<td>No domain name provided</td>
</tr>
<tr>
<td></td>
<td>NOINPT</td>
<td></td>
<td>No input data</td>
</tr>
<tr>
<td></td>
<td>INVFUNC</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td></td>
<td>INVMOD</td>
<td></td>
<td>Invalid mode</td>
</tr>
<tr>
<td></td>
<td>INVTEM</td>
<td></td>
<td>Invalid policy template</td>
</tr>
<tr>
<td></td>
<td>INVSTR</td>
<td></td>
<td>Invalid policy stream</td>
</tr>
<tr>
<td></td>
<td>INVCLS</td>
<td></td>
<td>Invalid policy clause</td>
</tr>
<tr>
<td></td>
<td>INVLOC</td>
<td></td>
<td>Invalid locale</td>
</tr>
<tr>
<td></td>
<td>INVENV</td>
<td></td>
<td>Invalid environment level</td>
</tr>
<tr>
<td></td>
<td>INVREC</td>
<td></td>
<td>Invalid RECON</td>
</tr>
<tr>
<td></td>
<td>NOPOLY</td>
<td></td>
<td>No policies in repository</td>
</tr>
<tr>
<td></td>
<td>MEMINU</td>
<td></td>
<td>Member in use</td>
</tr>
<tr>
<td></td>
<td>NOCHNG</td>
<td></td>
<td>No change to the repository allowed</td>
</tr>
<tr>
<td>X'7C'</td>
<td>INVCHA</td>
<td></td>
<td>Invalid char</td>
</tr>
</tbody>
</table>
Return/reason codes: Data Dictionary (BSN7600-7799, BBE1450E)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Data Dictionary interface in messages BSN7600-7799 and message BBE1450E.

Topics:
- “Data Dictionary return/reason codes overview”
- “Parmlist return/reason code analysis” on page 554
- “Data Dictionary: Parmlist codes for all List functions” on page 555
- “Data Dictionary LKUP function: List and List Entry codes” on page 556
- “Data Dictionary CTAG(ID/NAME) function: List and List Entry codes” on page 557
- “Data Dictionary VALE function: List and List Entry codes” on page 558
- “Data Dictionary TRAN function: List and List Entry codes” on page 559
- “Data Dictionary COMP function: List and List Entry codes” on page 557
- “Data Dictionary FORM function: List and List Entry codes” on page 558
- “Data Dictionary: Codes for non-List function calls” on page 559

Data Dictionary return/reason codes overview

This reference section provides an overview of the return and reason codes reported by the Policy Services Data Dictionary interface.

Data Dictionary function call types

The Data Dictionary processes two types of function calls:
- List
- Non-List

The non-List function calls include:
- Initialization (BSNDD FUNC=INIT)
- Termination (BSNDD FUNC=TERM)
- Connect (BSNDD FUNC=CONN)
- Disconnect (BSNDD FUNC=DISC)

The List function calls include:
- Lookup (BSNDD FUNC=LKUP)
- Create Tag using Tag ID (BSNDD FUNC=CTAG(ID))
- Create Tag using Tag name (BSNDD FUNC=CTAG(NAME))
- Validate (BSNDD FUNC=VALE)
- Transform (BSNDD FUNC=TRAN)
- Compare Format 1 (BSNDD FUNC=COMP(FORMAT1))
- Compare Format 2 (BSNDD FUNC=COMP(FORMAT2))
- Format (BSNDD FUNC=FORM)
When Data Dictionary return and reason codes are returned (API-specific)

The Data Dictionary non-list function calls will return Data Dictionary Parmlist return/reason codes in the parameter list only.

Data Dictionary non-list function calls do not return:
• Data Dictionary Overall List return/reason codes
• Data Dictionary List Entry return/reason codes

The Data Dictionary list function calls will return:
• Data Dictionary Parmlist return/reason codes
• Data Dictionary Overall List return/reason codes
• Data Dictionary List Entry return/reason codes

Information revealed by Data Dictionary return and reason codes

Parmlist return and reason codes reveal information about whether the Data Dictionary is present and functioning.

List return and reason codes reveal information about whether there is an error in any of the list entries. This type of error warns the user that the list entries must be inspected for errors.

List Entry return and reason codes reveal information that this specific function request has failed.

Parmlist return/reason code analysis

Analysis of Data Dictionary parameter list (Parmlist) return and reason codes follow a specific order.

The following order is used for analyzing Parmlist return and reason codes:
1. Data Dictionary Parmlist return/reason codes
2. Data Dictionary Overall List return/reason codes
3. Data Dictionary List Entry return/reason codes

Non-List function analysis

For non-list functions (INIT, CONN, DISC or TERM), analysis of the Data Dictionary Parmlist return/reason codes (BSNDD_PARM_RETCODE, and/or BSNDD_PARM_RETCOD) is all that is required.

For non-List functions, there are no Overall List return/reason codes or List Entry return/reason codes returned to be evaluated.
• If the Data Dictionary Parmlist return code is zero then the call completed successfully.
  No additional return/reason code analysis of either Data Dictionary Overall List return/reason codes or Data Dictionary List Entry return/reason codes is required.
• If the Data Dictionary Parmlist Return Code is non-zero then an environment error has occurred and Data Dictionary was unable to process the requested function.
No additional return/reason code analysis of either Data Dictionary Overall List return/reason codes or Data Dictionary List Entry return/reason codes is required.

