IBM Tools Base for z/OS
Version 1 Release 6

Policy Services User's Guide and Reference

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IBM
# Contents

About this information ................................. vii

## Part 1. Policy Services overview ........................ 1

### Chapter 1. Policy Services overview .................. 3
What’s new in Policy Services .............................. 4
What does Policy Services do? ............................ 5
Implementing policy-based database health management .................................................. 9
Policy Services components ................................ 12
Service updates and support information ............... 16
Product documentation and updates ..................... 17
Accessibility features ....................................... 19

### Chapter 2. Hardware and software prerequisites ........ 21

### Chapter 3. Sensor data service .......................... 23

### Chapter 4. Policies, rules, and notification lists .......... 27
What is a policy? ........................................... 28
What is sensor data? ........................................ 32
What is a rule? ............................................. 33
What is an exception? ...................................... 37
What is an action? ......................................... 40
What is a directory entry? ................................. 45
What is a notification list? ................................. 46
Exporting and importing Policy Services objects ....... 48
Example policy evaluation process flow .................. 50
Example scenario for conditional reorganization ........ 53

### Chapter 5. Domains, locales, and environments .......... 55
Domains .................................................... 56
Locales ...................................................... 57
Maintenance and operation environments .............. 59
Maintenance and operation connections ............... 61
Maintenance, operation, and history levels ............. 63
Special conditions and best practices for environments .................................................. 65

## Part 2. Configuring Policy Services .................... 69

## Part 3. Using Policy Services ............................ 71

### Chapter 6. Starting the Policy Services user interface .... 73

### Chapter 7. Copying rules ................................. 75

### Chapter 8. Customizing BSNGLOBL or locale-specific rules ...... 79

### Chapter 9. Modifying rule thresholds .................... 83

### Chapter 10. Defining custom rule threshold values for individual databases ........ 87

### Chapter 11. Managing notification lists and directory entries .......... 93
Notification lists and directory entries overview ........ 94
Creating directory entries ................................ 96
Creating a WTO directory entry .......................... 96
Creating a USER directory entry ........................ 98
Modifying directory entries .............................. 103
Creating notification lists ................................ 104
Modifying notification lists ............................... 106
Viewing and modifying the SMTP variables for email and texting ........................................ 107
Notifying users of phase 1 exception messages .......... 109

### Chapter 12. Modifying policy actions ..................... 111

### Chapter 13. Creating new policy from executable BSNGLOBL policy and copying to a new locale ........ 115

### Chapter 14. Creating a new policy ......................... 119

### Chapter 15. Promoting a maintenance environment to an operation environment ................. 123

### Chapter 16. Guidelines for exporting and importing .................................................. 127

## Part 4. Reference: Policy Services ...................... 129

### Chapter 17. Policy Services recovery .................... 131

### Chapter 18. Data elements ............................... 133
Data elements related to database attribute ............ 134
Data elements related to root segments ................ 135
Data elements related to randomizing parameter .......... 137
Data element related to database records ........................................ 138
Data elements related to index ................................................ 139
Data elements related to database data set space .......................... 140
Data elements related to data set CI/CA splits ............................. 147
Data elements related to segments in a data set group ....................... 148
Data elements related to pointers in a data set group ...................... 150
Data elements related to free space in a data set group .................... 151
Data elements related to free space in an area ............................ 153
Data elements related to overflow in an area ............................. 154
Data element related to segment occurrences in an area ................... 155
Data elements related to database records in an area ..................... 156
Data elements related to synonym in an area ............................. 157
Data elements related to physical I/O in an area .......................... 158
Data elements related to AREA definition ................................ 159
Data elements related to UOW statistics information ....................... 160
Data element related to repository group information ..................... 161
Data elements related to free space in a UOW .............................. 162
Data elements related to free space in a UOW group .................... 163
Data elements related to overflow in a UOW .............................. 164
Data elements related to overflow in a UOW group ...................... 165
Data elements related to database records in a UOW ..................... 166
Data elements related to database records in a UOW group .............. 167
Data elements related to synonym in a UOW ............................. 168
Data elements related to synonym in a UOW group ...................... 169
Data elements related to physical I/O in a UOW .......................... 170
Data elements related to physical I/O in a UOW group .................. 171
data elements related to RBASEFS or RDOVFFS conditions ................. 172
Data elements related to event dates ........................................ 173
Data elements related to data set backup status .......................... 174
Data elements related to database recovery ............................... 175
Data elements related to database backup ................................. 176
Data elements related to change accumulation groups ..................... 177

Chapter 19. Journal reports .................................................... 179
Journal report overview ....................................................... 180
Notification List and Directory Entry List report .......................... 182
Notification List Directory Entry Delete report ............................ 183
Notification List Directory Entry Import report ........................... 184
Notification List Update report ............................................. 186
Directory Entry Update report ............................................... 187
Policy Decision Making report .............................................. 188
Policy Environment Service Environment Create report .................... 191
Policy Environment Service Environment Delete report .................... 192
Policy Environment Service Environment Select and Validate report ..... 193

Policy Environment Service Worklist Maintenance
Process report ................................................................. 196
Policy Rule Template and Stream List report .............................. 197
Policy Stream Delete report .................................................. 199
Policy Stream Import report .................................................. 200
Policy Template Delete report ............................................... 202
Policy Template Import report ............................................... 203
Policy Template Update report ............................................. 206
Rule Template Import report .................................................. 209

Part 5. Reference: Domain REORG 213

Chapter 20. Domain REORG rules ........................................... 215
Rule: IBM.AVG_DBREC_LEN.10 .............................................. 217
Rule: IBM.CICA_SPLITS.10 .................................................. 219
Rule: IBM.DBDS_EXTENTS.10 .............................................. 221
Rule: IBM.DBDS_GROWTH.10 .............................................. 224
Rule: IBM.DBDS_GROWTH.20 .............................................. 227
Rule: IBM.DBDS_GROWTH.30 .............................................. 229
Rule: IBM.DEDB_DBREC_IO.10 .............................................. 232
Rule: IBM.DEDB_DBREC_IO.20 .............................................. 234
Rule: IBM.DEDB_DBRECCNT.10 .............................................. 236
Rule: IBM.DEDB_FS.10 ...................................................... 238
Rule: IBM.DEDB_FS.20 ...................................................... 240
Rule: IBM.DEDB_FS.30 ...................................................... 242
Rule: IBM.DEDB_FS.31 ...................................................... 244
Rule: IBM.DEDB_FS.40 ...................................................... 246
Rule: IBM.DEDB_FS.50 ...................................................... 248
Rule: IBM.DEDB_FS.60 ...................................................... 250
Rule: IBM.DEDB_FS.70 ...................................................... 252
Rule: IBM.DEDB_FS.80 ...................................................... 254
Rule: IBM.DEDB_FS.81 ...................................................... 256
Rule: IBM.DEDB_OVERFLOW.10 ............................................. 258
Rule: IBM.DEDB_OVERFLOW.20 ............................................. 260
Rule: IBM.DEDB_OVERFLOW.30 ............................................. 262
Rule: IBM.DEDB_OVERFLOW.40 ............................................. 264
Rule: IBM.DEDB_OVERFLOW.50 ............................................. 266
Rule: IBM.DEDB_OVERFLOW.60 ............................................. 268
Rule: IBM.DEDB_OVERFLOW.70 ............................................. 270
Rule: IBM.DEDB_OVERFLOW.80 ............................................. 272
Rule: IBM.DEDB_OVERFLOW.90 ............................................. 274
Rule: IBM.DEDB_RFS.10 .................................................... 276
Rule: IBM.DEDB_RFS.11 .................................................... 278
Rule: IBM.DEDB_RFS.20 .................................................... 280
Rule: IBM.DEDB_RFS.21 .................................................... 282
Rule: IBM.DEDB_ROOT_IO.10 ............................................... 284
Rule: IBM.DEDB_ROOT_IO.20 ............................................... 286
Rule: IBM.DEDB_SEGM_CNT.10 ............................................ 288
Rule: IBM.DEDB_SYN_LEN.10 .............................................. 290
Rule: IBM.DEDB_SYN_LEN.20 .............................................. 292
Rule: IBM.FFDB_FRAGDFSE.10 ............................................. 294
Rule: IBM.FFDB_NREUSFSE.10 ............................................. 296
Rule: IBM.FRAGMENTATION.10 ............................................. 298
Rule: IBM.FREE_SPACES.10 .................................................. 301
Rule: IBM.HDAM_OVERFLOW.10 ............................................. 304
Rule: IBM.HDAM_SYN_LEN.10 .............................................. 306
Rule: IBM.HISAM_SEG_DEL.10 .............................................. 308
Rule: IBM.IX_NUM_SEGMENT.10 ............................................. 310
Rule: IBM.IX_OVERFLOW.10 ................................................. 312
Rule: IBM.IX_EXTENTS.10 ................................................... 314
Chapter 21. Domain REORG policies 359
Policy: IBM.DBDTYPE.DEDB .................................. 361
Policy: IBM.DBDTYPE.FFDB .................................. 365
Policy: IBM.DBDTYPE.FFDBALL .................................. 369
Policy: IBM.DBDTYPE.HDAM .................................. 373
Policy: IBM.DBDTYPE.HDDB .................................. 376
Policy: IBM.DBDTYPE.HIDAM .................................. 379
Policy: IBM.DBDTYPE.HISAM .................................. 382
Policy: IBM.DBDTYPE.INDEX .................................. 385
Policy: IBM.DBDTYPE.PHDAM .................................. 388
Policy: IBM.DBDTYPE.PHDAM.A .................................. 391
Policy: IBM.DBDTYPE.PHIDAM .................................. 394
Policy: IBM.DBDTYPE.PHIDAM.A .................................. 397
Policy: IBM.DBDTYPE.SHISAM .................................. 400

Chapter 22. Domain REORG exceptions .................................. 403


Chapter 23. Domain RECOVERY rules 409
Rule: IBM.BACKOUT_NEEDED .................................. 411
Rule: IBM.EEQE_COUNT .................................. 413
Rule: IBM.HRS_SINCE_LASTCA .................................. 415
Rule: IBM.HRS_SINCE_LASTIC .................................. 417
Rule: IBM.IC_NEEDED .................................. 419
Rule: IBM.IC_RECOMMENDED .................................. 421
Rule: IBM.NOT_IN_CAGRP .................................. 423
Rule: IBM.RECOV_NEEDED .................................. 425

Chapter 24. Domain RECOVERY policies .................................. 427
Policy: IBM.RECOV_DEFAULT .................................. 429
Policy: IBM.CAGRP_DEFAULT .................................. 432

Chapter 25. Domain RECOVERY exceptions .................................. 435

Chapter 26. Domain RECOVERY actions .................................. 437

Part 7. Troubleshooting .................................. 439

Chapter 27. Runtime error messages (BSN) .................................. 441

Chapter 28. RECOVERY domain summary messages (IRO) .................................. 489

Chapter 29. Return and reason codes 491
Return/reason codes: Client API interface (BSN1000-1009) (BSN2000-2099) .................................. 492
Return/reason codes: Policy Environment Services (BSN1500-1599) .................................. 498
Return/reason codes: Association Manager (BSN1600-1799) .................................. 501
Return/reason codes: Email/Texting Variable (BSN1800-1899) .................................. 502
Return/reason codes: Storage Manager (BSN2200-2399) .................................. 503
Return/reason codes: Action Manager (BSN2800-2999) .................................. 504
Return/reason codes: Journal Manager (BSN3400-3499) .................................. 505
Return/reason codes: Parser, Validation, Evaluation (BSN4000-4199) .................................. 506
Return/reason codes: Notification Manager (BSN4600-4799) .................................. 507
Return/reason codes: Notification List Data Store (BSN5200-5399) .................................. 508
Return/reason codes: Policy Domain Data Store (BSN5800-5999) .................................. 511
Return/reason codes: Rules Data Store (BSN6400-6599) .................................. 512
Return/reason codes: Policy Data Store (BSN7000-7199) .................................. 516
Return/reason codes: Data Dictionary (BSN7600-7799, BBE1450E) .................................. 517
Data Dictionary return/reason codes overview 517
Parmlist return/reason code analysis 518
Data Dictionary: Parmlist codes for all List functions 519
Data Dictionary LKUP function: List and List Entry codes 520
Data Dictionary CTAG(ID/NAME) function: List and List Entry codes 521
Data Dictionary VALE function: List and List Entry codes 522
Data Dictionary TRAN function: List and List Entry codes 524
Data Dictionary COMP function: List and List Entry codes 525

Contents V
Data Dictionary FORM function: List and List Entry codes ........................................ 526
Data Dictionary: Codes for non-List function calls ...................................................... 527
Return/reason codes: Sensor Data read/write (BSN8800-8999, BBE1451E) .................. 530
Return/reason codes: Sensor Data delete (BSN8800-8999) .......................................... 534

Chapter 30. Gathering diagnostic information ............................................................... 537

Part 8. Appendixes ................................................. 539

Notices ................................................................. 541
Index ................................................................. 545
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:


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
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 21
- Chapter 3, “Sensor data service,” on page 23
- Chapter 4, “Policies, rules, and notification lists,” on page 27
- Chapter 5, “Domains, locales, and environments,” on page 55
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 16
- “Product documentation and updates” on page 17
- “Accessibility features” on page 19
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.

**SC19-4374-02 - 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".
- 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: Defining custom rule threshold values for individual databases
  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 RECOVERY domain for IMS Recovery Solution Pack, including:

- “Special conditions and best practices for environments” on page 65
- Part 6, “Reference: Domain RECOVERY,” on page 407
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 Store component

The Sensor Data Store component provides services to construct and deconstruct the sensor data that is stored in the 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.

The communication between the client application (such as IMS Database Reorganization Expert and stand-alone DB Sensor) and the Sensor Data Store is handled by the Sensor Data Store 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 Store. 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:

http://www.ibm.com/support(entry/portal/Overview/Software/Information_Management/IMS_Tools
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

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

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/

Receiving documentation updates automatically

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.

To register with the My Notifications service:
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.
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• Use the online reader comment form, which is located at http://www.ibm.com/software/data/rcf/.
• Send your comments by email to comments@us.ibm.com. Include the name of the book, the part number of the book, the version of the product that you are using, and, if applicable, the specific location of the text you are commenting on, for example, a page number or table number.
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 Service

![Diagram of Sensor Data Service architecture]

**Figure 2. Sensor data service architecture**

**Sensor Data Store API**

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

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.

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 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.
Chapter 4. Policies, rules, and notification lists

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 28
- "What is sensor data?" on page 32
- "What is a rule?" on page 33
- "What is an exception?" on page 37
- "What is an action?" on page 40
- "What is a directory entry?" on page 45
- "What is a notification list?" on page 46
- "Exporting and importing Policy Services objects" on page 48
- "Example policy evaluation process flow" on page 50
- "Example scenario for conditional reorganization" on page 53
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 Diagram]

Figure 4. Sensor Data repository stores rule data elements

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: DBBYTES_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:

&1 = 8589934592
&2 = 70
&3 = 0
&4 = 30

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 &amp;2 = 70 &amp;3 = 0 &amp;4 = 30</td>
</tr>
<tr>
<td>MED (IBM predefined)</td>
<td>&amp;1 = 8589934592 &amp;2 = 80 &amp;3 = 0 &amp;4 = 20</td>
</tr>
<tr>
<td>HIGH (IBM predefined)</td>
<td>&amp;1 = 8589934592 &amp;2 = 90 &amp;3 = 0 &amp;4 = 10</td>
</tr>
<tr>
<td>IMS3LOW (user-created)</td>
<td>&amp;1 = 8589934592 &amp;2 = 60 &amp;3 = 0 &amp;4 = 40</td>
</tr>
<tr>
<td>IMS3HIGH (user-created)</td>
<td>&amp;1 = 8589934592 &amp;2 = 85 &amp;3 = 0 &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:

![Rule exception components diagram]

"The fragmentation of free space in %RESOURCE% has increased"

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></td>
<td>WARNING</td>
</tr>
<tr>
<td>MED</td>
<td></td>
<td>SEVERE</td>
</tr>
<tr>
<td>HIGH</td>
<td></td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MYLOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MYHIGH</td>
<td></td>
<td></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></td>
<td>WARNING</td>
<td></td>
<td>Message</td>
</tr>
<tr>
<td>MED</td>
<td></td>
<td>SEVERE</td>
<td></td>
<td>Process</td>
</tr>
<tr>
<td>HIGH</td>
<td></td>
<td>CRITICAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MYLOW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MYHIGH</td>
<td></td>
<td></td>
<td></td>
<td></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 21, “Domain REORG policies,” on page 359
- Chapter 24, “Domain RECOVERY policies,” on page 427

**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>
</tbody>
</table>
| MESSAGE| SEVERE         | MED           | Notification List A
|        |                |               | Notification List B |
| REORG  | CRITICAL       | HIGH          | Notification List A
|        |                |               | Notification List C
|        |                |               | Notification List E |

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.
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 6. Example policy evaluation process flow

<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 HDAM 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>
</tbody>
</table>
Table 6. Example policy evaluation process flow (continued)

<table>
<thead>
<tr>
<th>Process Flow</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data element (sensor data) values are collected and evaluated against the value of each threshold in the condition expression.</td>
<td>DB_AVG_NUM_FSE for &amp;1</td>
</tr>
<tr>
<td></td>
<td>DB_AVG_NUM_NOREUSE_FSE for &amp;2</td>
</tr>
<tr>
<td></td>
<td>DB_NUM_FSE for &amp;3</td>
</tr>
<tr>
<td></td>
<td>DB_NUM_FSE_MIN for &amp;4</td>
</tr>
<tr>
<td></td>
<td>DB_NUM_FSE_MAX for &amp;5</td>
</tr>
<tr>
<td>The rule contains threshold sets that define threshold values for varying levels of the rule conditions.</td>
<td>Threshold sets:</td>
</tr>
<tr>
<td>The example rule contains the three default threshold sets (LOW, MED, HIGH) and two custom threshold sets (IMS3LOW, IMS3HIGH).</td>
<td>LOW</td>
</tr>
<tr>
<td>The rule compares threshold values (expressed in the rule as variables) to stored data element values:</td>
<td>MED</td>
</tr>
<tr>
<td>&amp;1 = DB_AVG_NUM_FSE</td>
<td>&amp;1 = 5</td>
</tr>
<tr>
<td>&amp;2 = DB_AVG_NUM_NOREUSE_FSE</td>
<td>&amp;2 = 5</td>
</tr>
<tr>
<td>&amp;3 = DB_NUM_FSE</td>
<td>&amp;3 = 2147483648</td>
</tr>
<tr>
<td>&amp;4 = DB_NUM_FSE_MIN</td>
<td>&amp;4 = 2147483648</td>
</tr>
<tr>
<td>&amp;5 = DB_NUM_FSE_MAX</td>
<td>&amp;5 = 2147483648</td>
</tr>
<tr>
<td>The value 2147483648 is the never-to-be-reached maximum threshold value. If this (default) value is specified, you can disable the evaluation of the corresponding data element value.</td>
<td>HIGH</td>
</tr>
<tr>
<td></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>
<tr>
<td></td>
<td>IMS3LOW</td>
</tr>
<tr>
<td></td>
<td>&amp;1 = 8</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 8</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></td>
<td>IMS3HIGH</td>
</tr>
<tr>
<td></td>
<td>&amp;1 = 25</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 25</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>Rule threshold sets are mapped to a maximum of three exception severity levels.</td>
<td>LOW =&gt; WARNING</td>
</tr>
<tr>
<td>Only the selected (mapped) threshold are used in a policy evaluation.</td>
<td>MED =&gt; SEVERE</td>
</tr>
<tr>
<td>Policy evaluation detects that the threshold set IMS3HIGH was crossed, which eventually generates the defined exception in the CRITICAL severity level.</td>
<td>IMS3HIGH =&gt; CRITICAL</td>
</tr>
<tr>
<td>Exception class for rule IBM.FRAGMENTATION.10 is:</td>
<td>FRAGMENTED_FREE_SPACES</td>
</tr>
</tbody>
</table>
Table 6. Example policy evaluation process flow (continued)

<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. The actions include a REORG process and an exception message.</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>Phase 2 policy evaluation for the status of the reorganized database detects no crossing of any threshold set of any rule. Therefore, no exception is returned. The exception messages for the exceptions detected in the first phase evaluation are suppressed and not sent.</td>
<td>The exception messages for the exceptions detected in the first phase evaluation are suppressed and not sent.</td>
</tr>
<tr>
<td>The summary message is sent after the second evaluation phase.</td>
<td>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>

IBM Tools Base: Policy Services User’s Guide and Reference
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 autonomic 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 *IBM 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 56
- “Locales” on page 57
- “Maintenance and operation environments” on page 59
- “Maintenance and operation connections” on page 61
- “Maintenance, operation, and history levels” on page 63
- “Special conditions and best practices for environments” on page 65
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
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 policies
- 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 policies
- 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 000000n) is successfully promoted, your connection is changed from the maintenance environment (level 000000n) to the new operation environment (level 000000n+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 000000n) is successfully promoted, your connection remains in an operation environment. However, your current operation environment level (level 000000r) is changed to a new operation environment level (level 000000n+1).