**List function analysis**

List functions (LKUP, CTAG(ID), CTAG(NAME), VALE, TRAN, FORM, or COMP) require the following analysis:

- Analysis of the Data Dictionary Parmlist return/reason code (BSNDD_PARM_RETCODE, and/or BSNDD_PARM_RETCODE) is required:
  - If the Data Dictionary Parmlist return code is X'00', then the call completed. Additional return/reason code analysis of the Data Dictionary Overall List Return/Reason Codes is required to determine if any of the list elements completed in error.
  - If the Data Dictionary Parmlist Return Code is non-zero, then an environment error has occurred and Data Dictionary was unable to process the requested function.
    - The call completed in error with the Data Dictionary function not being processed. No additional return/reason code analysis of either Data Dictionary Overall List return/reason codes or Data Dictionary List Entry return/reason codes is required.

- Analysis of the Data Dictionary Overall List Return/Reason Codes (BSNDD_xxxxLIST_RETCODE and BSNDD_xxxxLIST_RSNCODE) is required:
  - If the Data Dictionary Overall List return code BSNDD_xxxxLIST_RETCODE is X'00', then the call completed with no error. No additional analysis of Data Dictionary List Entry return/reason codes is required.
  - If the Data Dictionary Overall List return code BSNDD_xxxxLIST_RETCODE is X'08', then the call completed with one or more list element items in error. The List Entry return/reason codes values BSNDD_xxxxLISTE_RETCODE and BSNDD_xxxxLISTE_RSNCODE for each list entry needs to be analyzed to determine the completion of each of the list element requests.
  - If the Data Dictionary Parmlist return code is greater than X'08', then a list error has occurred and the Data Dictionary was unable to process the requested function.
    - Error example: something is wrong with the list parameters, such as a list pointer and a list count of zero, or a valid count and no list pointer.
    - The call completed in error with the Data Dictionary function not being processed. No additional analysis of the Data Dictionary List Entry return/reason codes is required.

- Analysis of the Data Dictionary List Element Return/Reason Codes (BSNDD_xxxxLISTE_RETCODE and BSNDD_xxxxLISTE_RSNCODE) is required:
  - Evaluate the BASNDD_xxxxLISTE_RETCODE and BSNDD_xxxxLISTE_RSNCODE.

**Data Dictionary: Parmlist codes for all List functions**

This reference section provides detailed information about the parameter list (parmlist) return and reason codes reported by all List functions of the Policy Services Data Dictionary interface. These List functions include lookup (LKUP), create tag (CTAG(ID/NAME)), validate (VALE), transform (TRAN), compare format (COMP), and format (FORM).
Parmlist codes for Format (BSNDD FUNC=
LKUP|CTAG(ID)|CTAG(NAME)|VALE|TRAN|FORM|COMP|)

BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION

Table 180. Parmlist return and reason codes reported by all List functions of the Policy Services Data Dictionary interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Environment Error - No Token in parameter area</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Environment Error - BSNDEIS invalid address defined in token</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>Environment Error - BSNDES invalid address defined in token</td>
</tr>
<tr>
<td>X'24'</td>
<td>Any code</td>
<td>Environment Error - BSNDDS invalid address defined in token</td>
</tr>
<tr>
<td>X'20'</td>
<td>Any code</td>
<td>Environment Error - BSNDDIS invalid address defined in token</td>
</tr>
<tr>
<td>X'1C'</td>
<td>Any code</td>
<td>Environment Error - BSNDDNS invalid address defined in token</td>
</tr>
<tr>
<td>X'18'</td>
<td>Any code</td>
<td>Environment Error - No List in parameter area</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Invalid function requested (BSNDD FUNC=invalid value)</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Method successful - Validation of the List Header return/reason code is required.</td>
</tr>
</tbody>
</table>

Data Dictionary LKUP function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary lookup function (LKUP).

See also "Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Lookup (BSNDD FUNC=LKUP)

BSNDD_LKUPLIST_RETURN/BSNDD_LKUPLIST_REASON CODE DEFINITION

Table 181. List return and reason codes reported by Policy Services Data Dictionary LKUP function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>List Error - Not a LKUP list</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>List Error - No number of list entries</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>List Entry return/reason codes need to be analyzed.</td>
</tr>
</tbody>
</table>

List Entry codes for Lookup (BSNDD FUNC=LKUP)

BSNDD_LKUPLISTE_RETURN/BSNDD_LKUPLISTE_REASON CODE DEFINITION
Table 182. List Entry return and reason codes reported by Policy Services Data Dictionary LKUP function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Entry Error - Tag ID invalid</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Entry Error - Tag Name invalid</td>
</tr>
</tbody>
</table>

Data Dictionary CTAG(ID/NAME) function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary create tag function (CTAG(ID/NAME)).

See also “Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Create Tag (BSNDD FUNC=CTAG(ID/NAME))

BSNDD_CTIDLIST_RETURN/BSNDD_CTIDLIST_REASON CODE DEFINITION

Table 183. List return and reason codes reported by Policy Services Data Dictionary CTID function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>List Error - Not a CTAG (CTID/CTNM) list</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>List Error - No number of list entries</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>List Error - Storage allocation failure for list</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>List Entry return/reason codes need to be analyzed.</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>No List Entry errors, call successful</td>
</tr>
</tbody>
</table>

List Entry codes for Create Tag (BSNDD FUNC=CTAG(ID/NAME))

BSNDD_CTIDLISTE_RETURN/BSNDD_CTIDLISTE_REASON CODE DEFINITION

Table 184. List Entry return and reason codes reported by Policy Services Data Dictionary CTID function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'60'</td>
<td>Any code</td>
<td>Entry Error - No Tag specified (CTID)</td>
</tr>
<tr>
<td>X'5C'</td>
<td>Any code</td>
<td>Entry Error - No Tag ID specified (CTID)</td>
</tr>
<tr>
<td>X'58'</td>
<td>Any code</td>
<td>Entry Error - Tag ID not found (CTID)</td>
</tr>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Entry Error - No Tag specified (CTNM)</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Entry Error - No Tag Name specified (CTNM)</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>Entry Error - Tag Name not found (CTNM)</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>List Entry return/reason codes need to be analyzed.</td>
</tr>
</tbody>
</table>
Data Dictionary VALE function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary validate function (VALE).

See also “Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Validate (BSNDD FUNC=VALE)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>List Error - Not a VALE list</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>List Error - No number of list entries</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>List Error - Storage allocation failure for list</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>No List Entry errors, call successful</td>
</tr>
</tbody>
</table>

List Entry codes for Validate (BSNDD FUNC=VALE)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Entry Error - No Tag Address</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Entry Error - No Value Address</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>Entry Error - No Value Length</td>
</tr>
<tr>
<td>Return code</td>
<td>Reason code</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>X'24'</td>
<td>Any code</td>
<td>Entry Error - Tag Validation Failed (see reason codes)</td>
</tr>
<tr>
<td>X'C4'</td>
<td>Tag Error</td>
<td>- Incorrect SIGNED/_UNSIGNED setting</td>
</tr>
<tr>
<td>X'C0'</td>
<td>Tag Error</td>
<td>- Incorrect SCALE setting</td>
</tr>
<tr>
<td>X'BC'</td>
<td>Tag Error</td>
<td>- Invalid LOGICAL Type</td>
</tr>
<tr>
<td>X'B8'</td>
<td>LOGICAL(INTEGER) PHYSICAL(EXTERNAL)</td>
<td>sign error</td>
</tr>
<tr>
<td>X'B4'</td>
<td>LOGICAL(INTEGER) PHYSICAL(EXTERNAL)</td>
<td>validate error</td>
</tr>
<tr>
<td>X'B0'</td>
<td>LOGICAL(INTEGER) PHYSICAL(INTERNAL)</td>
<td>invalid</td>
</tr>
<tr>
<td>X'AC'</td>
<td>LOGICAL(INTEGER) PHYSICAL(PACKED)</td>
<td>validate error</td>
</tr>
<tr>
<td>X'A8'</td>
<td>LOGICAL(INTEGER) PHYSICAL(ZONED)</td>
<td>validate error</td>
</tr>
<tr>
<td>X'A4'</td>
<td>LOGICAL(INTEGER) PHYSICAL(FLOATHFP)</td>
<td>invalid</td>
</tr>
<tr>
<td>X'A0'</td>
<td>LOGICAL(INTEGER) PHYSICAL(FLOATHFP)</td>
<td>invalid</td>
</tr>
<tr>
<td>X'9C'</td>
<td>LOGICAL(INTEGER) PHYSICAL(CHARACTER)</td>
<td>validate error</td>
</tr>
<tr>
<td>X'98'</td>
<td>LOGICAL(INTEGER) PHYSICAL(unknown)</td>
<td>invalid, physical representation in file</td>
</tr>
<tr>
<td>X'94'</td>
<td>LOGICAL(FLOATINGPOINT)</td>
<td>not implement</td>
</tr>
<tr>
<td>X'90'</td>
<td>LOGICAL(BOOLEAN)</td>
<td>sign error</td>
</tr>
<tr>
<td>X'8C'</td>
<td>LOGICAL(BOOLEAN)</td>
<td>not one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(EXTERNAL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(BINARY)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(FIXEDCHARACTER)</td>
</tr>
<tr>
<td>X'88'</td>
<td>LOGICAL(CHARACTER)</td>
<td>value not char</td>
</tr>
<tr>
<td>X'80'</td>
<td>LOGICAL(BOOLEAN)</td>
<td>sign error</td>
</tr>
<tr>
<td>X'7C'</td>
<td>LOGICAL(BOOLEAN)</td>
<td>not one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(EXTERNAL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(BINARY)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PHYSICAL(FIXEDCHARACTER)</td>
</tr>
<tr>
<td>X'64'</td>
<td>Validate Successful</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>Any code</td>
<td>Entry Error - Range Validation Failed (see reason codes)</td>
</tr>
<tr>
<td>X'128'</td>
<td>Tag ID error</td>
<td>- Tag ID is zero</td>
</tr>
<tr>
<td>X'124'</td>
<td>DDEF error</td>
<td>- RANGE not found</td>
</tr>
<tr>
<td>X'120'</td>
<td>BOUNDARY List error</td>
<td>- Tag value less than Low Boundary</td>
</tr>
<tr>
<td>X'11C'</td>
<td>BOUNDARY List error</td>
<td>- Tag value greater than High Boundary</td>
</tr>
<tr>
<td>X'118'</td>
<td>VALUE List error</td>
<td>- Tag value not found in list</td>
</tr>
<tr>
<td>X'C8'</td>
<td>Validate successful</td>
<td></td>
</tr>
</tbody>
</table>
Data Dictionary TRAN function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary transform function (TRAN).