- Prior to the Promote action, all changes to Policy Services items are stored in the operation environment you are working in (level 000000r).
- After the Promote action, that operation environment is archived as a history level (level 000000r).
- If the changes made to the operation environment (level 000000r) are not also made in the maintenance environment (level 000000n), the new operation environment (level 000000n+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 000000n) is successfully promoted, your connection remains in an operation environment. However, your current operation environment level (level 000000r) is changed to a new operation environment level (level 000000n).

Prior to the Promote action, all changes to Policy Services items are stored in the operation level you are working in (level 000000r).

After the Promote action, that operation environment is archived as a history level (level 000000r).

Changes made to the former operation environment (level 000000r) are not reflected in the new operation environment (level 000000n).

Additional changes to Policy Services items are reflected only in the new current operation environment (level 000000n).
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 73
- Chapter 7, “Copying rules,” on page 75
- Chapter 8, “Customizing BSNGLOBL or locale-specific rules,” on page 79
- Chapter 9, “Modifying rule thresholds,” on page 83
- Chapter 11, “Managing notification lists and directory entries,” on page 93
- Chapter 12, “Modifying policy actions,” on page 111
- Chapter 13, “Creating 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, “Guidelines for exporting and importing,” on page 127
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. From 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

Policy Services Setup: Select XCF Group Name

Command ===>  

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. From 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.
3. 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.
All listed locales were established during the Policy Services post-installation process using the IMS Tools Knowledge Base user/administration interface.

4. 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)

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

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

7. 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. From 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.
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. From 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 31</td>
</tr>
</tbody>
</table>

   Command ===> 

   Select a row action or a command from the commands menu. End to exit.
   Resource types selected: (Active logic: OR)
   HIDAM PHIDAM PHDAM HISAM SHISAM

   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.
   AS Locale  Rule Name  Description
   BSNGLOBL IBM.AVG_DBREC_LEN.10  Average length of database records
   BSNGLOBL IBM.CICA_SPLITS.10  KSDS CI or CA splits in HISAM and SHISAM
   BSNGLOBL IBM.DDBS_EXTENTS.10  Availability of data set extents
   BSNGLOBL IBM.DDBS_GROWTH.10  Growth data set size
   BSNGLOBL IBM.DDBS_GROWTH.20  Percentage growth data set and free space
   BSNGLOBL IBM.DDBS_GROWTH.30  Growth data set size full of segment data
   BSNGLOBL IBM.DDBS_DBREC.10,10  Average number of I/Os per database record
   BSNGLOBL IBM.DDBS_DBREC.10,20  Maximum number of I/Os per database record
   BSNGLOBL IBM.DDBS_DBRECCNT.10  Number of database records in a DDEB area

   Figure 17. 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. 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.

4. Press End (PF3) to return 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 A Threshold panel is displayed.

---

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

**Figure 19. Evaluation Formula Description (Rule Condition Description) panel**
Enter the threshold values and press Enter.

Locale . . . . . . : MYRECON3 Rule name : IBM.RANDOMIZING.10
Value set for threshold : LOW
ID# Value Description
&1 20 Numeric, range: 0 to 100
The percentage of unused root anchor points compared to the
total root anchor points.
&2 20 Numeric, range: 0 to 100
The percentage of synonyms compared to the total number
of root segment occurrences.

Figure 20. Update/Add A Threshold panel

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

7. You can continue to make changes within this panel. When you are ready to
   commit all changes, press Enter.

   You are returned to the View/Update Rule panel.

8. When you have completed all modifications to this rule, press Enter.

   A Confirmation window is displayed.

Figure 21. Confirmation window

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

   The Manage Rules panel is displayed.

10. 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:

![Diagram showing different policies and their threshold values](image-url)
**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.

   **Figure 23. View/Update Rule panel**

4. Type a new threshold name (up to 12 characters), and press Enter.
   The Update/Add A Threshold 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 new policy from executable BSNGLOBL policy and copying to a new locale,” on page 115
  Specify the new thresholds in step 9.
- Chapter 14, “Creating a new policy,” on page 119
  Specify the new thresholds in step 10.

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>S</th>
<th>Threshold</th>
<th>Action</th>
<th>Level</th>
<th>Omit Missing</th>
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<td></td>
<td>S</td>
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<td></td>
<td>S NEW3</td>
<td>MESSAGE</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
</tbody>
</table>

Figure 28. Select Thresholds and Actions panel
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.

   Figure 29. Notification Lists, Directory Entries Management panel

   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

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

   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/CONSNAM**
Specify the console ID (CONSID) or console name (CONSNNAME) 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.
• Routing 1: Provide location routing code (optional)
• Routing 2: 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.

```
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Create directory entry of type WTO</td>
</tr>
<tr>
<td>2</td>
<td>Create directory entry of type USER</td>
</tr>
</tbody>
</table>
```

![Figure 34. Choose Directory Entry Type panel](image)

**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.

Help
----------------------------------------------------------------
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.

phonenumber@hostaddress:

phonenumber

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.

   ![](https://example.com/image1.png)

   **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.

   ![](https://example.com/image2.png)

   **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](image)

   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 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](image)

   Enter new notification list name and locale and press Enter. Press End to cancel.
   Notification list name ...
   Locale ............... BSNGLOBL
   Description

   **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.

   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.

   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.

```
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 47. Notification Lists, Directory Entries Management panel*

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

```
Help
---------------------------------------------
Locale Selection
Command ==> 
Select one and only one locale. Press Enter to exit.
XCF Group Name . . . . : FPQSRVT4