See also “Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Transform (BSNDD FUNC=TRAN)

BSNDD_TRANLIST_RETURN/BSNDD_TRANLIST_REASON CODE DEFINITION

Table 187. List return and reason codes reported by Policy Services Data Dictionary TRAN function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>List Error - Not a TRAN list</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>List Error - No number of list entries</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>List Error - Storage allocation failure for list</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>No List Entry errors, call successful</td>
</tr>
</tbody>
</table>

List Entry codes for Transform (BSNDD FUNC=TRAN)

BSNDD_TRANLISTE_RETURN/BSNDD_TRANLISTE_REASON CODE SOURCE

Table 188. List Entry return and reason codes reported by Policy Services Data Dictionary TRAN function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'128'</td>
<td>Any code</td>
<td>Target Error - No Source Tag</td>
</tr>
<tr>
<td>X'124'</td>
<td>Any code</td>
<td>Target Error - No Source Value</td>
</tr>
<tr>
<td>X'120'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(EXTERNAL) conversion to external format failed (CTEFF)</td>
</tr>
<tr>
<td>None</td>
<td>CTEFF = Conversion to external format failed</td>
<td></td>
</tr>
<tr>
<td>X'11C'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(INTERNAL) CTEFF</td>
</tr>
<tr>
<td>X'118'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(BINARY) CTEFF</td>
</tr>
<tr>
<td>X'114'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(PACKED) CTEFF</td>
</tr>
<tr>
<td>X'110'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(ZONED) CTEFF</td>
</tr>
<tr>
<td>X'10C'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(FLOATBHP) CTEFF</td>
</tr>
<tr>
<td>X'108'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(FLOATFHP) CTEFF</td>
</tr>
<tr>
<td>X'104'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(FIXEDCHARACTER) CTEFF</td>
</tr>
<tr>
<td>X'100'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STRINGL) Not supported</td>
</tr>
<tr>
<td>X'FC'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STRINGLL) Not supported</td>
</tr>
<tr>
<td>X'F8'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STRINGLLLL) Not supported</td>
</tr>
<tr>
<td>X'F4'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STRINGLLBB) Not supported</td>
</tr>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STRINGG) Not supported</td>
</tr>
</tbody>
</table>
Table 188. List Entry return and reason codes reported by Policy Services Data Dictionary TRAN function (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'EC'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STCK) Not supported</td>
</tr>
<tr>
<td>X'E8'</td>
<td>Any code</td>
<td>Target Error - PHYSICAL(STCKE) Not supported</td>
</tr>
<tr>
<td>X'D0'</td>
<td>Any code</td>
<td>Target Error - Unknown PHYSICAL type</td>
</tr>
<tr>
<td>X'C4'</td>
<td>Any code</td>
<td>Source Error - No Source Tag</td>
</tr>
<tr>
<td>X'C0'</td>
<td>Any code</td>
<td>Source Error - No Source Value</td>
</tr>
<tr>
<td>X'BC'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(EXTERNAL) conversion to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>internal format failed (CTIFF)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>CTIFF = Conversion to internal format failed</td>
</tr>
<tr>
<td>X'B8'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(INTERNAL) CTIFF</td>
</tr>
<tr>
<td>X'B4'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(BINARY) CTIFF</td>
</tr>
<tr>
<td>X'B0'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(PACKED) CTIFF</td>
</tr>
<tr>
<td>X'AC'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(ZONED) CTIFF</td>
</tr>
<tr>
<td>X'A8'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(FLOATBHP) CTIFF</td>
</tr>
<tr>
<td>X'A4'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(FLOATFHP) CTIFF</td>
</tr>
<tr>
<td>X'A0'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(FIXEDCHARACTER) CTIFF</td>
</tr>
<tr>
<td>X'9C'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STRINGL) Not supported</td>
</tr>
<tr>
<td>X'98'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STRINGLL) Not supported</td>
</tr>
<tr>
<td>X'94'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STRINGLLLL) Not supported</td>
</tr>
<tr>
<td>X'90'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STRINGLLBB) Not supported</td>
</tr>
<tr>
<td>X'8C'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STRINGG) Not supported</td>
</tr>
<tr>
<td>X'88'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STCK) Not supported</td>
</tr>
<tr>
<td>X'84'</td>
<td>Any code</td>
<td>Source Error - PHYSICAL(STCKE) Not supported</td>
</tr>
<tr>
<td>X'6C'</td>
<td>Any code</td>
<td>Source Error - Unknown PHYSICAL Type</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
</tbody>
</table>

List entry Return/Reason Codes need to be analyzed.

Data Dictionary COMP function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary compare format function (COMP).

See also “Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Compare (BSNDD FUNC=COMP)

BSNDD_COMPLIST_RETURN/BSNDD_COMPLIST_REASON CODE TARGET CODE DEFINITION

Table 189. List return and reason codes reported by Policy Services Data Dictionary COMP function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Process ended normally</td>
</tr>
</tbody>
</table>
Table 189. List return and reason codes reported by Policy Services Data Dictionary COMP function (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>List Warning - A list entry had an information.</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure.</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Environmental error. See reason code for details.</td>
</tr>
<tr>
<td>X'10'</td>
<td></td>
<td>Incorrect parameter list</td>
</tr>
<tr>
<td>X'14'</td>
<td></td>
<td>Storage obtain failed</td>
</tr>
</tbody>
</table>

List Entry codes for Compare (BSNDD FUNC=COMP)

BSNDD_COMPLISTE_RETURN/BSNDD_COMPLISTE_REASON CODE TARGET CODE DEFINITION

Table 190. List Entry return and reason codes reported by Policy Services Data Dictionary COMP function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Process ended normally</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Process ended with warning</td>
</tr>
<tr>
<td></td>
<td>X'04'</td>
<td>Source tag value for target tag value was not found</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Process ended with error</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Incomparable value was found</td>
</tr>
</tbody>
</table>

Data Dictionary FORM function: List and List Entry codes

This reference section provides detailed information about the List and List Entry return and reason codes reported by the Policy Services Data Dictionary format function (FORM).