A: Row Actions: S - Select
A Locale name Locale Description
BSNGLOBL Policy Services Global Locale
```

*Figure 48. Locale Selection panel*

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.

Figure 49. View/Update EMAIL SMTP Variables panel

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.

   - Help
   - -----------------------------------------------
   - Command ===>
   - Policy Services Setup: Select XCF Group Name
   - Type the XCF group name, and press Enter.
   - * XCF group name . . . . FPQSPLEX

   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 51. Policy Services Setup: Select XCF Group Name panel

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. From the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.
   The Policies Management panel is displayed.
2. From 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.

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 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. From the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.
   The Policies Management panel is displayed.
2. From 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.

<table>
<thead>
<tr>
<th>Commands</th>
<th>View</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG/MAINTENANCE</td>
<td>Manage Policies</td>
<td>Row 1 to 9 of 9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HDAM</th>
<th>HIDAM</th>
<th>PHDAM</th>
<th>PHIDAM</th>
<th>HISAM</th>
<th>SHISAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 58. Manage Policies panel
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) on 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.
1. To commit all changes, type Y (Yes) and press Enter.
   The Manage Policies panel is displayed.

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

Figure 60. Confirmation window

---

Chapter 13. Creating new policy from executable BSNGLOBL policy and copying to a new locale
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. From the Policy Services Main Menu: Maintenance panel, select option 1 - Policies management, and press Enter.
   The Policies Management panel is displayed.
2. From 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 S 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 S row action (Select) on a rule that you want to belong to this new policy, and press Enter.
   The Associate Actions with Rule Thresholds panel is displayed.
10. Associate specific threshold sets with action-level pairs.
11. After associating threshold sets with action-level pairs, press Enter to 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:

   ![Select Rule Notification Lists panel](image)

   **Figure 62. Select Rule Notification Lists panel**

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.

   ![Confirmation window](image)

   **Figure 63. Confirmation window**

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

The Promote function allows you to:

- Promote a maintenance environment level to a 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. From 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.

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 L row action (List domain environments) on the domain row, and press Enter.
The List Domain Environments panel is displayed.

6. Then from the List Domain Environments panel, type the 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. 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. Reference: Policy Services

The topics in this section provide you with supplemental technical references for Policy Services.

Topics:
- Chapter 17, “Policy Services recovery,” on page 131
- Chapter 18, “Data elements,” on page 133
- Chapter 19, “Journal reports,” on page 179
Chapter 17. Policy Services recovery

The Policy Services recovery process ensures that Policy Services does not cause a failure of the client (Policy Services user interface or the IMS Tool) while processing Policy Services modules.

Policy Services provides the following recovery services:

1. Policy Services recovery code for an IMS Tool client (other than the Policy Services user interface) that prevents an ABEND (such as 0Cx or any other system ABEND in Policy Services) from causing Policy Services and/or the IMS Tool client to abnormally terminate.

2. Policy Services recovery code for the Policy Services user interface client (which executes in the TSO environment) that prevents an ABEND (such as 0Cx or any other system ABEND in Policy Services or in the Policy Services user interface) from abnormally terminating Policy Services and the Policy Services user interface client.

Recovery for Policy Services and the IMS Tool client

Policy Services sets up its recovery on receipt of calls from the IMS Tool client (with the exception of INIT, STRT and TERM calls) and terminates the recovery process at the completion of each of the calls.

Policy Services recovery performs the following functions:

• Captures the system ABEND
• Performs the required cleanup of the Policy Services environment
• Return to the IMS Tool client to allow the Client to:
  – Retry the same call
  – Perform a different call
  – Capture a DUMP
  – Terminate Policy Services

If there is a second system ABEND following the retry, a second DUMP is captured and the ABEND is allowed to continue.

Recovery for Policy Services and the Policy Services user interface

Policy Services sets up its recovery on return of the INIT call from the Policy Services user interface and terminates the recovery process at the start of the TERM call from the Policy Services user interface.

Policy Services recovery is in effect for all Policy Services user interface calls to Policy Services between the INIT and TERM calls of Policy Services.

The Policy Services user interface sets up its recovery during its own initialization process and prior to requesting the initialization of the Policy Services. Policy Services sets up its recovery upon completion of the Policy Services initialization. Therefore the recovery of Policy Services is not fully in effect until Policy Services returns to the Policy Services user interface client.
The Policy Services user interface recovery process is terminated at the beginning of Policy Services termination process. The Policy Services recovery process is terminated at the beginning of the Policy Services user interface termination process. Therefore the recovery process of Policy Services is fully terminated at the start of Policy Services user interface.

The Policy Services user interface does not attempt any retry.

**Recovery retry logic for the IMS Tool client**

The Policy Services recovery process ensures that Policy Services does not cause a failure of the client (Policy Services user interface or the IMS Tool) while processing Policy Services modules. This recovery process intercepts an abnormal failures in Policy Services modules (which includes both Policy Services non-user interface and user interface modules), and attempts to set up a retry for the IMS Tool client only.

The retry logic determines if a retry has already occurred. If the retry fails and causes a second failure, control is returned to MVS™, which percolates to the next recovery routine (if any) for the TCB.

If this is the first failure, Policy Services performs a cleanup of the Policy Services environment, releases any locks held against the repository, issues a summary dump to the MVS console, takes an SDUMP, and returns to the IMS Tool client to allow the client to either retry the function, request a different function, or terminate normally.

If the IMS Tool client attempts a retry of the same function or a different function, and there is a failure, Policy Services return to MVS to percolate to a higher recovery routine. If there is no higher recovery routine, Policy Services continues the abnormal termination, if this is a second failure.

**Other recovery considerations**

- It is the responsibility of the IMS Tool client to protect itself between calls. If the initialization of the Policy Services recovery fails, Policy services continues to process the calls. If there is an abnormal failure within Policy Services, there is no active Policy Services recovery function available.
- Because the Sensor Data Store is not driven directly by any of the Policy Services components, Sensor Data Store recovery is under the control of the IMS Tool recovery process.
- If error messages BSN1008E or BSN1009E are issued (which indicate that the setup of the Policy Services recovery process failed), Policy Services continues to process. However, there is no active Policy Services recovery function.
Chapter 18. 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 134
- “Data elements related to root segments” on page 135
- “Data elements related to randomizing parameter” on page 137
- “Data element related to database records” on page 138
- “Data elements related to index” on page 139
- “Data elements related to database data set space” on page 140
- “Data elements related to data set CL/CA splits” on page 147
- “Data elements related to segments in a data set group” on page 148
- “Data elements related to pointers in a data set group” on page 150
- “Data elements related to free space in a data set group” on page 151
- “Data elements related to free space in an area” on page 153
- “Data elements related to overflow in an area” on page 154
- “Data element related to segment occurrences in an area” on page 155
- “Data elements related to database records in an area” on page 156
- “Data elements related to synonym in an area” on page 157
- “Data elements related to physical I/O in an area” on page 158
- “Data elements related to AREA definition” on page 159
- “Data elements related to UOW statistics information” on page 160
- “Data element related to repository group information” on page 161
- “Data elements related to free space in a UOW” on page 162
- “Data elements related to free space in a UOW group” on page 163
- “Data elements related to overflow in a UOW” on page 164
- “Data elements related to overflow in a UOW group” on page 165
- “Data elements related to database records in a UOW” on page 166
- “Data elements related to database records in a UOW group” on page 167
- “Data elements related to synonym in a UOW” on page 168
- “Data elements related to synonym in a UOW group” on page 169
- “Data elements related to physical I/O in a UOW” on page 170
- “Data elements related to physical I/O in a UOW group” on page 171
- “Data elements related to RBASEFS or RDOVFFS conditions” on page 172
- “Data elements related to event dates” on page 173
- “Data elements related to data set backup status” on page 174
- “Data elements related to database recovery” on page 175
- “Data elements related to database backout” on page 176
- “Data elements related to change accumulation groups” on page 177
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>
<thead>
<tr>
<th>Data element name</th>
<th>H</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>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 8. 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></td>
<td>DB</td>
<td>The number of synonyms that are root segment occurrences not assigned to a unique root anchor point (RAP).</td>
</tr>
</tbody>
</table>
| DB_PCT_NUM_SYNONYM      | Y | - | - | Y |    |   | DB   | The percentage of synonyms compared to the total number of root segment occurrences. This value is calculated by the following formula:  
  DB_PCT_NUM_SYNONYM (%) = (DB_NUM_SYNONYM / DB_NUM_ROOT) * 100 |
| DB_NUM_ROOT_NOHOME      | Y | - | - | Y |    |   | DB   | The number of root segment occurrences that are not in the home block or CI.  
  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. |
| DB_PCT_NUM_ROOT_NOHOME  | Y | - | - | Y |    |   | DB   | The percentage of root segment occurrences that are not in the home block compared to the total number of root segment occurrences.  
  This value is calculated by the following formula:  
  DB_PCT_NUM_ROOT_NOHOME (%) = (DB_NUM_ROOT_NOHOME / DB_NUM_ROOT) * 100 |
| DB_NUM_ROOT_OVFL        | Y | - | - | Y |    |   | DB   | The number of root segment occurrences that are found in an overflow area. |
Table 8. 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>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D</td>
<td>I</td>
<td>I</td>
<td>H</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>A</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>M</td>
<td>A</td>
<td>M</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB_PCT_NUM_ROOT_OVFL</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</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. This value is calculated by the following formula: ( \text{DB}<em>\text{PCT_NUM_ROOT_OVFL} (%) = \left( \frac{\text{DB}</em>\text{NUM_ROOT_OVFL}}{\text{DB}_\text{NUM_ROOT}} \right) \times 100 )</td>
</tr>
<tr>
<td>DB_FLAG_SENSOR_HOME</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</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>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>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 9. Data elements related to the randomizing parameter

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>I</th>
<th>I</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_BYTES_SEG_RAA</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>DB</td>
<td>The total bytes of segment occurrences that are found in a root addressable area (RAA).</td>
</tr>
</tbody>
</table>
| DB_PCT_BYTES_OVFL           | Y | - | - | - | Y | - | - | DB   | The percentage of the total bytes of segment occurrences that are found in an overflow area. This value is calculated by the following formula:  
  \[ DB_{PCT\_BYTES\_OVFL} (\%) = \frac{(Total \ bytes \ of \ segment \ occurrences \ in \ an \ overflow \ area)}{(Total \ bytes \ of \ segment \ occurrences \ in \ DSG1)\times100} \]  
  Data Set Group 1 (DSG1) refers to the database data set that contains root segment occurrences. |
| DB_NUM_RAP                  | Y | - | - | - | Y | - | - | DB   | The total number of root anchor points (RAPs) in the database.               |
| DB_NUM_UNUSED_RAP           | Y | - | - | - | Y | - | - | DB   | The number of unused root anchor points.                                   |
| DB_PCT_NUM_UNUSED_RAP       | Y | - | - | - | Y | - | - | DB   | The usage rate of RAPs. This value shows the percentage of "unused root anchor points" compared to "the total root anchor points". This value is calculated by the following formula:  
  \[ DB_{PCT\_NUM\_UNUSED\_RAP} (\%) = \frac{(DB_{NUM\_UNUSED\_RAP})}{(DB_{NUM\_RAP})}\times100 \]  |
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 10. Data elements related to database records

<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_AVG_DBREC_LENGTH</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;\text{the total bytes of segment occurrences in the database}) divided by (&quot;\text{the number of root segment occurrences}). This value is calculated by the following formula: (\text{DB_AVG_DBREC_LENGTH} = \frac{\text{Total bytes of segment occurrences}}{\text{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>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>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 11. Data elements related to index

| Data element name | P | S | I | N | D | E | X | P | P | S | H | I | I | D | N | A | D | M | 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>
<thead>
<tr>
<th>Data element name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_FLAG_SMS</td>
<td>The indicator that shows whether DFSMSdss was active or not when collecting the statistics for data elements.</td>
</tr>
<tr>
<td></td>
<td>The value is either Y or N.</td>
</tr>
<tr>
<td></td>
<td>Y     DFSMSdss is active.</td>
</tr>
<tr>
<td></td>
<td>N     DFSMSdss is not active.</td>
</tr>
<tr>
<td>DB_MAX_EXT_DS</td>
<td>The maximum number of extents for the data set which is limited by an access method.</td>
</tr>
<tr>
<td></td>
<td>This number is as follows:</td>
</tr>
<tr>
<td></td>
<td>• VSAM data set: 251</td>
</tr>
<tr>
<td></td>
<td>• OSAM data set:</td>
</tr>
<tr>
<td></td>
<td>– 62 for IMS V13 or earlier</td>
</tr>
<tr>
<td></td>
<td>– 120 for IMS V14 or later</td>
</tr>
<tr>
<td></td>
<td>Notes:</td>
</tr>
<tr>
<td></td>
<td>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 Set.</td>
</tr>
<tr>
<td></td>
<td>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>The maximum number of extents that can be allocated on one DASD volume.</td>
</tr>
<tr>
<td></td>
<td>VSAM data set</td>
</tr>
<tr>
<td></td>
<td>123 extents per volume</td>
</tr>
<tr>
<td></td>
<td>OSAM data set</td>
</tr>
<tr>
<td></td>
<td>16 extents per volume</td>
</tr>
</tbody>
</table>
Table 12. Data elements related to database data set space (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>H</th>
<th>H</th>
<th>S</th>
<th>S</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_AVL_EXT_LESS_100</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>DS</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>The remaining extents is less than 100.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N</td>
<td>The remaining extents is equal to or greater than 100.</td>
</tr>
</tbody>
</table>
Table 12. Data elements related to database data set space (continued)

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>D</th>
<th>A</th>
<th>M</th>
<th>H</th>
<th>I</th>
<th>S</th>
<th>A</th>
<th>M</th>
<th>H</th>
<th>I</th>
<th>S</th>
<th>A</th>
<th>M</th>
<th>P</th>
<th>P</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| DB_AVAIL_EXT_LIMIT| Y  | Y  | Y  | Y  | -  | -  | Y  | Y  | -  | DS | The reason the remaining extents are less than 100. Use this information to determine an action for expanding space.

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 12. 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_NUM_AVAIL_EXT</td>
<td>DS</td>
<td>The estimated number of remaining extents for the data set. This value is collected when DB_AVAIL_EXT_LESS_100 is “Y”.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Notes:</strong></td>
</tr>
<tr>
<td></td>
<td></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></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></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>DS</td>
<td>The number of extents that currently exist in the data set.</td>
</tr>
<tr>
<td>DB_RBA_HIGH_USED</td>
<td>DS</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>DS</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>DS</td>
<td>The number of DASD volumes that are used by the data set.</td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL</td>
<td>DS</td>
<td>The number of unused DASD volumes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[DB_NUM_UNUSED_VOL=]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[\text{The number of volumes defined to data set - } DB_NUM_VOL]</td>
</tr>
<tr>
<td>DB_NUM_UNUSED_VOL_SER</td>
<td>DS</td>
<td>The number of unused DASD volumes whose volume serial numbers are already assigned.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This value is calculated by the following formula:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[DB_NUM_UNUSED_VOL_SER=]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[DB_NUM_UNUSED_VOL - DB_NUM_UNUSED_VOL_CAND]</td>
</tr>
</tbody>
</table>
### Table 12. Data elements related to database data set space (continued)

| DB_NUM_UNUSED_VOL_CAND                        | 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:  
  \[ DB\_NUM\_UNUSED\_VOL\_CAND = DB\_NUM\_UNUSED\_VOL - DB\_NUM\_UNUSED\_VOL\_SER \] |
| DB_FLAG_SPACE_TYPE                             | 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 | - | DS | The size of the primary allocation. |
| DB_NUM_SEC_SPACE                               | Y | Y | Y | - | - | Y | Y | - | DS | The size of the secondary allocation. |
| DB_UNUSED_BYTES                                | 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 | - | 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 | - | 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 | - | 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:  
  \[ DB\_PCT\_OF\_MAX\_DS\_SIZE (%) = \frac{DB\_MAX\_DS\_SIZE - DB\_RBA\_HIGH\_ALLOC}{DB\_MAX\_DS\_SIZE} * 100 \] |
<p>| DB_NUM_DBDS_BLOCKS                             | 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 | - | DS | The CI size of VSAM or the block size of OSAM. |</p>
<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 DB 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. This value is in decimal format.</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>DBX_UNUSED_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>H</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 13. Data elements related to data set CI/CA splits**

| Data element name          | H | D | I | A | M | H | D | I | A | M | P | S | I | H | N | D | I | N | D | A | E | M | A | D | E | X | Type | Description                                                                 |
| DB_NUM_CI_SPLIT            | - | - | Y | Y | - | - | - | - | - | DS | The number of control interval splits that have occurred for VSAM KSDS.  |
| DB_PCT_NUM_CI_SPLIT        | - | - | Y | Y | - | - | - | - | - | DS | The percentage of split CIs compared to the total number of CIs.         |
| DB_NUM_CA_SPLIT            | - | - | Y | Y | - | - | - | - | - | DS | The number of control area splits that have occurred for VSAM KSDS.      |
| DB_PCT_NUM_CA_SPLIT        | - | - | Y | Y | - | - | - | - | - | DS | The percentage of split CAs compared to the total number of CAs.          |
| DBX_NUM_CI_SPLIT           | - | - | - | - | Y | Y | - | Y | Y | DS | The number of split CIs (VSAM control interval) in the index database data set. |
| DBX_PCT_NUM_CI_SPLIT       | - | - | - | - | Y | Y | - | Y | Y | DS | The percentage of split CIs compared to the total number of CIs in the index database data set. |
| DBX_NUM_CA_SPLIT           | - | - | - | - | Y | Y | - | Y | Y | DS | The number of split CAs (VSAM control area) in the index database data set. |
| DBX_PCT_NUM_CA_SPLIT       | - | - | - | - | Y | Y | - | Y | Y | DS | The percentage of split CAs compared to the total number of CAs in the index database data set. |
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 14. Data elements related to segments in a data set group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>H</th>
<th>I</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</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>The number of segment occurrences in the data set.</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>The number of variable-length segment occurrences in the data set.</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>The number of split segment occurrences in the data set. 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>
</tr>
</tbody>
</table>
| DB_PCT_NUM_VLSEG_SPLIT   | Y | Y | - | - | Y | DS   | The percentage of the split variable-segment occurrences compared to the total number of variable-segment occurrences in the data set. This value is calculated by the following formula: 

\[
DB\_PCT\_NUM\_VLSEG\_SPLIT (\%) = \frac{DB\_NUM\_VLSEG\_SPLIT}{DB\_NUM\_VLSEG\_SPLIT / DB\_NUM\_VLSEG} \times 100
\] |
| DB_NUM_DELSEG            | - | - | Y | - | - | DS   | The number of deleted segment occurrences in the data set. A deleted segment occurrence refers to a segment occurrence whose delete byte is marked as deleted. |
| DB_BYTES_SEG             | Y | Y | Y | Y | Y | DS   | The total bytes of segment occurrences in the data set.                    |
| DB_PCT_BYTES_SEG         | Y | Y | Y | Y | Y | DS   | The percentage of segment occurrences compared to the total bytes of used blocks in the data set. This value is calculated by the following formula: 

\[
DB\_PCT\_BYTES\_SEG (\%) = \frac{DB\_BYTES\_SEG}{DB\_BYTES\_SEG / (DB\_NUM\_DBDS\_BLOCKS \times DB\_BLOCK\_SIZE)} \times 100
\] |
Table 14. 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>H</th>
<th>S</th>
<th>P</th>
<th>P</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| DB_PCT_NUM_DELSEG              |   |   | Y |   |   |   | DS  | The percentage of deleted segment occurrences compared to the total bytes of used blocks in the data set. This value is calculated by the following formula:  
  \[
  DB\_PCT\_NUM\_DELSEG (\%) = \frac{DB\_NUM\_DELSEG}{DB\_NUM\_DBDS\_BLOCKS \times DB\_BLOCK\_SIZE}} \times 100
  \]
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 15. Data elements related to pointers in a data set group

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_PTR</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>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>
<tr>
<td>DB_PCT_NUM_PTR_DIFF_BLK</td>
<td>DS</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DB_PCT_NUM_PTR_DIFF_BLK (%) = (DB_NUM_PTR_DIFF_BLK / DB_NUM_PTR) * 100</td>
</tr>
</tbody>
</table>
### 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 16. Data elements related to free space in a data set group**

<table>
<thead>
<tr>
<th>Data element name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB_NUM_FSE</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>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>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>The average number of free space elements, per block or CI, in the data set. This value is calculated by the following formula:</td>
</tr>
</tbody>
</table>
|                              | \[
|                              | \text{DB\_AVG\_NUM\_FSE} = \text{DB\_NUM\_FSE} / \text{DB\_NUM\_DBDS\_BLOCKS} \]
| DB_AVG_NUM_NOREUSE_FSE       | 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: \[
|                              | \text{DB\_AVG\_NUM\_NOREUSE\_FSE} = (\text{DB\_NUM\_FSE} - \text{DB\_NUM\_FSE\_MIN}) / \text{DB\_NUM\_DBDS\_BLOCKS} \]
| DB_PCT_NUM_NOREUSE_FSE       | The percentage of free space elements that cannot hold the smallest segment in the data set.                                               |
| DB_BYTES_FREE_SPACE          | The total bytes of free spaces.                                                                                                           |
| DB_PCT_BYTES_FREE_SPACE      | 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:    |
|                              | \[
|                              | \text{DB\_PCT\_BYTES\_FREE\_SPACE} = (\text{DB\_BYTES\_FREE\_SPACE} / (\text{DB\_NUM\_DBDS\_BLOCKS} \times \text{DB\_BLOCK\_SIZE})) \times 100 \]
| DB_BYTES_UNIDENTIFIED        | The number of slack byte areas in the data set. These areas consist of 7 or fewer slack bytes and cannot hold IMS data.                   |
Table 16. Data elements related to free space in a data set group  (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_NUM_UNIDENTIFIED</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td>The total slack bytes in the data set. A slack byte is a byte of disk space that cannot hold IMS data.</td>
</tr>
<tr>
<td>DB_AVG_NUM_UNIDENTIFIED</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td>The average number of slack byte areas, per block or CI, in the data set. Slack byte areas cannot hold IMS data.</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_AVG_NUM_UNIDENTIFIED = DB_NUM_UNIDENTIFIED / DB_NUM_DBDS_BLOCKS ]</td>
</tr>
<tr>
<td>DB_PCT_NUM_FRAGD_FSE</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td>The percentage of free space elements that cannot hold the largest segment in the data set.</td>
</tr>
<tr>
<td>DB_AVG_NUM_FRAGD_FSE</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>DS</td>
<td></td>
<td>The average number of free space elements, per block or CI (VSAM control interval), that cannot hold the largest segment.</td>
</tr>
</tbody>
</table>

152  IBM Tools Base: Policy Services User’s Guide and Reference
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to free space in an area.

**DB_PCT_BYTES_FS_RAA**
The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the data set (in bytes).

**DB_PCT_BYTES_FS_DOVF**
The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the data set (in bytes).

**DB_PCT_BYTES_FS_IOVF**
The percentage of free space in the IOVF (in bytes) compared to the total IOVF in the data set (in bytes).

**DB_PCT_BYTES_FS_SDEP**
The percentage of free space in the SDEP (in bytes) compared to the total SDEP in the data set (in bytes).
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to overflow in an area.

- **DB_PCT_NUM_UOW_USE_DOVF**: The percentage of UOWs that use DOVF CIs compared to the total number of UOWs in the data set.
- **DB_AVG_NUM_DOVF_CI_BY_UOW**: 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.
- **DB_MAX_NUM_DOVF_CI_BY_UOW**: The maximum number of DOVF CIs that are used by a UOW in the data set.
- **DB_PCT_NUM_UOW_USE_IOVF**: The percentage of UOWs that use IOVF CIs compared to the total number of UOWs in the data set.
- **DB_NUM_UOW_USE_IOVF**: The number of UOWs that use IOVF CIs in the data set.
- **DB_AVG_NUM_IOVF_CI_BY_UOW**: 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.
- **DB_MIN_NUM_IOVF_CI_BY_UOW**: The minimum number of IOVF CIs that are used by a UOW in the data set.
- **DB_PCT_NUM_IOVF_CI_USED**: The percentage of used IOVF CIs compared to the total IOVF CIs (bitmaps excluded) in the data set.
- **DB_PCT_NUM_RAPCI_OVFL**: The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the data set.
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to segment occurrences in an area.

**DB_NUM_SEG**
The number of segment occurrences in the data set.
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to database records in an area.

**DB_NUM_ROOT**
The number of root segment occurrences in the database, the partition, or the area.

**DB_AVG,DBREC_LENGTH**
The average length of database records in the database, the partition, or the area.

**DB_MAX,DBREC_LENGTH**
The length of the longest database record in the data set.

**DB_MIN,DBREC_LENGTH**
The length of the shortest database record in the data set.

**DB_PCT_NUM,DBREC_IOVF**
The percentage of DB records using IOVF CIs compared to the total DB records in the data set.
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to synonym in an area.

**DB_AVG_LEN_SYNONYM_CHAIN**
The average length of all synonym chains in the data set that have a length greater than or equal to 2.

**DB_MAX_LEN_SYNONYM_CHAIN**
The length of the longest synonym chain in the data set.
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to physical I/O in an area.

**DB_AVG_DBREC_IO**
- The average number of physical I/Os required to retrieve an entire DB record in the data set.

**DB_ESTIMATED_DBREC_IO**
- The estimated number of I/Os that are required to retrieve an entire database record.

**DB_MAX_DBREC_IO**
- The maximum number of physical I/Os required to retrieve an entire DB record in the data set.

**DB_AVG_ROOT_IO**
- The average number of physical I/Os required to retrieve a root segment in the data set.

**DB_ESTIMATED_ROOT_IO**
- The estimated number of I/Os that are required to reach a root segment from RAP by following the synonym chain.

**DB_MAX_ROOT_IO**
- The maximum number of physical I/Os required to retrieve a root segment in the data set.
Data elements related to AREA definition

This reference topic provides information about data elements that are related to AREA definition.

The type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to AREA definition.

**DB_AREADEF_CISIZE**
The size of the VSAM CI for the area.

**DB_AREADEF_UOW1**
The number of VSAM CIs in a UOW for the area.

**DB_AREADEF_UOW2**
The number of VSAM CIs in the overflow section of a UOW for the area.

**DB_AREADEF_ROOT1**
The total space allocated to the root addressable part of the area and to the area reserved for the IOVF part.

**DB_AREADEF_ROOT2**
The space reserved for the IOVF part in terms of UOWs.

**DB_AREADEF_NUM_SDEP_CIS**
The total number of CIs that are allocated for the SDEP part.
Data elements related to UOW statistics information

This reference topic provides information about data elements that are related to UOW statistics information.

The type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to UOW statistics information.

DB_FLAG_UOW_DATA
The indicator that shows whether the data elements are collected for each UOW.

DB_FLAG_UOW_GROUP_DATA
The indicator that shows whether the data elements are collected for each group of UOWs.

DB_NUM_UOW_GROUPS
The number of UOW groups that are defined.
Data element related to repository group information

This reference topic provides information about data elements that are related to repository group information.

The type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

The following list summarizes the data elements that are related to repository group information.

**DB_SENSOR_DATA_GROUP_ID**

The name of the repository group.
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 type in the policy domain definition and sensor data record header is UOW. The database type is DEDB.

The following list summarizes the data elements that are related to free space in a UOW.

**DBU_PCT_BYTES_FS_RAA**
- The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the UOW (in bytes).

**DBU_PCT_BYTES_FS_DOVF**
- The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the UOW (in bytes).

**DBU_PCT_BYTES_FS_IOVF**
- The percentage of free space in the IOVFs that are used by the UOW compared to the total bytes of those IOVFs.

**DBU_PCT_USABLE_RAAFS**
- The percentage of usable free space in the RAA BASE (in bytes) compared to the total RAA BASE in the UOW (in bytes).

**DBU_PCT_USABLE_DOVFFS**
- The percentage of usable free space in the DOVF (in bytes) compared to the total DOVF in the UOW (in bytes).

**DBU_PCT_USABLE_IOVFFS**
- The percentage of usable free space in the IOVFs that are used by the UOW compared to the total bytes of those IOVFs.

**DBU_PCT_RAP_ROOTSZFS**
- The percentage of RAP CIs that have free space to insert a root segment compared to the total used RAP CIs in the UOW.

**DBU_MAX_PCT_BYTES_RAPFS**
- The maximum percentage of free space in a RAP CI that uses overflow CIs (bytes) compared to a RAP CI in the UOW (bytes).

**DBU_FLAG_UOW_USING_OVFL**
- The indicator that shows whether at least one overflow CI is used by the UOW.

**DBU_FLAG_UOW_USING_IOVF**
- The indicator that shows whether at least one IOVF CI is used by the UOW.
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 type in the policy domain definition and sensor data record header is UOWG. The database type is DEDB.

The following list summarizes the data elements that are related to free space in a UOW group.

**DBG_PCT_BYTES_FS_RAA**
The percentage of free space in the RAA BASE (in bytes) compared to the total RAA BASE in the group of UOWs (in bytes).

**DBG_PCT_BYTES_FS_DOVF**
The percentage of free space in the DOVF (in bytes) compared to the total DOVF in the group of UOWs (in bytes).

**DBG_PCT_BYTES_FS_IOVF**
The percentage of free space in the IOVFs that are used by the UOW group compared to the total bytes of those IOVFs.

**DBG_PCT_USABLE_RAAFS**
The percentage of usable free space in the RAA BASE compared to the total RAA BASE in the group of UOWs (in bytes).

**DBG_PCT_USABLE_DOVFFS**
The percentage of usable free space in the DOVF (in bytes) compared to the total DOVF in the group of UOWs (in bytes).

**DBG_PCT_USABLE_IOVFFS**
The percentage of usable free space in the IOVFs that are used by the UOW group compared to the total bytes of the IOVFs.

**DBG_PCT_RAP_ROOTSZFS**
The percentage of RAP CIs that have free space to insert a root segment compared to the total used RAP CIs in UOW group.
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 type in the policy domain definition and sensor data record header is UOW. The database type is DEDB.

The following list summarizes the data elements that are related to overflow in a UOW.

- **DBU_NUM_DOVFCI_BY_UOW**
  The number of DOVF CIs that are used by the UOW.

- **DBU_NUM_IOVF_CI_BY_UOW**
  The number of IOVF CIs that are used by the UOW.

- **DBU_PCT_NUM_RAPCI_OVFL**
  The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the UOW.
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 type in the policy domain definition and sensor data record header is UOWG. The database type is DEDB.

The following list summarizes the data elements that are related to overflow in a UOW group.

**DBG_PCT_NUM_UOW_DOVF**
- The percentage of UOWs that use DOVF CIs compared to the total number of UOWs in the group of UOWs.

**DBG_AVG_NUM_DOVFCI**
- 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.

**DBG_MAX_NUM_DOVFCI**
- The maximum number of DOVF CIs that are used by a UOW in the group of UOWs.

**DBG_PCT_NUM_UOW_IOVF**
- The percentage of UOWs that use IOVF CIs compared to the total number of UOWs in the group of UOWs.

**DBG_AVG_NUM_IOVFCI**
- 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.

**DBG_MAX_NUM_IOVFCI**
- The maximum number of IOVF CIs that are used by a UOW in the group of UOWs.

**DBG_PCT_NUM_RAPCI_OVFL**
- The percentage of RAP CIs that use overflow CIs compared to the total number of used RAP CIs in the group of UOWs.
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 type in the policy domain definition and sensor data record header is UOW. The database type is DEDB.

The following list summarizes the data elements that are related to database records in a UOW.

**DBU_NUM_ROOT**
- The number of root segment occurrences in the UOW.

**DBU_AVG_DBREC_LENGTH**
- The average length of database records in the UOW.

**DBU_MAX_DBREC_LENGTH**
- The length of the longest database record in the UOW.

**DBU_MIN_DBREC_LENGTH**
- The length of the shortest database record in the UOW.

**DBU_PCT_NUM_DBREC_IOVF**
- The percentage of DB records using IOVF CIs compared to the total DB records in the UOW.
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 type in the policy domain definition and sensor data record header is UOWG. The database type is DEDB.

The following list summarizes the data elements that are related to database records in a UOW group.

**DEBUG_NUM_ROOT**
The number of root segment occurrences in the group of UOWs.

**DEBUG_AVG_DBREC_LENGTH**
The average length of database records in the group of UOWs.

**DEBUG_MAX_DBREC_LENGTH**
The length of the longest database record in the group of UOWs.

**DEBUG_MIN_DBREC_LENGTH**
The length of the shortest database record in the group of UOWs.

**DEBUG_PCT_NUM_DBREC_IOVF**
The percentage of DB records using IOVF CIs compared to the total DB records in the group of UOWs.
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 type in the policy domain definition and sensor data record header is UOW. The database type is DEDB.

The following list summarizes the data elements that are related to synonym in a UOW.

**DBU_AVG_LEN_SYN_CHAIN**
The average length of all synonym chains in the UOW that have a length greater than or equal to 2.

**DBU_MAX_LEN_SYN_CHAIN**
The length of the longest synonym chain in the UOW.
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 type in the policy domain definition and sensor data record header is UOWG. The database type is DEDB.

The following list summarizes the data elements that are related to synonym in a UOW group.

**DBG_AVG_LEN_SYN_CHAIN**
The average length of all synonym chains in the group of UOWs that have a length greater than or equal to 2.

**DBG_MAX_LEN_SYN_CHAIN**
The length of the longest synonym chain in the group of UOWs.
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 type in the policy domain definition and sensor data record header is UOW. The database type is DEDB.

The following list summarizes the data elements that are related to physical I/O in a UOW.

**DBU_AVG_DBREC_IO**
The average number of physical I/Os required to retrieve an entire DB record in the UOW.

**DBU_MAX_DBREC_IO**
The maximum number of physical I/Os required to retrieve an entire DB record in the UOW.

**DBU_AVG_ROOT_IO**
The average number of physical I/Os required to retrieve a root segment in the UOW.

**DBU_MAX_ROOT_IO**
The maximum number of physical I/Os required to retrieve a root segment in the UOW.
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 type in the policy domain definition and sensor data record header is UOWG. The database type is DEDB.

The following list summarizes the data elements that are related to physical I/O in a UOW group.

**DEBUG_AVG_DBREC_IO**

The average number of physical I/Os required to retrieve an entire DB record in the group of UOWs.

**DEBUG_MAX_DBREC_IO**

The maximum number of physical I/Os required to retrieve an entire DB record in the group of UOWs.

**DEBUG_AVG_ROOT_IO**

The average number of physical I/Os required to retrieve a root segment in the group of UOWs.

**DEBUG_MAX_ROOT_IO**

The maximum number of physical I/Os required to retrieve a root segment in the group of UOWs.
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 type in the policy domain definition and sensor data record header is AREA. The database type is DEDB.

**DB_NUM_UOW_RFS_COND**
The number of UOWs that match the RBASEFS condition or the RDOVFFS condition.

**DB_PCT_NUM_UOW_RFS_COND**
The percentage of UOWs that match the RBASEFS condition or the RDOVFFS condition compared to the total number of UOWs.

**DB_THRESHOLD_RBASEFS**
The threshold value that is specified by the RBASEFS or the EXC_RBASEFS keyword for selecting UOWs to reorganize.

**DB_THRESHOLD_RDOVFFS**
The threshold value that is specified by the RDOVFFS or the EXC_RDOVFFS keyword for selecting UOWs to reorganize.
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 17. Data elements related to event dates

<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>I</th>
<th>N</th>
<th>P</th>
<th>D</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>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>AR</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>
</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 18. Data elements related to data set backup status

<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_NEEEDED</td>
<td>D8</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>D8</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>D8</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>D8</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 19. 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 20. 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 21. 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 CAGR.</td>
</tr>
</tbody>
</table>
Chapter 19. Journal reports

Policy Services writes journal records that are useful to IBM Software Support for problem resolution.

Topics:
- “Journal report overview” on page 180
- “Notification List and Directory Entry List report” on page 182
- “Notification List Delete report” on page 183
- “Notification List and Directory Entry Import report” on page 184
- “Notification List Update report” on page 186
- “Directory Entry Update report” on page 187
- “Policy Decision Making report” on page 188
- “Policy Environment Service Environment Create report” on page 191
- “Policy Environment Service Environment Delete report” on page 192
- “Policy Environment Service Environment Select and Validate report” on page 193
- “Policy Environment Service Worklist Maintenance Process report” on page 196
- “Policy Rule Template and Stream List report” on page 197
- “Policy Stream Delete report” on page 199
- “Policy Stream Import report” on page 200
- “Policy Template Delete report” on page 202
- “Policy Template Import report” on page 203
- “Policy Template Update report” on page 206
- “Rule Template Import report” on page 209
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:

```
//BSNJMO1 DD DSN=BSNJMO1.BSN(+1),
//    SPACE=(TRK,(50,50)),UNIT=3390,
//    VOL=SER=222222,
//    DCB=(LRECL=134,BLKSIZE=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.

```
//BSNJMO1 DD SYSOUT=A
```
**Notification List and Directory Entry List report**

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 notification list list 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 69. Example notification list list*

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 70. Example directory entry list*
Notification List Delete report

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:

********** POLICY TEMPLATE GET CLAUSE RAW DATA
********** POLICY TEMPLATE GET CLAUSE RAW DATA

2009-04-21 23:55:07 PDS
2009-04-21 23:55:07 PDS

********** POLICY TEMPLATE GET CLAUSE RAW DATA
********** POLICY TEMPLATE GET CLAUSE RAW DATA

G:LIST03
G:LIST05

2009-04-21 23:55:077@PDS
2009-04-21 23:55:077@PDS

G:LIST05
G:LIST03

********** POLICY TEMPLATE GET CLAUSE RAW DATA
********** POLICY TEMPLATE GET CLAUSE RAW DATA

Chapter 19. Journal reports  183
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:

```plaintext
2009-04-21 20:01:33 NLDS: BSN5211I LEVEL=00000000, RECON=MYRECON1
2009-04-21 20:01:33 NLDS: BSN5211I NOTIFICATION LIST IMPORT STARTED

@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; STMWS1.USER1; Primary DBA; NOWAIT;
USER2; 1; STMWS1.USER2; Secondary DBA; NOWAIT;
USER3; 1; STMWS1.USER3; Secondary DBA; NOWAIT; AGTMOD11
SHIOMIT; 2; STMWS1.SHIOMIT; Backup DBA; 3 11 13 KEY001 1;
DEST_01; 1; ; Other destinations; ;
@end

2009-04-21 20:01:33 NLDS: BSN5201I NLDS BSNLDP0 GET CONTROL WITH FUNCTION NLDSCHK RC=00000000, RSN=ENTRY
2009-04-21 20:01:33 NLDS: BSN5201I NLDS BSNLDP0 GET CONTROL WITH FUNCTION NLDSCHK RC=00000000, RSN=EXIT
2009-04-21 20:01:33 NLDS: BSN5201I NLDS BSNLDP0 GET CONTROL WITH FUNCTION NLDSIMP0 RC=00000000, RSN=EXIT

2009-04-21 20:01:33 NLDS: BSN5212I LEVEL=00000000, RECON=MYRECON1, NOTIFICATION LIST IMPORT ENDED
2009-04-21 20:01:33 NLDS: BSN5212I NOTIFICATION LIST IMPORT ENDED RC=00000000, RSN=00000000
```

**Figure 72. Example of notification list template**

The following example shows the directory entry template from a sample Notification List and Directory Entry Import report:
Figure 73. Example of directory entry template
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 BSNGLOBL LIST02 INCLUDES G:LIST01
```

**Figure 74. Example of notification lists nesting information**

```
---
BOUND NOTIFICATION DIRECTORY ENTRIES
---
DIR3 TSO
DIR1 TSO
DIR2 WTO
```

**Figure 75. Example of notification list expanded valid directory entries**

```
---
NOTIFICATION LIST ENTRY DESCRIPTION: LIST02 Description
---
DIR3 TSO
G:LIST01 NESTED NOTIFICATION LIST
DIR1 TSO
```

**Figure 76. 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 77. Example of directory entry definition
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
----- RULE STREAM READ FROM REPOSITORY
----- RULE EXP

RULE(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 %RESOURC
        )
    )
    EXCEPTION_LEVEL(CRITICAL)
    NTFYLIST_REF(G:LIST03)
    NTFYLIST_REF(G:LIST02)
    ONMISSING(*,SKIPVALUES)
)
```

**Figure 78. 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 EXP

RULE(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 %RESOURC
        )
    )
    EXCEPTION_LEVEL(CRITICAL)
    NTFYLIST_REF(G:LIST03)
    NTFYLIST_REF(G:LIST02)
    ONMISSING(*,SKIPVALUES)
)
```

**Figure 79. 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 80. 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.
Figure 81. 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:

```
09-04-19 19:39:169PES : BSN1501I PES_ENVIRONMENT CREATE PROCESS STARTED
09-04-19 19:39:169PES : BSN1501I PES_ENVIRONMENT CREATE PROCESS ENDED
```

```
Chapter 19. Journal reports 191
```
The Policy Environment Service Delete report shows you the environment level that was deleted and its policy domain.

The following example shows an example of deleting environment report:

Figure 83. 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:
POLICY ENVIRONMENT SELECTION PROCESS STARTED

2010-02-03 20:47:126PES : BSN111 FOR DOMAIN REGL, ORIGIN ENVIRONMENT LEVEL=00000002.
2010-02-03 20:47:126PES : BSN111 THE PES ENVIRONMENT SELECT PROCESS STARTED

2010-02-03 20:47:126PES : BSN1501I THE PES MODULE BSNPESQ0 RECEIVED CONTROL WITH FUNCTION PES_ENV: RC=00000000, RSN=ENTRY
2010-02-03 20:47:126PES : BSN1501I THE PES MODULE BSNPESQ0 RECEIVED CONTROL WITH FUNCTION PES_ENV: RC=00000000, RSN=EXIT
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLD0 RECEIVED CONTROL WITH FUNCTION NLDSMEN: RC=00000000, RSN=ENTRY
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLD0 RECEIVED CONTROL WITH FUNCTION NLDSMEN: RC=00000000, RSN=EXIT
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLO0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=ENTRY
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLO0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=EXIT

00000002 BSNGLBL LIST01

2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLO0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=ENTRY
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLO0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=EXIT
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLD0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=ENTRY
2010-02-03 20:47:126PES : BSN15101 THE NLDS MODULE BSNSMLD0 RECEIVED CONTROL WITH FUNCTION NLDSMML: RC=00000000, RSN=EXIT

POLICY ENVIRONMENT SELECTION PROCESS ENDED

2010-02-03 20:47:130PES : BSN15121 FOR DOMAIN REGL, OPERATION ENVIRONMENT=00000002, NON-DOMAIN OPERATION ENVIRONMENT LEVEL=00000005

Figure 84. Example of the policy environment select process.
2010-02-04 06:19:380@PES: BSN1511I FOR DOMAIN=REORG, ORIGIN ENVIRONMENT LEVEL=00000005,
2010-02-04 06:19:380@PES: BSN1511I THE PES ENVIRONMENT VALIDATE PROCESS STARTED

2010-02-04 06:19:380@PES: BSN1501I FOR DOMAIN=REORG, ORIGIN ENVIRONMENT LEVEL=00000005,
2010-02-04 06:19:380@PES: BSN1501I THE PES ENVIRONMENT VALIDATE PROCESS STARTED

2010-02-04 06:19:380@PES: BSN1511I THE PES ENVIRONMENT VALIDATE PROCESS STARTED

2010-02-04 06:19:380@PES: BSN1511I THE PES ENVIRONMENT VALIDATE PROCESS ENDDED

Figure 85. 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 following example:

```plaintext
********************************************************************************
**** IMPORTED WORKLIST OBJECTS
********************************************************************************

<table>
<thead>
<tr>
<th>LOCALE</th>
<th>TYPE</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>00001234</td>
<td>STRM</td>
<td>OBJECT004</td>
</tr>
<tr>
<td>00002222</td>
<td>RULE</td>
<td>OBJECT006</td>
</tr>
<tr>
<td>00003333</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
2009-04-27 19:43:38 @PES: BSN1511I PES ADD APARS SERVICE STARTED
```

Figure 86. Example of imported worklist objects in the sample Policy Environment Service Worklist Maintenance Process report

```plaintext
********************************************************************************
**** ADD APAR LIST
********************************************************************************

<table>
<thead>
<tr>
<th>APARID</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>APAR001</td>
<td>DESC111111111111111</td>
</tr>
<tr>
<td>APAR007</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>APAR008</td>
<td>MY DESCRIPTION</td>
</tr>
<tr>
<td>APAR009</td>
<td>DESC111111111111111</td>
</tr>
<tr>
<td>APAR006</td>
<td>DESCRIPTION</td>
</tr>
</tbody>
</table>

2009-04-27 19:43:38 @PES: BSN1512I PES ADD APARS SERVICE ENDED RC=00000000, RSN=00000000
2009-04-27 19:43:38 @PES: BSN1511I PES ADD PACKAGE SERVICE STARTED
ADDED PACKAGE - PACKAGE ID: PKG002 , DESCRIPTION: PACKAGE DESCRIPTION
2009-04-27 19:43:38 @PES: BSN1512I PES ADD PACKAGE SERVICE ENDED RC=00000000, RSN=00000000
2009-04-27 19:43:38 @PES: BSN1511I PES GET WORKLIST ITEM SERVICE STARTED
GETED WORKLIST ITEM - ITEM TYPE: RULE, USAGE: IMP, LOCALE: 00002222, ITEM NAME: OBJECT006
2009-04-27 19:43:38 @PES: BSN1512I PES GET WORKLIST ITEM SERVICE ENDED RC=00000000, RSN=00000000
2009-04-27 19:43:38 @PES: BSN1511I PES UPDATE WORKLIST ITEM SERVICE STARTED
UPDATED WORKLIST ITEM - ITEM TYPE: RULE, USAGE: IMP, LOCALE: 00002222, ITEM NAME: OBJECT006
INSTALLED STATUS UPDATED: Y
CUSTOMIZED STATUS UPDATED: I
COPYED STATUS UPDATED: N
2009-04-27 19:43:38 @PES: BSN1512I PES UPDATE WORKLIST ITEM SERVICE ENDED RC=00000000, RSN=00000000
```

Figure 87. 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.

```
****************************************************************************************
**** RULE TEMPLATE/STREAM LIST
****************************************************************************************
<table>
<thead>
<tr>
<th>RECONID</th>
<th>RULE NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000002</td>
<td>MYRECON1 CI_CA_SPLITS_HISAM</td>
<td>DLIDB - OUT OF SPACE CONDITION</td>
</tr>
<tr>
<td>00000002</td>
<td>IBM.AVG_DBREC_LEN.10</td>
<td>Simple rule on the average database record length</td>
</tr>
</tbody>
</table>
```

Figure 88. Example rule template list

The following example shows a rule stream list from a sample Policy Rule Template and Rule Stream List report.