See also "Data Dictionary: Parmlist codes for all List functions” on page 555

List codes for Format (BSNDD FUNC=FORM)

BSNDD_FORMPLIST_RETURN/BSNDD_FORMPLIST_REASON CODE TARGET CODE DEFINITION

Table 191. List return and reason codes reported by Policy Services Data Dictionary FORM function

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>List Error - Not a FORM list</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>List Error - No number of list entries</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>List Error - Storage allocation failure for list</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure</td>
</tr>
</tbody>
</table>
## List Entry codes for Format (BSNDD FUNC=FORM)

### BSNDD_FORMLISTE_RETURN/BSNDD_FORMLISTE_REASON CODE TARGET CODE DEFINITION

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Entry Error - No tag specified</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Entry Error - No value specified</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>Entry Error - Value of zero specified</td>
</tr>
<tr>
<td>X'24'</td>
<td>Any code</td>
<td>Entry Error - No presentation area specified</td>
</tr>
<tr>
<td>X'20'</td>
<td>Any code</td>
<td>Entry Error - Transform tag/value failure</td>
</tr>
<tr>
<td>X'C4'</td>
<td>Invalid Tag - LOGICAL(FLOATINGPOINT)</td>
<td></td>
</tr>
<tr>
<td>X'C0'</td>
<td>Invalid Tag - LOGICAL(STRING)</td>
<td></td>
</tr>
<tr>
<td>X'BC'</td>
<td>Invalid Tag - LOGICAL(TIMEVALUE)</td>
<td></td>
</tr>
<tr>
<td>X'B8'</td>
<td>Invalid Tag - LOGICAL(TIMESTAMP)</td>
<td></td>
</tr>
<tr>
<td>X'94'</td>
<td>Invalid Tag - LOGICAL(UNKNOWN)</td>
<td></td>
</tr>
<tr>
<td>X'90'</td>
<td>Invalid Tag - PHYSICAL(INTERNAL)</td>
<td></td>
</tr>
<tr>
<td>X'8C'</td>
<td>Invalid Tag - PHYSICAL(BINARY)</td>
<td></td>
</tr>
<tr>
<td>X'88'</td>
<td>Invalid Tag - PHYSICAL(PACKED)</td>
<td></td>
</tr>
<tr>
<td>X'84'</td>
<td>Invalid Tag - PHYSICAL(ZONED)</td>
<td></td>
</tr>
<tr>
<td>X'80'</td>
<td>Invalid Tag - PHYSICAL(FLOATBHP)</td>
<td></td>
</tr>
<tr>
<td>X'7C'</td>
<td>Invalid Tag - PHYSICAL(FLOATHFP)</td>
<td></td>
</tr>
<tr>
<td>X'78'</td>
<td>Invalid Value - PHYSICAL(FIXEDCHARACTER) PHYSICAL(BOOLEAN)</td>
<td></td>
</tr>
<tr>
<td>X'68'</td>
<td>Invalid Tag - PHYSICAL(UNKNOWN)</td>
<td></td>
</tr>
<tr>
<td>X'00'</td>
<td>Transform successful</td>
<td></td>
</tr>
<tr>
<td>X'1C'</td>
<td>Any code</td>
<td>Entry Error - Format transformed tag/value failure</td>
</tr>
<tr>
<td>X'128'</td>
<td>Invalid Tag - ID is zero</td>
<td></td>
</tr>
<tr>
<td>X'124'</td>
<td>Invalid Tag - Value length is zero</td>
<td></td>
</tr>
<tr>
<td>X'114'</td>
<td>Internal Error - Presentation length of zero</td>
<td></td>
</tr>
</tbody>
</table>

### Data Dictionary: Codes for non-List function calls

This reference section provides detailed information about the return and reason codes reported by the Policy Services Data Dictionary initialization (INIT), termination (TERM), connect (CONN), and disconnect (DISC) non-List function calls.
### Initialization (BSNDD FUNC=INIT)

**BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION**

Table 193. Return and reason codes reported by Policy Services Data Dictionary initialization (INIT) non-List function call

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Initialization was successful</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Invalid function requested (BSNDD FUNC=invalid value)</td>
</tr>
<tr>
<td>X'28'</td>
<td>Any code</td>
<td>Unable to connect the Data Dictionary definition structures</td>
</tr>
<tr>
<td>X'2C'</td>
<td>Any code</td>
<td>Unable to initialize the Data Dictionary definition structures</td>
</tr>
<tr>
<td>X'30'</td>
<td>Any code</td>
<td>Unable to allocate (obtain) Data Dictionary definition structures</td>
</tr>
<tr>
<td>X'34'</td>
<td>Any code</td>
<td>Unable to load Data Dictionary definition table</td>
</tr>
<tr>
<td>X'38'</td>
<td>Any code</td>
<td>Unable to connect to the Data Dictionary definition</td>
</tr>
<tr>
<td>X'3C'</td>
<td>Any code</td>
<td>Unable to allocate working storage</td>
</tr>
</tbody>
</table>