```
****************************************************************************************
**** RULE TEMPLATE/STREAM LIST
****************************************************************************************
<table>
<thead>
<tr>
<th>RECONID</th>
<th>RULE NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000002</td>
<td>MYRECON1 CI_CA_SPLITS_HISAM/HIGH</td>
<td>DLIDB - OUT OF SPACE CONDITION</td>
</tr>
<tr>
<td>00000002</td>
<td>MYRECON1 CI_CA_SPLITS_HISAM/LOW</td>
<td>DLIDB - OUT OF SPACE CONDITION</td>
</tr>
<tr>
<td>00000002</td>
<td>IBM.AVG_DBREC_LEN.10/HIGH</td>
<td>Simple rule on the average database record length</td>
</tr>
<tr>
<td>00000002</td>
<td>IBM.AVG_DBREC_LEN.10/LOW</td>
<td>Simple rule on the average database record length</td>
</tr>
</tbody>
</table>
```

Figure 89. 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 23. 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 90. Example policy template list**

The following table describes the different fields in the policy template and stream list.

**Table 23. Policy Rule Template Import report field descriptions**

<table>
<thead>
<tr>
<th>DOMAIN NAME</th>
<th>LEVEL</th>
<th>RECONID</th>
<th>POLICY NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>IBM.DBDTYPE.HDAM</td>
<td>IBM basic policy for HDAM databases</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>IBM.DBDTYPE.HIDAM</td>
<td>IBM basic policy for HDAM databases</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>IBM.DBDTYPE.PHIDAM</td>
<td>IBM basic policy for PHIDAM partitions</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>SYS.DBDTYPE.HDAM</td>
<td>IBM basic policy for HDAM databases</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>SYS.DBDTYPE.HIDAM</td>
<td>IBM basic policy for HDAM databases</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>SYS.DBDTYPE.PHIDAM</td>
<td>IBM basic policy for PHIDAM partitions</td>
</tr>
<tr>
<td>REORG</td>
<td>00000002</td>
<td>MYRECON1</td>
<td>SYS.DBDTYPE.PHIDAM</td>
<td>IBM basic policy for PHIDAM partitions</td>
</tr>
</tbody>
</table>
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 01:12:469@PDS: BSN7011I POLICY STREAM DELETE PROCESS STARTED

2009-04-28 01:12:469@PDS: BSN7012I POLICY STREAM DELETE PROCESS ENDED

Figure 91. Example of Policy Stream Delete report
Policy Stream Import 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.DBTYPE.HDAM)
  ANNOTATION(IBM basic policy for HDAM databases)
  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
        )
      )
      EXCEPTION_LEVEL(CRITICAL)
      NTFYLIST_REF(G:LIST03)
      NTFYLIST_REF(G:LIST02)
      ONMISSING(*,SKIPFAIL)
    )
  )
)

Figure 92. 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 22:54:191@PDS: BSN7011I DOMAIN=REORG, LEVEL=000000011, RECON=BBBRECON, POLICY=DEFAULT_BASIC_POLICY
2009-04-27 22:54:191@PDS: BSN7011I POLICY TEMPLATE DELETE PROCESS STARTED

********************************************************************************
*** POLICY TEMPLATE DELETE PROCESS ENDED
********************************************************************************

2009-04-27 22:54:191@PDS: BSN7012I DOMAIN=REORG, LEVEL=000000011, RECON=BBBRECON, POLICY=DEFAULT_BASIC_POLICY
2009-04-27 22:54:191@PDS: BSN7012I POLICY TEMPLATE IMPORT PROCESS ENDED RC=00000000, RSN=00000000

Figure 93. 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.

Figure 94. 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 95. Example of a rule stream for the number of database records**

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 96. Example of a policy stream build
Policy Template Update report

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

<table>
<thead>
<tr>
<th>NOTIFICATION LIST NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST01</td>
</tr>
<tr>
<td>LIST02</td>
</tr>
</tbody>
</table>

***** POLICY TEMPLATE RESOURCE TYPE LIST CLAUSE

<table>
<thead>
<tr>
<th>RESOURCE TYPE LIST NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDAM</td>
</tr>
<tr>
<td>HIDAM</td>
</tr>
<tr>
<td>PHDAM</td>
</tr>
<tr>
<td>PHIDAM</td>
</tr>
<tr>
<td>HISAM</td>
</tr>
</tbody>
</table>

***** POLICY TEMPLATE ACTION DESCRIPTION CLAUSE

<table>
<thead>
<tr>
<th>ACTION NAME</th>
<th>EXCEPTION LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>REORG HD_DB_SPACE_UTILIZATION</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MESSAGE HD_DB_SPACE_UTILIZATION</td>
<td></td>
</tr>
<tr>
<td>REORG HISAM_CI_CA_SPLITS</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>MESSAGE HISAM_CI_CA_SPLITS</td>
<td></td>
</tr>
<tr>
<td>MESSAGE DLDB_OUT_OF_SPACE</td>
<td></td>
</tr>
<tr>
<td>MESSAGE RAP_OVERLOAD</td>
<td></td>
</tr>
</tbody>
</table>

***** POLICY TEMPLATE RULE LIST CLAUSE

<table>
<thead>
<tr>
<th>RULE LIST NAME</th>
<th>THRESHOLD</th>
<th>EXCEPTION</th>
<th>MISSING DATA</th>
<th>NOTIFICATION LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_CA_SPLITS_HISAM</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
<td>LIST01</td>
</tr>
<tr>
<td>CI_CA_SPLITS_HISAM</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
<td>LIST07</td>
</tr>
<tr>
<td>CI_CA_SPLITS_HISAM</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
<td>LIST03</td>
</tr>
</tbody>
</table>

Figure 97. Example clause list

The following table describes the different fields for each clause list.

Table 24. Clause list field descriptions

<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 24. 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:

```
********************************************************************************
<table>
<thead>
<tr>
<th>POLICY TEMPLATE UPDATE MAINTENANCE MESSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE POLICY TEMPLATE 'DEFAULT_BASIC_POLICY'</td>
</tr>
<tr>
<td>WILL BE UPDATED BY THIS MAINTENANCE.</td>
</tr>
<tr>
<td>* PLEASE BE CAUTIOUS IF YOU HAVE UPDATED THE TEMPLATE *</td>
</tr>
</tbody>
</table>

Figure 98. Example maintenance message
```

Following example shows the updated policy template saved in the repository:
Figure 99. 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.
RULE STREAM WRITE TO THE REPOSITORY

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 101. Example rule stream from the Rule Template Import report
Part 5. Reference: Domain REORG

The topics in this section provide you with supplemental technical references for the Policy Services REORG domain.

Topics:
- Chapter 20, “Domain REORG rules,” on page 215
- Chapter 21, “Domain REORG policies,” on page 359
- Chapter 22, “Domain REORG exceptions,” on page 403
Chapter 20. 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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

Exception class

AVERAGE_DB_RECORD_LENGTH

Rule condition expression

\[
\text{OR}
\left(
\text{IF} \left(DB\_AVG\_DBREC\_LENGTH, \geq, 1, 1\right)
\right)
\]
**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 25. 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 = 85899345920</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85899345920</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 85899345920</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 support by this rule.

- HISAM
- SHISAM

**Exception class**

EXCESSIVE_CI_OR_CA_SPLITS

**Rule condition expression**

\[
\text{OR(}
  \text{IF(DB_PCT_NUM_CI_SPLIT.1, GE, 1)}
  \text{IF(DB_PCT_NUM_CA_SPLIT.1, GE, 2)}
)\
\]
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 26. 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>
Rule: IBM.DBDS_EXTENTS.10

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 support by this rule.

• HDAM
• HIDAM
• PHDAM
• PHIDAM
• HISAM
• SHISAM

Exception class

DATA_SET_EXTENTS_AVAILABILITY

Rule condition expression

OR(
  AOR(
    AAND(
      IF(DB_FLAG_SMS,IS,N)
      IF(DB_AVAIL_EXT_LESS_100,IS,Y)
      IF(DB_NUM_AVAIL_EXT,LE,&1
    )
  )
)
AAND(
    IF(DB_FLAG_SMS,IS,Y)
    IF(DB_NUM_UNUSED_VOL_CAND,LE,
        &2
    )
    IF(DB_AVAIL_EXT_LESS_100,IS,Y)
    IF(DB_NUM_AVAIL_EXT,LE,
        &3
    )
)
)
)

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

- DB_NUM_AVAIL_EXT &1
- DB_NUM_UNUSED_VOL_CAND &2
- DB_NUM_AVAIL_EXT &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_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 27. 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>LOW</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>MED</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>HIGH</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 support by this rule.
• HDAM
• HIDAM
• PHDAM
• PHIDAM
• HISAM
• SHISAM

Exception class

DATA_SET_SIZE_GROWTH
Rule condition expression

OR(
  AOR(
    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 rules IBM.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

- `DB_NUM_DBDS_BLOCKS` &1
- `DB_PCT_OF_MAX_DS_SIZE` &2
- `DB_RBA_HIGH_ALLOC` &3
- `DB_RBA_HIGH_USED` &4

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>
<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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

**Exception class**

GROWING_DBDS_WITH_FREE_SPACES

**Rule condition expression**

\[
\text{OR}(
\text{AAND(}
\text{IF(DB\_PCT\_OF\_MAX\_DS\_SIZE,GE,1)}
\text{)}
\text{IF(DB\_PCT\_BYTES\_FREE\_SPACE,GE,1)}
\text{)}
\]

Chapter 20. Domain REORG rules 227
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_PCTBYTES_FREE_SPACE):

\[
\begin{align*}
\text{DB_PCT_OF_MAX_DS_SIZE: } & \&1 \\
\text{DB_PCTBYTES_FREE_SPACE: } & \&2
\end{align*}
\]

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

\[
\begin{align*}
\text{DB_PCT_OF_MAX_DS_SIZE: } & \&1 \\
\text{DB_PCTBYTES_FREE_SPACE: } & \&2
\end{align*}
\]

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_OF_MAX_DS_SIZE for the data set.
- The variable \&2 specifies a threshold for the data element value of DB_PCTBYTES_FREE_SPACE for the data set.

Rule threshold sets

Table 29. 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</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 20</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90</td>
</tr>
<tr>
<td></td>
<td>&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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM
- HISAM
- SHISAM

**Exception class**

GROWING_DBDS_WITH_DATA_FULL

**Rule condition expression**

\[
\text{OR} \left( \text{AAND} \left( \begin{array}{l} \text{IF} \left( \frac{\text{DB\_PCT\_OF\_MAX\_DS\_SIZE}}{1}, \text{GE}, \&1 \right) \right. \\
\left. \text{IF} \left( \frac{\text{DB\_PCT\_BYTES\_SEG}}{2}, \text{GE}, \&2 \right) \end{array} \right) \right)
\]
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 30. 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&lt;br&gt;&amp;2 = 90&lt;br&gt;&amp;3 = 10</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 85&lt;br&gt;&amp;2 = 90&lt;br&gt;&amp;3 = 10</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 90&lt;br&gt;&amp;2 = 90&lt;br&gt;&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{cases}
\text{IF(DB_AVG_DBREC_IO,GT,} \\ &1 \\
\end{cases}
\end{array}
\)\]

**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 31. Rule threshold sets for IBM.DEDB_DBREC_IO.10

<table>
<thead>
<tr>
<th>Threshold Set Name</th>
<th>Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 1.5</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 2.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 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**

\[
\text{OR(}
\text{IF(DB_MAX_DBREC_IO,GT,}
&1
\text{)}
\text{)}
\]

**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 32. 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 33. 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_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**

\[
\text{OR}(\text{IF(DB\_PCT\_BYTES\_FS\_RAA,LT,} \\
&1 \\
))
\]

**Rule condition description**

Specify a threshold on the percentage of free space in the RAA BASE section of a DEDB area.

\[\text{DB\_PCT\_BYTES\_FS\_RAA:} \ &1\]

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 34. Rule threshold sets for IBM.DEDB.DEDB_FS.10

<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**

```
OR(
    IF(DB_PCT_BYTES_FS_DOVF,LT,&1

)
)
```

**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 35. 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

OR(
   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.

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>
<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**

\[
\text{OR} \left( \begin{array}
\text{IF} ( \text{DB\_PCT\_BYTES\_FS\_IOVF}, \text{LT}, \&1 )
\end{array} \right)
\]
**Rule condition description**

Specify a threshold on the percentage of free space in the IOVF portion of a DEDB area.

\[ DB\_PCT\_BYTES\_FS\_IOVF: \&1 \]

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**

\[ DB\_PCT\_BYTES\_FS\_IOVF \&1 \]

**Rule threshold sets**

*Table 37. 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_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**

\[
\text{AND}
(JF(DB\_PCT\_BYTES\_FS\_RAA, GT, \&1)
\text{IF(DB\_PCT\_BYTES\_FS\_DOVF, LT, \&2))}
\]

**Rule condition description**

Specify thresholds on the percentage of free spaces in the RAA BASE section (DB\_PCT\_BYTES\_FS\_RAA) and in the 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(DEDB_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
- DB_PCT_BYTES FS DOVF

**Rule threshold sets**

*Table 38. 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

\[
\text{AND}(
\text{IF(DB\_PCT\_BYTES\_FS\_RAA, GT, 1)} \\
\text{IF(DB\_PCT\_BYTES\_FS\_IOVF, LT, 2)} \\
) \]

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.
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
- DB_PCT_BYTES_FS_IOVF

**Rule threshold sets**

*Table 39. 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_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

\[
\text{AND(}
\quad \text{IF(DB\_PCT\_BYTES\_FS\_DOVF,GT,}
\quad \quad \&1
\quad \}
\quad \text{IF(DB\_PCT\_BYTES\_FS\_IOVF,LT,}
\quad \quad \&2
\quad )
\quad )
\]

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**

- `DB_PCT_BYTES_FS_DOVF`
- `DB_PCT_BYTES_FS_IOVF`

**Rule threshold sets**

*Table 40. Rule threshold sets for IBM.DEDB_DEDB_FS.60*

<table>
<thead>
<tr>
<th>Threshold Set Name</th>
<th>Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>™1 = 30, ™2 = 50</td>
</tr>
<tr>
<td>MED</td>
<td>™1 = 30, ™2 = 30</td>
</tr>
<tr>
<td>HIGH</td>
<td>™1 = 30, ™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**

\[
\text{AND}(\text{IF}(DB\_PCT\_BYTES\_FS\_RAA,\text{GT}, \&1) \text{OR}(\text{IF}(DB\_PCT\_BYTES\_FS\_DOVF,\text{LT}, \&2) \text{IF}(DB\_PCT\_BYTES\_FS\_IOVF,\text{LT}, \&3)\text{)}))\]


**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 41. 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**

\[
\text{OR(}
\quad \text{IF(DB\_PCT\_BYTES\_FS\_SDEP,LT,}
\quad &1
\quad )}
\]

**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 42. 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

DEDDB

Exception class

DEDDB_SDEP_NEEDS_TO_BE_EXTENDED

Rule condition expression

\[ \text{OR(}
\quad \text{IF(DB\_PCT\_BYTES\_FS\_SDEP, LT, }
\quad & 1)
\quad \text{)} \]
Rule condition description

Specify a threshold on the percentage of free space in the sequential dependent segment (SDEP) portion of a DEDB area.

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

DB_PCT_BYTES_FS_SDEP &1

Rule threshold sets

Table 43. Rule threshold sets for IBM.DEDB_RFS.81

<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

\[
\text{OR(}
\quad \text{IF(DB\_PCT\_NUM\_UOW\_USE\_DOVF,GT,  \\
\quad &1 }
\quad )
\quad )
\]

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.

\text{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 44. 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**

\[
\text{OR(}
\begin{align*}
\text{IF(} & \text{DB.PCT.NUM.UOW USE IOVF, GT,}
\end{align*}
\]

\&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.

\[
\text{DB.PCT.NUM.UOW USE IOVF: } \&1
\]

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 45. 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 46. 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**

\[
\text{OR}(
\quad \text{IF(DB\_AVG\_NUM\_IOVFCI\_BY\_UOW,GT,} \& 1 \\
\quad \quad)
\quad)
\]

**Rule condition description**

Specify a threshold on the average number of IOVF CIs used by a UOW in a DEDB area.

\[
\text{DB\_AVG\_NUM\_IOVFCI\_BY\_UOW:} \& 1
\]

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_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 47. Rule threshold sets for IBM.DEDB_OVERFLOW.40*

<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_IOVF_CI_BY_UOW,GT,&1
   &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_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_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_IOVFCI_BY_UOW &1

**Rule threshold sets**

*Table 48. Rule threshold sets for IBM.DEDB_OVERFLOW.50*

<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.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

\[
\text{OR}
\begin{align*}
\text{IF}(\text{DB.MIN_NUM_IOVF_CI_BY_UOW}, &> \&1 \\
\end{align*}
\]

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**
- EXCEPTIONCLASS(DEDB_EXCESS_MIN_IOVF_CI_PER_UOW)
- EXCEPTIONLEVEL(WARNING)
- EXCEPTIONMESSAGE

**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 &1 |

**Rule threshold sets**

*Table 49. 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;1 = 1.0</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 2.0</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 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

\[
\text{OR(}
\quad \text{IF(DB\_PCT\_NUM\_IOVFCI\_USED, GT,}
\quad \quad \&1
\quad \quad )}
\]

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(DEDDB_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 50. 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>
IBM.DEBB_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.DEBB_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

\[
\text{OR(}
\text{IF(DB\_PCT\_NUM\_RAPCI\_OVFL, GT, &1)}
\text{)}
\]

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.

\[
\text{DB\_PCT\_NUM\_RAPCI\_OVFL: } &1
\]

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 51. 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

\[ \text{OR}(\text{IF(DB\_PCT\_NUM\_DBREC\_IOVF,GT,} \&1)) \]

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 52. 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

\(\text{OR}\)

\(\text{IF} \{\text{DB_NUM_UOW}_RFS\_COND, \text{GT}, \) & 1 \}

)
**Rule condition description**

Specify a threshold on the number of UOWs that match the RBASEFS or the RDOVFFS condition.

\[ \text{DB_NUM_UOW_RFS_COND: } &1 \]

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**

\[ \text{DB_NUM_UOW_RFS_COND } &1 \]

**Rule threshold sets**

*Table 53. Rule threshold sets for IBM.DEDB_RFS.10*

| Threshold Set Name | Threshold Values |  |
|--------------------|------------------|
| LOW                | \&1 = 32766      |
| MED                | \&1 = 32766      |
| HIGH               | \&1 = 32766      |
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

```
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 54. 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

\( \text{OR} \left( \text{IF(DB_PCT_NUM_UOW_RFS_COND, GT, &1) } \right) \)
Rule condition description

Specify a threshold on the percentage of UOWs that match the RBASEFS or the RDOVFFS condition.