### Termination (BSNDD FUNC=TERM)

**BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION**

Table 194. Return and reason codes reported by Policy Services Data Dictionary termination (TERM) non-List function call

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Termination was successful</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Invalid function requested (BSNDD FUNC=invalid value)</td>
</tr>
<tr>
<td>X'10'</td>
<td>Any code</td>
<td>Unable to delete Data Dictionary modules or delete name token</td>
</tr>
<tr>
<td>X'14'</td>
<td>Any code</td>
<td>Unable to delete Data Dictionary Definition table</td>
</tr>
<tr>
<td>X'18'</td>
<td>Any code</td>
<td>Unable to deallocate (release) Data Dictionary definition structures</td>
</tr>
<tr>
<td>X'1C'</td>
<td>Any code</td>
<td>Unable to disconnect from the Data Dictionary definition</td>
</tr>
<tr>
<td>X'20'</td>
<td>Any code</td>
<td>Termination has occurred with active sessions missing disconnect requests</td>
</tr>
</tbody>
</table>

### Connect (BSNDD FUNC=CONN)

**BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION**

Table 195. Return and reason codes reported by Policy Services Data Dictionary connect (CONN) non-List function call

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Connection was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Storage allocation failure</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Duplicate instance requesting connection</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Invalid function requested (BSNDD FUNC=invalid value)</td>
</tr>
</tbody>
</table>
Disconnect (BSNDD FUNC=DISC)

BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION

Table 196. Return and reason codes reported by Policy Services Data Dictionary disconnect (DISC) non-List function call

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'00'</td>
<td>Any code</td>
<td>Disconnect was successful</td>
</tr>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Not used</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Storage deallocation failure</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Invalid function requested (BSNDD FUNC=invalid value)</td>
</tr>
<tr>
<td>X'10'</td>
<td>Any code</td>
<td>Instance requesting disconnection does not exist</td>
</tr>
</tbody>
</table>
Return/reason codes: Sensor Data read/write (BSN8800-8999, BBE1451E)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Sensor Data read/write interface in messages BSN8800-8999 and message BBE1451E.

Table 197. Return and reason codes reported by Policy Services Sensor Data read/write interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'25'</td>
<td></td>
<td>No log file open</td>
</tr>
<tr>
<td>X'27'</td>
<td></td>
<td>No member access</td>
</tr>
<tr>
<td>X'2A'</td>
<td></td>
<td>Non-queued record in set</td>
</tr>
<tr>
<td>X'34'</td>
<td></td>
<td>Read entry not found</td>
</tr>
<tr>
<td>X'3A'</td>
<td></td>
<td>Return length truncated</td>
</tr>
<tr>
<td>X'3B'</td>
<td></td>
<td>Memory key not found</td>
</tr>
<tr>
<td>X'44'</td>
<td></td>
<td>Null GET elements</td>
</tr>
<tr>
<td>X'49'</td>
<td></td>
<td>End of list</td>
</tr>
<tr>
<td>X'52'</td>
<td></td>
<td>The required key field definitions are incomplete.</td>
</tr>
</tbody>
</table>