\texttt{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

- \texttt{EXCEPTION\_CLASS(DEDB\_EXCESS\_PCT\_UOWS\_MATCH\_COND)}
- \texttt{EXCEPTION\_LEVEL(WARNING)}
- \texttt{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

\texttt{DB\_PCT\_NUM\_UOW\_RFS\_COND} \&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 = 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**

```c
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.

\[
\text{DB\_PCT\_NUM\_UOW\_RFS\_COND: } &1
\]

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

\[
\text{DB\_PCT\_NUM\_UOW\_RFS\_COND: } &1
\]

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 = 5</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 10</td>
</tr>
</tbody>
</table>

Chapter 20. Domain REORG rules 283
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

OR(

IF(DB_AVG_ROOT_IO,GT,

&1

)

)

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.

DB_AVG_ROOT_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 57. Rule threshold sets for IBM.DEDB_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**

\[ \text{OR(} \text{IF(DB\_MAX\_ROOT\_IO,GT,} \&1 \text{)} \) \]

**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(DEDDB_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 58. 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

OR(
    IF(DB_NUM_SEG, GE, &1

)

)

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 59. 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**

\[
\text{OR(}
\quad \text{IF(} \text{DB\_AVG\_LEN\_SYNONYM\_CHAIN}, \text{GT},
\quad &1
\quad )
\quad )
\]

**Rule condition description**

Specify a threshold on the average length of RAP synonym chains in a DEDB area.

\text{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>
<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 61. 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

\[
\text{OR(}
  \text{AOR(}
    \text{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.

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

DB_PCT_NUM_FRAGD_FSE &1

Rule threshold sets

Table 62. Rule threshold sets for IBM.FFDB_FRAGDFSE.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.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

\[
\text{OR}(\text{AOR}(\text{IF(DB\_PCT\_NUM\_NOREUSE\_FSE, GT, \&1})
\])
\]
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>
<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>

Table 63. Rule threshold sets for IBM.FFDB_NREUSFSE.10
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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

Exception class

FRAGMENTED_FREE_SPACES

Rule condition expression

```python
OR(
    AOR(
        IF(DB_AVG_NUM_FSE, GE, &1
        )
        IF(DB_AVG_NUM_NOREUSE_FSE, GE, &2
        )
        IF(DB_NUM_FSE, GE, &3
```
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:
   \( \text{DB\_AVG\_NUM\_FSE} = \&1 \)

2. Average number of non-reusable FSEs per database data set block:
   \( \text{DB\_AVG\_NUM\_NOREUSE\_FSE} = \&2 \)

3. Total number of FSEs in a database data set:
   \( \text{DB\_NUM\_FSE} = \&3 \)

4. Total number of FSEs that can hold the defined smallest segment in the data set:
   \( \text{DB\_NUM\_FSE\_MIN} = \&4 \)

5. Total number of FSEs that can hold the defined largest segment in the data set:
   \( \text{DB\_NUM\_FSE\_MAX} = \&5 \)

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

- \( \text{EXCEPTION\_CLASS(FRAGMENTED\_FREE\_SPACES)} \)
- \( \text{EXCEPTION\_LEVEL(WARNING)} \)
- \( \text{EXCEPTION\_MESSAGE} \)

Rule message template

The fragmentation of free space in %RESOURCE% has increased

Data elements being evaluated for this rule

- \( \text{DB\_AVG\_NUM\_FSE} = \&1 \)
- \( \text{DB\_AVG\_NUM\_NOREUSE\_FSE} = \&2 \)
- \( \text{DB\_NUM\_FSE} = \&3 \)
- \( \text{DB\_NUM\_FSE\_MIN} = \&4 \)
- \( \text{DB\_NUM\_FSE\_MAX} = \&5 \)

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 \( \text{DB\_AVG\_NUM\_FSE} \) for the data set.
- The variable \&2 specifies a threshold for the data element value of \( \text{DB\_AVG\_NUM\_NOREUSE\_FSE} \) 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 64. 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

- DB_BYTES_SEG &1
- DB_PCT_BYTES_SEG &2
- DB_BYTES_FREE_SPACE &3
- DB_PCT_BYTES_FREE_SPACE &4
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 65. 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.
Rule: IBM.HDAM_OVERFLOW.10

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 support by this rule.

• HDAM
• PHDAM

Exception class

EXCESSIVE_HDAM_OVERFLOW

Rule condition expression

OR(
  IF(DB_PCT_BYTES_OVFL,GE, &1
  &1
)
)

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 66. Rule threshold sets for IBM.HDAM_OVERFLOW.10*

<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>
Rule: IBM.HDAM_SYN_LEN.10

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**

\[
\text{OR(}
\text{IF(DB\_AVG\_LEN\_SYNONYM\_CHAIN,G\_T,}
\ &1
\text{)}
\text{)}
\]

**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 67. 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 support by this rule.

• HISAM

Exception class

EXCESSIVE_HISAM_DELETE_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**

```plaintext
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 68. 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 support 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 69. 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 support 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 70. 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 support by this rule:
• INDEX
• PSINDEX

Exception class

INDEX_EXTENTS_AVAILABILITY

Rule condition expression

OR(
  AOR(
    AAND(
      IF(DBX_FLAG_SMS,IS,N)
      IF(DBX_AVAIL_EXT_LESS_100,IS,Y)
      IF(DBX_NUM_AVAIL_EXT,LE,&1)
    )
  )
  AAND(
    IF(DBX_FLAG_SMS,IS,Y)
    IF(DBX_NUM_UNUSED_VOL_CAND,LE,&2)
  )
)
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 71. 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>
### Table 71. 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.1

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**

```plaintext
OR(
    AND(
        IF(DBX_FLAG_SMS,IS,N)
        IF(DBX_AVAIL_EXT_LESS_100,IS,Y)
        IF(DBX_NUM_AVAIL_EXT,LE,&1)
    )
) AND(
    IF(DBX_FLAG_SMS,IS,Y)
    IF(DBX_NUM_UNUSED_VOL_CAND,LE,&2)
) IF(DBX_AVAIL_EXT_LESS_100,IS,Y)
IF(DBX_NUM_AVAIL_EXT,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>
<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 support 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,}
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
   DBX_NUM_DBDS_BLOCKS : &1
2. Percentage of maximum data set size
   DBX_PCT_OF_MAX_DS_SIZE: &2
3. High-Allocated-RBA (in decimal expression)
   DBX_RBA_HIGH_ALLOC : &3
4. High-Used-RBA (in decimal expression)
   DBX_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 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

DBX_NUM_DBDS_BLOCKS &1
DBX_PCT_OF_MAX_DS_SIZE &2
DBX_RBA_HIGH_ALLOC &3
DBX_RBA_HIGH_USED &4

Rule threshold sets

Table 73. Rule threshold sets for IBM.IX_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 = 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 73. 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, &amp;2 = 90, &amp;3 = 6442450944, &amp;4 = 6442450944</td>
</tr>
</tbody>
</table>
Rule: IBM.IX_GROWTH.11

IBM.IX_GROWTH.11 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(
    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  )
)

**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**

\[ \text{DBX\_NUM\_DBDS\_BLOCKS} \quad \&1 \]
\[ \text{DBX\_PCT\_OF\_MAX\_DS\_SIZE} \quad \&2 \]
\[ \text{DBX\_RBA\_HIGH\_ALLOC} \quad \&3 \]
\[ \text{DBX\_RBA\_HIGH\_USED} \quad \&4 \]

**Rule threshold sets**

*Table 74. Rule threshold sets for IBM.IX\_GROWTH.11*

<table>
<thead>
<tr>
<th>Threshold Set Name</th>
<th>Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>&amp;1 = 16777216, &amp;2 = 60, &amp;3 = 6442450944, &amp;4 = 6442450944</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 16777216, &amp;2 = 80, &amp;3 = 6442450944, &amp;4 = 6442450944</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 16777216, &amp;2 = 90, &amp;3 = 6442450944, &amp;4 = 6442450944</td>
</tr>
</tbody>
</table>
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 support 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 ruleIBM.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 75. Rule threshold sets for IBM.IX_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 = 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

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 the primary index data set.

\[
\begin{align*}
\text{DBX_PCT_OF_MAX_DS_SIZE} & : & 1 \\
\text{DBX_PCT_UNUSED_BYTES} & : & 2 \\
\end{align*}
\]

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**

\[
\begin{align*}
\text{DBX_PCT_OF_MAX_DS_SIZE} & : 1 \\
\text{DBX_PCT_UNUSED_BYTES} & : 2 \\
\end{align*}
\]

**Rule threshold sets**

*Table 76. 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 support by this rule:

- INDEX
- PSINDEX

Exception class

EXCESSIVE_INDEX_CI_OR_CA_SPLITS

Rule condition expression

\[
\text{OR(}
\text{IF(DBX\_PCT\_NUM\_CI\_SPLIT.1,GE,}
\&1
\text{)}
\text{IF(DBX\_PCT\_NUM\_CA\_SPLIT.1,GE,}
\&2
\text{)}
\text{)}
\]
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 rule IBM.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 77. 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**

```plaintext
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 78. Rule threshold sets for IBM.IX_CICA_SPLIT.11*

<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

\[
\text{OR(}
\quad \text{IF(DB DAYS SINCE LAST REORG, GT &1 }
\quad \text{)}
\text{)}
\]
**Rule condition description**

Specify a threshold on the number of days that have passed since the last reorganization.

\[DB\_DAYS\_SINCE\_LAST\_REORG: \&1\]

An exception is issued if the threshold is exceeded.

**Rule exception expression**

- \text{EXCEPTION\_CLASS(DAYS\_PASSED\_SINCE\_LAST\_REORG)}
- \text{EXCEPTION\_LEVEL(WARNING)}
- \text{EXCEPTION\_MESSAGE}

**Rule message template**

No reorganization has been performed on \%RESOURCE\% for a while.

**Data elements being evaluated for this rule**

\[DB\_DAYS\_SINCE\_LAST\_REORG \&1\]

**Rule threshold sets**

*Table 79. Rule threshold sets for IBM.LAST_REORG.10*

<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 support by this rule.

• HDAM
• HIDAM
• PHDAM
• PHIDAM
• HISAM
• SHISAM

Exception class

NUMBER_OF_DB_RECORDS

Rule condition expression

\[
\text{OR(}
\quad \text{IF(DB\_NUM\_ROOT,GE,}
\quad \quad 1)
\text{)}
\]
Rule condition description

Specify a threshold on the total number of root segment occurrences in the database or the partition:

DB_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

• EXCEPTION_CLASS(NUMBER_OF_DB_RECORDS)
• EXCEPTION_LEVEL(WARNING)
• 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_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

Table 80. 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 support by this rule.

• HDAM
• PHDAM

Exception class

DATA_VOLUME_IN_HDAM_RAA

Rule condition expression

OR(
  IF(DB_BYTES_SEG_RAA,GE,
    &1
  )
)

IBM T

IBM Tools Base: Policy Services User’s Guide and Reference
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 81. 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

IMBALANCEDRANDOMIZING

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):

DB_PCT_NUM_UNUSED_RAP: &1
DB_PCT_NUM_SYNONYM: &2

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

DB_PCT_NUM_UNUSED_RAP: &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_PCT_NUM_UNUSED_RAP.
- The variable &2 specifies a threshold for the data element value of DB_PCT_NUM_SYNONYM.

Rule threshold sets

Table 82. 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 support by this rule.

- HDAM
- PHDAM

Exception class

EXCESSIVE_RAP_SYNONYMS

Rule condition expression

\[
\text{OR(}
\begin{align*}
&\text{IF(DB\_NUM\_SYNONYM,GE,} \\
&\quad &\&1 \\
&\text{)} \\
&\text{IF(DB\_PCT\_NUM\_SYNONYM,GE,} \\
&\quad &\&2 \\
&\text{)}
\end{align*}
\]

IBM Tools Base: Policy Services User's Guide and Reference
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 83. 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 support by this rule.
• HDAM
• PHDAM

Exception class

EXCESSIVE_HDAM_ROOTS_OVERFLOW

Rule condition expression

OR(
    IF(DB_NUM_ROOT_OVFL,GE,
        &1
    )
    IF(DB_PCT_NUM_ROOT_OVFL,GE,
        &2
    )
)
**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 84. 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>LOW</td>
<td>&amp;1 = 1073741824</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 40</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 1073741824</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 50</td>
</tr>
<tr>
<td>HIGH</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 support 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 85. 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

OR(
    AOR(
        IF(DB_NUM_SEG, GE, &1)
    )
)

Rule condition description

Specify a threshold on the total number of segment occurrences in a database data set:

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

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 86. Rule threshold sets for IBM.SEGM_COUNT.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 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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

Exception class

EXCESSIVE_SEGMENT_SCATTERING

Rule condition expression

```
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</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 2147483648</td>
</tr>
<tr>
<td>MED</td>
<td>&amp;1 = 30</td>
</tr>
<tr>
<td></td>
<td>&amp;2 = 2147483648</td>
</tr>
<tr>
<td>HIGH</td>
<td>&amp;1 = 40</td>
</tr>
<tr>
<td></td>
<td>&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**

\[
\text{OR(}
\text{AOR(}
\text{IF(DB_AVG_NUM_UNIDENTIFIED,GE,} \\
&1)
\text{IF(DB_NUM_UNIDENTIFIED,GE,} \\
&2)
\text{IF(DB_BYTES_UNIDENTIFIED,GE,}
\text{350})}
\text{)}
\text{)}
\text{)}
\]
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 88. 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 support by this rule.

• HDAM
• PHDAM

Exception class

EXCESSIVE_UNUSED_RAPS

Rule condition expression

OR(
  IF(DB_NUM_UNUSED_RAP,GE,
    &1
  )
)
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):

\[
\begin{align*}
\text{DB_NUM_UNUSED_RAP} & : \&1 \\
\text{DB_PCT_NUM_UNUSED_RAP} & : \&2
\end{align*}
\]

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

\[
\begin{align*}
\text{DB_NUM_UNUSED_RAP} & : \&1 \\
\text{DB_PCT_NUM_UNUSED_RAP} & : \&2
\end{align*}
\]

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_NUM_UNUSED_RAP.
- The variable \&2 specifies a threshold for the data element value of DB_PCT_NUM_UNUSED_RAP.

Rule threshold sets

Table 89. Rule threshold sets for IBMUNUSED_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 support by this rule.

- HDAM
- HIDAM
- PHDAM
- PHIDAM

Exception class

EXCESSIVE_VL_SPLIT_SEGMENTS

Rule condition expression

\[
\text{OR} \left( \text{AOR} \left( \text{IF} \left( \text{DB\_PCT\_NUM\_VLSEG\_SPLIT}, \geq, 1 \right) \right) \right.
\]

\[
\left. \text{IF} \left( \text{DB\_NUM\_VLSEG\_SPLIT}, \geq, 2 \right) \right)
\]

\]
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 90. 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 21. 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.
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 22, “Domain REORG exceptions,” on page 403.

**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 support 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 91. 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>
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</table>
Table 91. 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>
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<td>WARNING</td>
<td>SKIPEVAL</td>
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<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 92. REORG action description for exceptions detected by IBM.DBDTYPE.FFDB*

<table>
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<tr>
<th>Action</th>
<th>Exception Class</th>
<th>Severity</th>
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<tr>
<td>REORG</td>
<td>FRAGMENTED_FREE_SPACES</td>
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</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>
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<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 22, “Domain REORG exceptions,” on page 403.

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 support 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 93. 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>
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<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
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<td>IBM.DBDS_EXTENTS.10</td>
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<td>EVALUATE</td>
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<td>Severity Level</td>
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<td>LOW</td>
<td>WARNING</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.HDAM_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPPEVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPPEVAL</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.
Policy: IBM.DBDTYPE.FFDBALL

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>
<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 22, “Domain REORG exceptions,” on page 403.

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 support 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>
<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>
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<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>
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<tr>
<td>IBM.SEGM_SPREAD.10</td>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
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<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>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>
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<td>CRITICAL</td>
<td>SKIP/EVAL</td>
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<td>IBM.HDAM_OVERFLOW.10</td>
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<td>CRITICAL</td>
<td>SKIP/EVAL</td>
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<td>IBM.ROOT_OVERFLOW.10</td>
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<td>SKIP/EVAL</td>
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<td>IBM.IX_OVERFLOW.10</td>
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<td>SKIP/EVAL</td>
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<tr>
<td>IBM.IX_EXTENTS.10</td>
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<td>CRITICAL</td>
<td>EVALUATE</td>
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<td>IBM.IX_GROWTH.10</td>
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<td>SKIP/EVAL</td>
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<td>SKIP/EVAL</td>
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<td>IBM.IX_CICA_SPLIT.10</td>
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<td>CRITICAL</td>
<td>SKIP/EVAL</td>
</tr>
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<td>EVALUATE</td>
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<td>CRITICAL</td>
<td>SKIP/EVAL</td>
</tr>
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<td>SKIP/EVAL</td>
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<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
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<td>CRITICAL</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
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<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<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>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.SLACK_BYTES.10</td>
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<td>SKIP/EVAL</td>
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<td>SKIP/EVAL</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.ROOTS_NOTHOME.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
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<td>IBM.HDAM_OVERFLOW.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.ROOT_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.CICA_SPLITS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.HISAM_SEG_DEL.10</td>
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<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
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<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.IX_OVERFLOW.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</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>SKIP/EVAL</td>
</tr>
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<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIP/EVAL</td>
</tr>
</tbody>
</table>
Table 95. 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>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.IX_GROWTH.21</td>
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<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>
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<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.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>
<tr>
<td>IBM.IX_NUM_SEGM.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>
<tr>
<td>IBM.IX_EXTENTS.11</td>
<td>LOW</td>
<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>
<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.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 22, “Domain REORG exceptions,” on page 403.
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 support 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>
<thead>
<tr>
<th>Rule</th>
<th>Threshold Set</th>
<th>Severity Level</th>
<th>If comparison data is missing:</th>
</tr>
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<tr>
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<td>CRITICAL</td>
<td>SKIPEVAL</td>
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<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>CRITICAL</td>
<td>EVALUATE</td>
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<td>CRITICAL</td>
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<td>SKIPEVAL</td>
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<tr>
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<td>SKIPEVAL</td>
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<td>IBM.ROOTS_NOTHOME.10</td>
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<td>IBM.HDAM_OVERFLOW.10</td>
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<td>IBM.ROOT_OVERFLOW.10</td>
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<td>SKIPEVAL</td>
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</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>
</tbody>
</table>
Table 97. Rule list for IBM.DBDTYPE.HDAM (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.VL_SEGM_SPLIT.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.SLACKBYTES.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>
<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>SKIPEVAL</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.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>
</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.HDDB

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 22, “Domain REORG exceptions,” on page 403.
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.

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>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.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>
<td>SEVERE</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
<td>MED</td>
<td>SEVERE</td>
<td>EVALUATE</td>
</tr>
</tbody>
</table>
Table 99. 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>
<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.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>
<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.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.
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 22, “Domain REORG exceptions,” on page 403.
**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 support 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 101. Rule list for IBM.DBDTYP 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 102. 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 22, “Domain REORG exceptions,” on page 403.
Resource types supported

The following resource types are support 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 103. Rule list for IBM.DBDTYPE.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>
Table 103. Rule list for IBM.DBDTYPE.HISAM (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.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.
Policy: IBM.DBDTYPE.INDEX

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 22, “Domain REORG exceptions,” on page 403.
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 support by this policy:
- INDEX

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_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>
</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_SEGM.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_SEGM.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.
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 22, “Domain REORG exceptions,” on page 403.
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 107. 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>VL_SEGM_SPLIT.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SLACK_BYTES.10</td>
<td>HIGH</td>
<td>CRITICAL</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>SEGM_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 107. 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_LEN.10</td>
<td>LOW</td>
<td>WARNING</td>
<td>SKIPEVAL</td>
</tr>
<tr>
<td>DBDS_EXENTS.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.
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 22, “Domain REORG exceptions,” on page 403.
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 109. 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 110. REORG action description for exceptions detected by IBM.DBDTYPE.PHIDAM.A*

<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 22, “Domain REORG exceptions,” on page 403.

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>
<thead>
<tr>
<th>Table 111. Rule list for IBM.DBDTYPE.PHIDAM.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
</tr>
<tr>
<td>IBM.DBDS_EXTENTS.10</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.20</td>
</tr>
<tr>
<td>IBM.DBDS_GROWTH.30</td>
</tr>
<tr>
<td>IBM.FRAGMENTATION.10</td>
</tr>
<tr>
<td>IBM.VL_SEGM_SPLIT.10</td>
</tr>
<tr>
<td>IBM.SLACKBYTES.10</td>
</tr>
<tr>
<td>IBM.SEGM_SPREAD.10</td>
</tr>
<tr>
<td>IBM.IX_NUM_SEGM.10</td>
</tr>
<tr>
<td>IBM.IX_EXTENTS.11</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.11</td>
</tr>
<tr>
<td>IBM.IX_GROWTH.21</td>
</tr>
<tr>
<td>IBM.IX_CICA_SPLIT.11</td>
</tr>
<tr>
<td>IBM.NUM_DBRECORDS.10</td>
</tr>
<tr>
<td>IBM.AVG_DBREC_LEN.10</td>
</tr>
</tbody>
</table>
### Table 111. 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_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_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.
Policy: IBM.DBDTYPE.PSINDEX

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 22, “Domain REORG exceptions,” on page 403.

**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 113. Rule list for IBM.DBDTYPE.PSINDEX*

<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>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_SEGM.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_SEGM.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 22, “Domain REORG exceptions,” on page 403.
Resource types supported

The following resource types are support 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 115. 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 22. Domain REORG exceptions

The domain REORG exceptions define the response to any database state that crosses the defined threshold boundaries.

Table 116. 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>
</tbody>
</table>
### Table 116. Exceptions for the REORG policy domain (continued)

<table>
<thead>
<tr>
<th>Exception class</th>
<th>Exception description</th>
<th>Originating rule</th>
</tr>
</thead>
<tbody>
<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></td>
<td></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 Important: This rule is not applicable to non-partitioned or PHIDAM primary indexes.</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.SEMG.COUNT.10 **DEDB areas:**IBM.DEDB_SEGM_CNT.10</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>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>IBM.NUM_DBRECORDS.10</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>DEDB_FS.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAYS_PASSED_SINCE_LAST_REORG</td>
<td>Excessive number of days have passed since the last</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>IBM.FFDB_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 6. Reference: Domain RECOVERY

The topics in this section provide you with supplemental technical references for the Policy Services RECOVERY domain.

Topics:
- Chapter 23, “Domain RECOVERY rules,” on page 409
- Chapter 24, “Domain RECOVERY policies,” on page 427
- Chapter 25, “Domain RECOVERY exceptions,” on page 435
- Chapter 26, “Domain RECOVERY actions,” on page 437
Chapter 23. 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

\[
\text{OR(}
\quad \text{IF(DB_DBRC_BACKOUT_NEEDED, IS, } &1
\quad )
\]

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:

\[
\text{DB_DBRC_BACKOUT_NEEDED: } &1
\]

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 117. 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>
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 support by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

**Exception class**

DATABASE_NEEDS_TO_BE_RECOVERED
Rule condition expression

OR(
   IF(DB_DBRC_EEQE_COUNT,GE,
      &1
   )
)

Rule condition description

Specify a threshold on the number of Extended Error Queue Elements for a data set.

   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

- EXCEPTION_CLASS(DATABASE_NEEDS_TO_BE_RECOVERED)
- EXCEPTION_LEVEL(WARNING)
- 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

DB_DBRC_EEQE_COUNT &1

Rule threshold sets

*Table 118. Rule threshold sets for IBM.EEQE_COUNT*

<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

\[
\text{OR(}
\quad \text{IF(DB\_HOURS\_SINCE\_LASTCA,GE,} \&1
\quad \}
\]

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 119. 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 &amp;1 = 12</td>
<td></td>
</tr>
<tr>
<td>MED &amp;1 = 14</td>
<td></td>
</tr>
<tr>
<td>HIGH &amp;1 = 16</td>
<td></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 support by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

**Exception class**

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

\[
\text{OR(}
\quad \text{IF(DB_HOURS_SINCE_LASTIC,GE,}
\quad \&1
\quad \)}
\]

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.

\[
\text{DB_HOURS_SINCE_LASTIC: } \&1
\]

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 120. Rule threshold sets for IBM.HRS_SINCE_LASTIC

<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 support by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

\[
\text{OR(}
\quad \text{IF(DB_DBRC_IC_NEEDED, IS,}
\quad &1
\quad )
\quad )
\]

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:

\[
\text{DB_DBRC_IC_NEEDED: } &1
\]

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

\begin{tabular}{|l|l|}
\hline
Threshold Set Name & Threshold Values  \\
\hline
YES & \&1 = Y  \\
\hline
\end{tabular}
Rule: IBM.IC_RECOMMENDED

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 support by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

IMAGE_COPY_NEEDS_TO_BE_TAKEN
Rule condition expression

\[ \text{OR(} \text{IF(DB_DBRC_IC_RECOMMENDED,IS,} \&1) \text{)} \]

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:

\[ \text{DB_DBRC_IC_RECOMMENDED:} \&1 \]

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

\[ \text{DB_DBRC_IC_RECOMMENDED} \&1 \]

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>

Table 122. Rule threshold sets for IBM.IC_RECOMMENDED
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 support 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>
<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 support by this rule.

- HDAM
- HIDAM
- HISAM
- SHISAM
- PHDAM
- PHIDAM
- DEDB
- INDEX
- PSINDEX

Exception class

DATABASE_NEEDS_TO_BE_RECOVERED
Rule condition expression

\[
\text{OR(}
\begin{align*}
\text{IF(DB\_DBRC\_RECOV\_NEEDED, IS,} \\
\hspace{1em} &1
\end{align*}
\text{)}
\]

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 124. 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 24. 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 25, “Domain RECOVERY exceptions,” on page 435.
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 support 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 126. Rule list for IBM.RECOV_DEFAULT

<table>
<thead>
<tr>
<th>Rule</th>
<th>Threshold</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 25, “Domain RECOVERY exceptions,” on page 435.

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 support 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 128. 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 25. Domain RECOVERY exceptions

The domain RECOVERY exceptions define the response to any DBRC-managed resource state that crosses the defined threshold boundaries.

Table 129. 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 26. 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 130. 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 7. Troubleshooting

The topics in this section provide you with technical references to help you troubleshoot and diagnose Policy Services problems.

Topics:

- Chapter 27, “Runtime error messages (BSN),” on page 441
- Chapter 28, “RECOVERY domain summary messages (IRO),” on page 489
- Chapter 29, “Return and reason codes,” on page 491
- Chapter 30, “Gathering diagnostic information,” on page 537
Chapter 27. 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=hhrrrrrrr.

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, BSNPES0, BSNPESQ0, BSNPESL0, BSNPESL1

--

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 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:** BSNPESH0, BSNPESE0, BSNPESK0, BSNPESD0, BSNPESA0, BSNPESL0, BSNPESL1

**BSN1507E** THE PES CONTROL MEMBER HAS ENCOUNTERED AN ERROR WITH THE REPOSITORY.
THE FPQSRV FUNCTION=func FAILED
IN MODULE module WITH RC=rc,
RSN=rsnt

**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 IMS Tools Base Knowledge Base User’s Guide. 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 IMS Tools Base Knowledge Base User’s Guide 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.
BSN1600E • BSN1606E

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: BSNSCIF0

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

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.
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.

Module: BSNXEST0

BSN1608E SDUMP FAILED FOR mnnn 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 BSNSC 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

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### BSN1616E

**Explanation:** The request to terminate the policy domain data store termination (PDST) failed.

**System action:** Policy Services termination continues, and if any other service fails, another error message is issued.

**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

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### BSN1622E

**Explanation:** The client made a request to Policy Services without passing the required resource name. 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

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### BSN1624E

**Explanation:** The client function failed to pass a policy data store policy object control block (PDSP). 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

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### BSN1628E

**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

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### BSN1630E

**Explanation:** An invalid locale ID `mmmmmm` 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 RECON ID value.

**Module:** BSNASM00
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 (BSNnnnnm), 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 (BSNnnnnm), 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 (BSNnnnnnnn), where nnnnnn 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

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 the failure are returned to the client. System processing continues.

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

BSN1601I THE ETV MODULE module_name RECEIVED CONTROL WITH FUNCTION=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.

Module: BSNETVA0, BSNETVG0, BSNETVH0, BSNETVL0, BSNETVR0, BSNETVT0, BSNETVU0

BSN1603E 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

BSN1606E THE ETV REPOSITORY FUNCTION FAILED: DOMAIN=domain_name, LEVEL=environment_level, LOCALE=locale, recon_ID, VAR=var_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 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

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**BSN181II** THE VARIABLE TABLE LIST HAS STARTED LISTING OBJECTS FOR DOMAIN=domain_name.

**Explanation:** The email/texting variable (ETV) process started listing for domain_name.

**System action:** None.

**User response:** None.

**Module:** BSNETVL0

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**BSN181II** 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 BSNGL0BL.

**System action:** None.

**User response:** None.

**Module:** BSNETVR0

---

**BSN181II** THE VARIABLE DELETE BY RECON recon_name HAS STARTED

**Explanation:** The email/texting variable (ETV) process started by recon_name.

**System action:** None.

**User response:** None.

**Module:** BSNETVR0

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**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

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**BSN1815I** THE VARIABLE table LIST HAS ENDED FOR THE DOMAIN=domain_name: RC=nn, RSN=nn.

**Explanation:** The email/texting variable (ETV) process ended listing for domain_name.

**System action:** None.

**User response:** None.

**Module:** BSNETVL0

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**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:** BSNSCI00

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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:** BSNSCI00

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**BSN2008E**  
**THE REPOSITORY DOES NOT CONTAIN ANY RECON CONTAINER ITEMS.**

**Explanation:** RECONs 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 RECONs 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 RECONs to the repository, and then verify that the RECON definitions are in the repository by using the IMS tools Knowledge Base interface dialog.

**Module:** BSNSCI00

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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 IMS Tools Knowledge Base Users Guide for procedures on how to reinstate BSNGLOBL as a RECON ID.

**Module:** BSNSCI00

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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:** BSNSCI00

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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 RECONs 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 RECONs 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 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.

**ENABELED**

Exception messages that are generated during phase 1 of a policy evaluation are 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 • BSN2027E


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: BSN SCI 100

BSN2022E  A SECOND BNSC 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: BSN SCI 100

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: BSN SCI 100

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: BSN SCI 100

BSN2026E  A BNSC FUNC=STRT CALL WAS ISSUED BEFORE A BNSC 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: BSN SCI 100

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).
**BSN2028E • BSN2041E**

**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

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**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

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**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

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**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

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**BSN2041E **POLICY SERVICES COULD NOT CONNECT TO THE ITKB REPOSITORY: RC=nn, RSN=nn.

**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

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**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

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**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

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Chapter 27. Runtime error messages (BSN)  453
BSN2042I • BSN2800I • BSN2801I • BSN2802I • BSN2803I

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: BSNSTC00

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: BSNSTC00

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: BSNSCI00

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: BSNSCI00

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
BSN2804E • BSN3403E

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

BSN2805E  STORAGE COULD NOT BE OBTAINED FOR NLIST

Explanation: Storage could not be obtained for the action manager notification list (NLST) 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

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

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

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:

2010-07-14 11:09:175AM : BSN2900I BBE29nnI
Summary message text.

See the latest version of the IBM IMS Database Reorganization Expert for z/OS User’s Guide for further information about the BBE29nnI messages.

Module: BSNAMT00

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, BSNJSMR0, BSNJMSU0, BSNJSMW0, BSNJUOW0

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
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 IECnnn 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

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 IECnnn 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 IECnnn 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
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

BSN4005E  THE CSVQUERY FOR MODULE
module_name COULD NOT OBTAIN A MODULE EP ADDRESS: RC=nn.

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 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

BSN4101A 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

BSN4111I 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

BSN4121I 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: BSNPAMS0

BSN4131I 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: BSNPEDC0

BSN4141I 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: BSNPEMS0
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

BSN4016E  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: BSNPVPD0

BSN4017E  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: BSNPVM0

BSN4018E  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: BSNPVM0

BSN4019E  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: BSNPVM0


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  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: BSNPPEH0, BSNPPES0, BSNPPGV0, 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
- DOMAIN NAME
- RESOURCE NAME
- DATA ELEMENT NAME OF ONMISSING
- DATA ELEMENT NAME OF IF
- EXCEPTION CLASS
- EXCEPTION LEVEL