The other possibility is that the Sensor Data repository was not initialized. For more information about initializing the Sensor Data repository, refer to the IBM Tools Base for z/OS Configuration Guide for IMS.
Table 197. Return and reason codes reported by Policy Services Sensor Data read/write interface  (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'02'</td>
<td></td>
<td>Bad packed option: must be 'C' or 'A'</td>
</tr>
<tr>
<td>X'08'</td>
<td></td>
<td>Bad application name</td>
</tr>
<tr>
<td>X'0C'</td>
<td></td>
<td>Element list is invalid</td>
</tr>
<tr>
<td>X'13'</td>
<td></td>
<td>Member not found</td>
</tr>
<tr>
<td>X'15'</td>
<td></td>
<td>Bad packed data area</td>
</tr>
<tr>
<td>X'16'</td>
<td></td>
<td>Bad packed data length</td>
</tr>
<tr>
<td>X'1C'</td>
<td></td>
<td>Invalid owner</td>
</tr>
<tr>
<td>X'1E'</td>
<td></td>
<td>Bad record set</td>
</tr>
<tr>
<td>X'1F'</td>
<td></td>
<td>Type not record set</td>
</tr>
<tr>
<td>X'20'</td>
<td></td>
<td>Bad record</td>
</tr>
<tr>
<td>X'21'</td>
<td></td>
<td>Type not record</td>
</tr>
<tr>
<td>X'24'</td>
<td></td>
<td>No log file access</td>
</tr>
<tr>
<td>X'2B'</td>
<td></td>
<td>Bad location: must be 'N' or 'O'</td>
</tr>
<tr>
<td>X'30'</td>
<td></td>
<td>Invalid location for reading: must be 'R', 'M', or 'B'</td>
</tr>
<tr>
<td>X'35'</td>
<td></td>
<td>KEEP value is invalid: must be 'Y' or 'N'</td>
</tr>
<tr>
<td>X'39'</td>
<td></td>
<td>Invalid read option: must be 'H' or 'D'</td>
</tr>
<tr>
<td>X'3C'</td>
<td></td>
<td>Begin read entry not found</td>
</tr>
<tr>
<td>X'3D'</td>
<td></td>
<td>Bad time sequence setting</td>
</tr>
<tr>
<td>X'3E'</td>
<td></td>
<td>Invalid time locale</td>
</tr>
<tr>
<td>X'3F'</td>
<td></td>
<td>Invalid time zone</td>
</tr>
<tr>
<td>X'40'</td>
<td></td>
<td>Invalid leap seconds</td>
</tr>
<tr>
<td>X'41'</td>
<td></td>
<td>Invalid time type</td>
</tr>
<tr>
<td>X'42'</td>
<td></td>
<td>Invalid time value</td>
</tr>
<tr>
<td>X'47'</td>
<td></td>
<td>GET failed</td>
</tr>
<tr>
<td>X'48'</td>
<td></td>
<td>Key not found</td>
</tr>
<tr>
<td>X'4B'</td>
<td></td>
<td>Write null data to ADD</td>
</tr>
<tr>
<td>X'51'</td>
<td></td>
<td>GET element transform error</td>
</tr>
<tr>
<td>Return code</td>
<td>Reason code</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'03'</td>
<td>Bad group name</td>
<td></td>
</tr>
<tr>
<td>X'05'</td>
<td>Test invalid option: must be 'Y', 'N', or blank</td>
<td></td>
</tr>
<tr>
<td>X'07'</td>
<td>History could not be found</td>
<td></td>
</tr>
<tr>
<td>X'0A'</td>
<td>Invalid record set RSI value</td>
<td></td>
</tr>
<tr>
<td>X'0B'</td>
<td>Connection failed for group and repository</td>
<td></td>
</tr>
<tr>
<td>X'0D'</td>
<td>Uninitialized environment</td>
<td></td>
</tr>
<tr>
<td>X'0E'</td>
<td>No connection</td>
<td></td>
</tr>
<tr>
<td>X'0F'</td>
<td>Invalid tag</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>Invalid handle</td>
<td></td>
</tr>
<tr>
<td>X'11'</td>
<td>Invalid key</td>
<td></td>
</tr>
<tr>
<td>X'12'</td>
<td>Invalid key length</td>
<td></td>
</tr>
<tr>
<td>X'14'</td>
<td>Bad element address</td>
<td></td>
</tr>
<tr>
<td>X'17'</td>
<td>Undefined set clock error</td>
<td></td>
</tr>
<tr>
<td>X'18'</td>
<td>Invalid option</td>
<td></td>
</tr>
<tr>
<td>X'19'</td>
<td>Cannot set history</td>
<td></td>
</tr>
<tr>
<td>X'1A'</td>
<td>Bad supplier ID</td>
<td></td>
</tr>
<tr>
<td>X'1B'</td>
<td>Bad supplier program</td>
<td></td>
</tr>
<tr>
<td>X'1D'</td>
<td>No record position set</td>
<td></td>
</tr>
<tr>
<td>X'22'</td>
<td>Delete failed</td>
<td></td>
</tr>
<tr>
<td>X'23'</td>
<td>Cannot issue query</td>
<td></td>
</tr>
<tr>
<td>X'26'</td>
<td>Cannot set control entities</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>Missing status area</td>
<td></td>
</tr>
<tr>
<td>X'29'</td>
<td>Cannot clear control entities</td>
<td></td>
</tr>
<tr>
<td>X'2C'</td>
<td>Adding bad element count</td>
<td></td>
</tr>
<tr>
<td>X'2D'</td>
<td>Adding bad tag length</td>
<td></td>
</tr>
<tr>
<td>X'2E'</td>
<td>Record already queued</td>
<td></td>
</tr>
<tr>
<td>X'31'</td>
<td>Invalid region dump type</td>
<td></td>
</tr>
<tr>
<td>X'32'</td>
<td>Dump log error</td>
<td></td>
</tr>
<tr>
<td>X'33'</td>
<td>Log error</td>
<td></td>
</tr>
<tr>
<td>X'36'</td>
<td>Read search error</td>
<td></td>
</tr>
<tr>
<td>X'37'</td>
<td>Return area undefined</td>
<td></td>
</tr>
<tr>
<td>X'38'</td>
<td>Return length invalid</td>
<td></td>
</tr>
<tr>
<td>X'43'</td>
<td>GET elements bad count</td>
<td></td>
</tr>
<tr>
<td>X'45'</td>
<td>GET bad tag in record</td>
<td></td>
</tr>
<tr>
<td>X'4F'</td>
<td>Bad record type: record type must be non-null and cannot begin with an underscore ('_')</td>
<td></td>
</tr>
<tr>
<td>X'50'</td>
<td>GET bad tag data length</td>
<td></td>
</tr>
</tbody>
</table>
Table 197. Return and reason codes reported by Policy Services Sensor Data read/write interface  (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'10'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'01'</td>
<td></td>
<td>Invalid function type</td>
</tr>
<tr>
<td>X'04'</td>
<td></td>
<td>Invalid version number</td>
</tr>
<tr>
<td>X'06'</td>
<td></td>
<td>Invalid processing task</td>
</tr>
<tr>
<td>X'09'</td>
<td></td>
<td>Browse failed</td>
</tr>
<tr>
<td>X'46'</td>
<td></td>
<td>Start failed for member list</td>
</tr>
<tr>
<td>X'4A'</td>
<td></td>
<td>PUT member failed</td>
</tr>
<tr>
<td>X'4C'</td>
<td></td>
<td>Data dictionary initialization failed</td>
</tr>
<tr>
<td>X'4D'</td>
<td></td>
<td>Data dictionary connection failed</td>
</tr>
<tr>
<td>X'4E'</td>
<td></td>
<td>End list failed</td>
</tr>
</tbody>
</table>
## Return/reason codes: Sensor Data delete (BSN8800-8999)

This reference section provides detailed information about the return and reason codes reported by the Policy Services Sensor Data delete interface in messages BSN8800-8999.

### Table 198. Return and reason codes reported by Policy Services Sensor Data delete interface

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'04'</td>
<td>Any code</td>
<td>Warning (Function completed with information)</td>
</tr>
<tr>
<td>X'1F'</td>
<td></td>
<td>No entries matched</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>X'0F'</td>
<td>Application not found</td>
</tr>
<tr>
<td></td>
<td>X'21'</td>
<td>Invalid time locale</td>
</tr>
<tr>
<td></td>
<td>X'22'</td>
<td>Invalid time zone</td>
</tr>
<tr>
<td></td>
<td>X'23'</td>
<td>Invalid leap seconds</td>
</tr>
<tr>
<td></td>
<td>X'24'</td>
<td>Invalid time type</td>
</tr>
<tr>
<td></td>
<td>X'25'</td>
<td>Invalid date value</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td></td>
<td>X'06'</td>
<td>Parser error</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>No input commands to process</td>
</tr>
<tr>
<td></td>
<td>X'0D'</td>
<td>Connection to server repository failed</td>
</tr>
<tr>
<td></td>
<td>X'0E'</td>
<td>Undefined set clock error</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>Invalid function</td>
</tr>
<tr>
<td></td>
<td>X'14'</td>
<td>Both date and age specified</td>
</tr>
<tr>
<td></td>
<td>X'15'</td>
<td>Invalid age specified</td>
</tr>
<tr>
<td></td>
<td>X'16'</td>
<td>Required one of date or age</td>
</tr>
<tr>
<td></td>
<td>X'17'</td>
<td>Invalid date specified</td>
</tr>
<tr>
<td></td>
<td>X'1A'</td>
<td>Command does not allow for server</td>
</tr>
<tr>
<td></td>
<td>X'1B'</td>
<td>Command does not allow for application</td>
</tr>
<tr>
<td></td>
<td>X'1C'</td>
<td>Command does not allow for RECON ID</td>
</tr>
<tr>
<td></td>
<td>X'1D'</td>
<td>Command does not allow for database</td>
</tr>
<tr>
<td></td>
<td>X'1E'</td>
<td>At least one process failed</td>
</tr>
<tr>
<td></td>
<td>X'28'</td>
<td>Delete by version failed</td>
</tr>
</tbody>
</table>
Table 198. Return and reason codes reported by Policy Services Sensor Data delete interface (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'16'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'01'</td>
<td></td>
<td>Open files failed</td>
</tr>
<tr>
<td>X'02'</td>
<td></td>
<td>Input commands missing</td>
</tr>
<tr>
<td>X'03'</td>
<td></td>
<td>Input command length missing</td>
</tr>
<tr>
<td>X'04'</td>
<td></td>
<td>Input line count exceeded</td>
</tr>
<tr>
<td>X'05'</td>
<td></td>
<td>Input command length invalid</td>
</tr>
<tr>
<td>X'07'</td>
<td></td>
<td>Unable to access BPE CSCD for parsing</td>
</tr>
<tr>
<td>X'09'</td>
<td></td>
<td>Null input to parse</td>
</tr>
<tr>
<td>X'0A'</td>
<td></td>
<td>Load error</td>
</tr>
<tr>
<td>X'0B'</td>
<td></td>
<td>Unable to open RECON log</td>
</tr>
<tr>
<td>X'0C'</td>
<td></td>
<td>RECON translation failed</td>
</tr>
<tr>
<td>X'11'</td>
<td></td>
<td>Bad conversion to time of day</td>
</tr>
<tr>
<td>X'12'</td>
<td></td>
<td>Bad store clock conversion</td>
</tr>
</tbody>
</table>
**Return codes: Sensor Data Extractor**

The Sensor Data Extractor ends with one of the following return codes:

Table 199. Return codes reported by Policy Services Sensor Data Extractor

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Job successfully ended.</td>
<td>None.</td>
</tr>
<tr>
<td>4</td>
<td>Job ended with a warning message.</td>
<td>Check the messages whose message numbers are suffixed by 'W'. If this is not the expected result, correct the error, and rerun the job.</td>
</tr>
<tr>
<td>8</td>
<td>Job ended with an error message.</td>
<td>Check the messages whose message numbers are suffixed by 'E'. Correct the error, and rerun the job.</td>
</tr>
<tr>
<td>12</td>
<td>Job abnormally ended and recovered by ESTAE routine.</td>
<td>This might be an internal system error. Contact IBM Software Support.</td>
</tr>
<tr>
<td>16</td>
<td>Job failed to initialize the BPE environment.</td>
<td>Correct any errors, and rerun the job. If this situation persists, contact IBM Software Support.</td>
</tr>
</tbody>
</table>
Chapter 31. Gathering diagnostic information

Before you report a problem with Policy Services to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

1. Provide the following information for all Policy Services problems:
   - A clear description of the problem and the steps that are required to recreate the problem
   - All messages that were issued preceding and following the problem
   - The timestamps of the messages
   - The Policy Services journal output
   - 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

2. Provide additional information based on the type of problem that you experienced:

   **For user interface abends, provide the following information**
   - A screen shot of the panel that you were using when the abend occurred
   - The job log from the TSO session that encountered the abend
   - The job log from the server
   - A description of the task that you were doing before the abend occurred

   **For errors that occur in processing an IMS Tool, provide the following information**
   - The complete job log
   - Print output
   - Contents of the any data sets that were used during the processing
Part 9. Appendixes
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