- ANNOTATION TEXT
- EXCEPTION MESSAGE TEXT

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: Use valid characters when specifying the content for the expression then rerun the job.

Module: BSNPPGV0

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 NTYLIST_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: BSNPPGV0, BSNPPEH0

BSN4025E  THE MAXIMUM NEST LEVEL WAS EXCEEDED.

Explanation: The nest level from the CONDITION expression exceeded the maximum allowable nest level.

Module: BSNPPPS0
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: BSNPPES0

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: In the rule, specify the exception class and level that are associated with the policy action, and then rerun the job.

Module: BSNPEAL0

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: BSNPECPL0

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: BSNPEH0

BSN4034E THE BOOLEAN EXPRESSION IS INCONSISTENT WITH THRESHOLD DEFINITION 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 AND or OR 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

BSN4035I AN EXPRESSION THAT REFERS TO 
data_element_name IS EVALUATED AS 
(TURE|FALSE|IGNORE). THE 
FOLLOWING EXPRESSION WAS 
EVALUATED: COMPARISON 
EXPRESSION #nn OF BOOLEAN 
EXPRESSION #nn IN NEST LEVEL n 
(OPRATOR: 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 that contains the missing data is true.
• FALSE: the comparison expression that contains the missing data is false.
• IGNORE: the comparison expression that contains the missing data is ignored.

System action: The policy evaluation process continues.

User response: No action is required.

Module: BSNPECPO

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 not a character type:

• GT
• LT
• GE
• LE
• EQ
• NE

Module: BSNPEMS0

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=TRC=nnnn FRSN=nnnn WAS SPECIFIED FOR FUNCTION CODE: FRC=nnnn.

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 NAME=threshold_name (TRC=nnnn TRSN=nnnn) WAS SPECIFIED FOR FUNCTION CODE: FRC=nnnn, FRSN=nnnn.

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

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BSN4053E THE DATA DICTIONARY SERVICE DETECTED PROBLEMS WHILE RUNNING. AN INVALID THRESHOLD VALUE=threshold_value (TRC=nnnn TRSN=nnnn) WAS SPECIFIED FOR THRESHOLD=threshold_name IN FUNCTION_CODE: FRC=nnnn, FRSN=nnnn.

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

BSN4054E THE DATA DICTIONARY SERVICE DETECTED PROBLEMS WHILE RUNNING. AN INVALID THRESHOLD VALUE=threshold_value OR SENSORY DATA VALUE=sensory_data_value (TRC=nnnn TRSN=nnnn) WAS SPECIFIED FOR THRESHOLD=threshold_name IN FUNCTION_CODE: FRC=nnnn, FRSN=nnnn.

Explanation: The threshold value or the sensory data value for threshold_name is invalid for the Data Dictionary function function_code.

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 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: 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.
BSN4601I • BSN4609W

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 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

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: BSNNMCV0

BSN4602E STORAGE COULD NOT BE OBTAINED FOR THE REQUESTED LENGTH=nnnnnnnn: RC=nn, 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: BSNNM00

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: BSNNM00

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: BSNNM00

BSN4608W BPE STRING PRINT FORMATTING SERVICE DETECTED AN ERROR DURING THE MESSAGE NOTIFICATION PROCESS: RC=nn.

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

BSN4609W BPE WTO PRINT FORMATTING SERVICE DETECTED AN ERROR DURING THE MESSAGE NOTIFICATION PROCESS: RC=nn.

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:** BSNNMMS0

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**BSN4610E**  
**THE MESSAGE NOTIFICATION PROCESS COULD NOT READ THE NOTIFICATION LIST**  
*notification_list_name*: FUNC=nnnn, RC=nn, RSN=nnn.

**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

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**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

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**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

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**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:** See the TSO/E Command Reference to find the return code of the SEND command, and see BSN4611I for more information about this error.

**Module:** BSNNM00

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**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.

**X'000C'** See the 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 DFSMS Macro Instructions for Data Sets for more information about the return code for the OPEN macro. Correct any errors, then rerun the job.

X'0014'  See the 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 MVS System Codes for more information about the system completion code.

System action:  The message notification process continues.

User response:  No action is required.

Module:  BSNNMM00

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:  BSNNMM00

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:  BSNNMM00

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:  BSNNLCB0, BSNNLD0, BSNLDU0, BSNNLDL0, BSNNLDP0, BSNNLPD0, BSNNLDE0, 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:  BSNNLDS0, BSNNLCB0, BSNNLD0, BSNLDU0, BSNNLDL0, BSNNLDP0, BSNNLPD0, BSNNLDE0, BSNLDA0

BSN5206E  A NLDS REPOSITORY FUNCTION FAILED: LEVEL=environment_level, LOCATE=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.
BSN5207I  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.

Module: BSNNLDN0

BSN5217I  THE NOTIFICATION LIST function BY RECON recon_name HAS ENDED FOR THE: RC=nn, RSN=nn.

Explanation: The notification list data store (NLDS) process ended by recon_name. The variable function is one of the following actions:

• DELETE
• QUERY

System action: None.

User response: None.

Module: BSNNLDN0

BSN5211I  NLDS HAS STARTED LISTING OBJECTS.

Explanation: The notification list process started listing.

System action: None.

User response: No action is required.

Module: BSNNLDO

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: BSNNLDO, BSNNLDO, BSNNLDO

Chapter 27. Runtime error messages (BSN)  467
THE NOTIFICATION LIST HAS ENDED LISTING OBJECTS: RC=nn, RSN=nn

Explanation: The notification list process ended listing.

System action: None.

User response: No action is required.

Module: BSNNLDO

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: BSNLDU0, BSNLDO, BSNLP0

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: BSNLDO

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: BSNLDO

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: BSNLDO

THE PDDS MOD module_name RECEIVED CONTROL WITH
  FUNCTION=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

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

THE RDS MOD module_name RECEIVED CONTROL WITH
  FUNCTION=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, BSNRDSC0, BSNRDS00, 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: BSNRDSL0

BSN6403E RDS HAS A CRITICAL ERROR IN MODULE module_name: FUNCTION=function_code, RC=nn, RSN=nn. FOR RULE=rule_name, LOCALE=locale_name.
Explanation: An error occurred in the rule data store (RDS) module. The output for RULE=rule_name and LOCALE=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, BSNRDSL0, BSNRDSS0, BSNRDSU0, BSNRDSV0, BSNRDSR0, BSNRDSC0, BSNRDSA0, BSNRDS00, BSNRDSH0

BSN6405E THE THRESHOLD WAS NOT DELETED, IT'S REFERENCED BY POLICY policy_name: LOCALE=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, BSNRDSL0, BSNRDS00

BSN6406E THE RDS REPOSITORY FUNCTION FAILED: DOMAIN=domain_name, LEVEL=environment_level, LOCALE=recon_ID, RULE=rule_name. THE FPQSRV FPQ_function_code FAILED IN MODULE module_name WITH RC=nn, RSN=nnn. 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, recon_ID, 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, BSNRDSL0, BSNRDSS0, BSNRDSU0, BSNRDSR0, BSNRDSA0

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: BSNRDSL0

BSN6412I THE RULE TEMPLATE function PROCESS HAS STARTED FOR DOMAIN=domain_name, LEVEL=environment_level, LOCALE=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 BSNGLOBL. 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  •  BSN7003E

• IMPORT
• DELETE
• UPDATE

System action: None.
User response: No action is required.
Module: BSNRDST0, BSNRDSU0

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

BSN6416I  THE RULE TEMPLATE function PROCESS HAS ENDED FOR:
DOMAIN=domain_name,
LEVEL=environment_level,
LOCAL=locale,
RULE=rule_template_name, RC=nn,
RSN=nn.

Explanation: The rule data store (RDS) 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 BSNGLOBAL.

The variable function is one of the following actions:
• IMPORT
• DELETE
• UPDATE

System action: None.
User response: No action is required.
Module: BSNRDST0

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.
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.
Module: BSNRDSN0

BSN7001I  THE MODULE module_name RECEIVED CONTROL WITH FUNC function_code:
RC=nn, RSN=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: BSNPDSL0, BSNPDST0, BSNPDSS0, BSNPDSU0, BSNPDSA0, BSNPDSP0, BSNPDSV0, BSNPDSG0

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: BSNPDSL0, 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 a 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: BSNPDSS0, BSNPDSL0, BSNPDST0, BSNPDSS0, BSNPDSU0, BSNPDSA0, BSNPDSP0, BSNPDSV0, BSNPDSG0

470  IBM Tools Base: Policy Services User’s Guide and Reference
BSN7005I NO NOTIFICATION LIST WAS SPECIFIED IN THE POLICY TEMPLATE.

Explanation: No notification list has been specified in the policy template.

System action: None.

User response: No action is required.

Module: BSNPDSU0

BSN7006E THE REPOSITORY FUNCTION failed in module function_code FAILED IN MODULE module_name: DOMAIN=domain_name, LEVEL=environment_level, LOCALE=recon_ID, POLICY=policy_name. 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 for policy data store (PDS) module for 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, BSNPDSS0, BSNPDSU0, BSNPDSA0, BSNPDSP0

BSN7007E THE GLOBAL RECON ID BSNGLOBAL IS NOT REGISTERED.

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: BSNPDSP0

BSN7008I THE POLICY WAS NOT FOUND IN THE RECON LOCALE. WILL CONTINUE TO SEARCH THE GLOBAL LOCALE.

LEVEL=environment_level, LOCALE=recon_ID, POLICY=policy_name, DOMAIN=domain_name.

Explanation: Policy Services searched the RECON locale for the requested policy, but the policy was not found in the RECON locale.

System action: Policy Services will continue the search in the global locale.

User response: None.

Module: BSNPDSS0

BSN7011I THE LISTING OF THE POLICY TEMPLATE/STREAM PROCESSING HAS STARTED FOR DOMAIN domain_name.

Explanation: The policy data store (PDS) process started listing for domain_name.

System action: None.

User response: No action is required.

Module: BSNPDSL0

BSN7012I THE POLICY action PROCESS HAS STARTED FOR DOMAIN=domain_name, POLICY=policy_name, LEVEL=environment_level, LOCALE=locale.

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

BSN7015I THE POLICY TEMPLATE/STREAM LIST HAS ENDED FOR DOMAIN=domain_name, RC=nn, RSN=nn.

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, BSNPDS0, 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.

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.

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.
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: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNDDMI00

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.


User response: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

Module: BSNDDMI00

BSN7606E 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

BSN7607E STORAGE FOR DDSIS 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 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

BSN7610E STORAGE FOR DDSIS 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: Contact IBM Software Support, and notify them of the IMS tool that encountered this problem.

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

BSN8801E  THE FUNCTION TYPE function_type IS INVALID.

Explanation: The name of a sensor data function is invalid or missing.

System action: The program returns an error.

User response: Specify a valid name for all sensor data functions.

Module: BSNSDSD0
BSN8802E  AN INVALID PACK OPTION WAS SPECIFIED. THE OPTION MUST BE 'C' OR 'A'.

Explanation: When the data elements were processed, invalid pack options were passed.

System action: The program returns an error.

User response: Specify either A or C for functions that use pack options. The value A is for append and the value C is for copy. The default setting is A.

Module: BSNSDSD0

BSN8803E  THE GROUP NAME group_name IS INVALID.

Explanation: The specified group or server name for the sensor data repository is missing or incorrect.

System action: The program returns an error.

User response: Specify the correct group or server name.

Module: BSNSDSD0

BSN8804E  THE SENSOR DATA VERSION NUMBER IS INVALID.

Explanation: An invalid version of sensor data was specified.

System action: The program returns an error.

User response: Specify a valid version number.

Module: BSNSDSD0

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.

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
BSN8811E • BSN8819E

BSNSD5M macro. The sensor data must receive a non-null RSI for the sensor data function.

Module: BSNSDSD0

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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

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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

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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: BSNSDSD0

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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: Issue a TERM call to cleanup the outstanding sensor data environment, and then see the log file and status block to determine possible errors.
Module: BSNSDSD0

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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: Verify that all input data tags and the associated data length are valid.
Module: BSNSDSD0

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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: BSNSDSD0

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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: BSNSDSD0

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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: BSNSDSD0

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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 and major key name.
If the names are correct, ensure that the member has been created or was not deleted.

**Module:** BSNSDSD0

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**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:** BSNSDSD0

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**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:** BSNSDSD0

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**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

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**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

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**BSN8824E**  
**AN OPTION COMMAND WAS CALLED THAT CONTAINS AN INVALID OPTION.**

**Explanation:** An options 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

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**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:** The connection between sensor data and the server might have been lost. Specify a log file, then rerun the job. If the problem persists, contact the system administrator.

**Module:** BSNSDSD0

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**BSN8826E**  
**THE SUPPLIER ID FOR AN ADD RECORD IS INVALID.**

**Explanation:** An options 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
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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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 logfile.

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**

**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**

**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**

**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**

**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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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 BNSNSDSM 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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

BSN8852E 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: BNSNSDSD0

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 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: BNSNSDSD0

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.

System action: The program returns with an error.

User response: Specify the READ option as either H for header only or D 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

BSN8860W 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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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 YYYYMMDDHHMMSSSTHMJU
- PICJULI-20 character YYYYDDD0HHMMSSSTHMJU

Module: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSNSDSD0

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: BNSSDSD0

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: BNSSDSD0

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: BNSSDSD0

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 BNSNSDSM macro, specify the correct application and major key.

Module: BNSSDSD0

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: BNSSDSD0

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: BNSSDSD0

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: BNSSDSD0

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: BNSSDSD0

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: BNSSDSD0
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: BSNSDSD0

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: BSNSDSD0

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: BSNSDSD0

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: BSNSDSD0

BSN8882E  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: BSNSDSD0

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: BSNSDDL0

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: BSNSDDL0

BSN8903E  THE INPUT COMMAND LENGTH FOR THE BSNSDSL MACRO IS MISSING.

Explanation: The length of the input command buffer specified on the BSNSDSL macro is missing.

System action: The program returns an error.

User response: Set the value of INLEN on the BSNSDSL macro to the length of the input command buffer.
Module: BNSSDDL0

BSN8904E  THE INPUT LINE COUNT FOR AN INPUT COMMAND FILE WAS EXCEEDED.

Explaination: 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: BNSSDDL0

BSN8905E  AN INVALID COMMAND LENGTH WAS SPECIFIED.

Explanatation: 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: BNSSDDL0

BSN8906E  THE SPECIFIED INPUT COMMANDS CONTAIN INVALID SYNTAX.

Explanatation: 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: BNSSDDL0

BSN8907E  THE BPE CSCD COULD NOT BE ACCESSED FOR PARSING.

Explanatation: 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 BNSSDDL0 delete utility. If the problem persists, contact the system administrator.

Module: BNSSDDL0

BSN8908E  BOTH AN INPUT FILE AND AN INPUT BUFFER CANNOT BE SPECIFIED.

Explanatation: 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: BNSSDDL0

BSN8909E  THE INPUT FILE OR INPUT COMMAND BUFFER DID NOT CONTAIN COMMANDS TO PARSE.

Explanatation: 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: BNSSDDL0

BSN8910E  THE PROCESSING MODULE COULD NOT BE LOADED.

Explanatation: 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: BNSSDDL0

BSN8911E  THE RECON LOG COULD NOT BE OPENED.

Explanatation: A log file for login RECON translation could not be opened.

System action: The program returns an error.

User response: Verify that the 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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**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:** BSNSDDL0

---

**BSN8926E** 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

---

**BSN8927E** 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 BSNDSL macro.

**System action:** The program returns an error.

**User response:** Remove the application reference from the macro, or switch to the BSNDSL API interface that does not reference INCMD$ or INFILE.

**Module:** BSNSDDL0

---

**BSN8928E** 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 BSNDSL 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

---

**BSN8929E** 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 BSNDSL 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

---

**BSN8930E** 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

---

**BSN8931W** 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: BSNDDL0

BSN8933E  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: BSNDDL0

BSN8934E  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: BSNDDL0

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: BSNDDL0

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: BSNDDL0

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: BSNDDL0

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: BSNDDL0

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 28. RECOVERY domain summary messages (IRO)

IROnnnx messages are summary messages for the RECOVERY domain.

**Message format**

Summary messages for the RECOVERY domain adhere to the following format:

IROnnnx

Where:

<table>
<thead>
<tr>
<th>IRO</th>
<th>Indicates that the message is a summary message for the RECOVERY domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>nnnn</td>
<td>Indicates the message identification number</td>
</tr>
<tr>
<td>x</td>
<td>Indicates the severity of the message:</td>
</tr>
<tr>
<td>E</td>
<td>Indicates that an error occurred, which might or might not require operator intervention.</td>
</tr>
<tr>
<td>I</td>
<td>Indicates that the message is informational only.</td>
</tr>
<tr>
<td>W</td>
<td>Indicates that the message is a warning to alert you to a possible error condition.</td>
</tr>
</tbody>
</table>

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.
**IRO4968I**  
resource_name IN RECONID=recon_id  
HAS SEVERE EXCEPTIONS IN THE  
RECOVERY DOMAIN.

**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.

**IRO4970I**  
action IS RECOMMENDED FOR  
resource_name IN THE  
RECONID=recon_id.

**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>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>

**Recommendation:**
- Take the backout process for the database updates. You can use IMS Batch Backout utility.
Chapter 29. 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 492
- “Return/reason codes: Policy Environment Services (BSN1500-1599)” on page 498
- “Return/reason codes: Association Manager (BSN1600-1799)” on page 501
- “Return/reason codes: Email/Texting Variable (BSN1800-1899)” on page 502
- “Return/reason codes: Storage Manager (BSN2200-2399)” on page 503
- “Return/reason codes: Action Manager (BSN2800-2999)” on page 504
- “Return/reason codes: Journal Manager (BSN3400-3499)” on page 505
- “Return/reason codes: Parser, Validation, Evaluation (BSN4000-4199)” on page 506
- “Return/reason codes: Notification Manager (BSN4600-4799)” on page 507
- “Return/reason codes: Notification List Data Store (BSN5200-5399)” on page 508
- “Return/reason codes: Policy Domain Data Store (BSN5800-5999)” on page 511
- “Return/reason codes: Rules Data Store (BSN6400-6599)” on page 512
- “Return/reason codes: Policy Data Store (BSN7000-7199)” on page 516
- “Return/reason codes: Data Dictionary (BSN7600-7799, BBE1450E)” on page 517
- “Return/reason codes: Sensor Data read/write (BSN8800-8999, BBE1451E)” on page 530
- “Return/reason codes: Sensor Data delete (BSN8800-8999)” on page 534
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 131. Return and reason codes reported by Policy Services client API 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>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></td>
<td>X'04'</td>
<td>Unable to obtain PSCB storage</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>Unable to load policy module</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>BPE initialization failed</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>Unable to obtain IFCB storage</td>
</tr>
<tr>
<td></td>
<td>X'14'</td>
<td>RECON container call failed</td>
</tr>
<tr>
<td></td>
<td>X'18'</td>
<td>No RECON container data</td>
</tr>
<tr>
<td></td>
<td>X'1C'</td>
<td>Unable to obtain RECON table</td>
</tr>
<tr>
<td></td>
<td>X'20'</td>
<td>Data Dictionary INIT failed</td>
</tr>
<tr>
<td></td>
<td>X'24'</td>
<td>Invalid function</td>
</tr>
<tr>
<td></td>
<td>X'28'</td>
<td>No valid RECON in container</td>
</tr>
<tr>
<td></td>
<td>X'2C'</td>
<td>Unable to obtain POCB storage</td>
</tr>
<tr>
<td>X'08' (cont'd)</td>
<td>X'30'</td>
<td>No resource passed</td>
</tr>
<tr>
<td></td>
<td>X'34'</td>
<td>No PDSP returned on PDS PTRD call</td>
</tr>
<tr>
<td></td>
<td>X'38'</td>
<td>No resource list returned on PDS GETC call</td>
</tr>
<tr>
<td></td>
<td>X'3C'</td>
<td>No match on resource name from PDDS open</td>
</tr>
<tr>
<td></td>
<td>X'40'</td>
<td>No policy name passed</td>
</tr>
<tr>
<td></td>
<td>X'44'</td>
<td>Invalid policy name; prefix is &quot;IBM.&quot;</td>
</tr>
<tr>
<td></td>
<td>X'48'</td>
<td>Unable to obtain PDEB control block</td>
</tr>
<tr>
<td></td>
<td>X'4C'</td>
<td>Invalid level change request</td>
</tr>
<tr>
<td></td>
<td>X'50'</td>
<td>Invalid domain name specified</td>
</tr>
<tr>
<td></td>
<td>X'54'</td>
<td>Set no PDED's defined to system</td>
</tr>
<tr>
<td></td>
<td>X'58'</td>
<td>No PDEB defined for specified domain name</td>
</tr>
<tr>
<td></td>
<td>X'5C'</td>
<td>Domain already in maintenance mode</td>
</tr>
<tr>
<td></td>
<td>X'60'</td>
<td>Policy Services have not been initialized</td>
</tr>
<tr>
<td></td>
<td>X'64'</td>
<td>BSNGLOBL locale not defined to IMS Tools KB</td>
</tr>
<tr>
<td></td>
<td>X'68'</td>
<td>Unable to obtain LISTAREA storage</td>
</tr>
<tr>
<td></td>
<td>X'70'</td>
<td>Domain is not in operation environment</td>
</tr>
</tbody>
</table>
### Table 131. 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'04'</td>
<td>Invalid INIT call issued by client (second or greater INIT call)</td>
</tr>
<tr>
<td>X'08'</td>
<td>X'08'</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>X'0C'</td>
<td>Component call failed</td>
</tr>
<tr>
<td>X'10'</td>
<td>X'10'</td>
<td>Invalid STRT call issued by client, no INIT call issued first</td>
</tr>
<tr>
<td>X'14'</td>
<td>X'14'</td>
<td>Initialization request failed for either Policy Services or Data Dictionary Services</td>
</tr>
<tr>
<td>X'18'</td>
<td>X'18'</td>
<td>Internal failure caught by Policy Services ESTAE routine; retry can be attempted</td>
</tr>
<tr>
<td>X'1C'</td>
<td>X'1C'</td>
<td>Load library is not APF authorized</td>
</tr>
<tr>
<td>Any code</td>
<td>Any code</td>
<td>Severe error (Component not available)</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 132. 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 133. 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 134. 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 135. 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 136. 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 137. 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 138. 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=EVAL</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 139. 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 140. 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 141. 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 142. 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 143. 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 144. 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 145. 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 146. 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>X'00'</td>
<td>none</td>
<td></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>X'04'</td>
<td>none</td>
<td></td>
<td>No more data</td>
</tr>
</tbody>
</table>
Table 146. 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></td>
<td>X'04'</td>
<td>none</td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTAIN</td>
<td>OBTPESA</td>
<td>Unable to obtain PES storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OBTPESH</td>
<td>Unable to obtain PES storage (PESA block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unable to obtain PES storage (PESH block)</td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELEASE</td>
<td>RELPESD</td>
<td>Unable to release PES storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELPESE</td>
<td>Unable to release PES storage (PESE block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELPESA</td>
<td>Unable to release PES storage (PESA block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELPESK</td>
<td>Unable to release PES storage (PESK block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELPESH</td>
<td>Unable to release PES storage (PESH block)</td>
</tr>
<tr>
<td>X'10'</td>
<td>PES_ENQ</td>
<td>PES_DEQ</td>
<td>PES latch failure (ENQ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PES latch failure (DEQ)</td>
</tr>
<tr>
<td>X'14'</td>
<td>DOMLOC</td>
<td></td>
<td>Domain latch failure</td>
</tr>
<tr>
<td>X'18'</td>
<td>NDMLOC</td>
<td></td>
<td>Non-domain latch failure</td>
</tr>
<tr>
<td>X'20'</td>
<td>NOPESH</td>
<td></td>
<td>No PESH control block</td>
</tr>
<tr>
<td>X'24'</td>
<td>NOPESE</td>
<td></td>
<td>No PESE control block</td>
</tr>
<tr>
<td>X'28'</td>
<td>NOPOCB</td>
<td></td>
<td>No POCB control block</td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOPESA</td>
<td></td>
<td>No PESA control block</td>
</tr>
<tr>
<td>X'30'</td>
<td>NOPESD</td>
<td></td>
<td>No PESD control block</td>
</tr>
<tr>
<td>X'34'</td>
<td>NODMNK</td>
<td></td>
<td>No domain name provided</td>
</tr>
<tr>
<td>X'38'</td>
<td>NOPESK</td>
<td></td>
<td>No PESK control block</td>
</tr>
<tr>
<td>X'3C'</td>
<td>NOINPT</td>
<td></td>
<td>No input data</td>
</tr>
<tr>
<td>X'50'</td>
<td>INVFUN</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td></td>
<td>UNKFUN</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'54'</td>
<td>INVMOD</td>
<td></td>
<td>Invalid mode</td>
</tr>
<tr>
<td>X'58'</td>
<td>INVPOL</td>
<td></td>
<td>Invalid policy objects</td>
</tr>
<tr>
<td>X'60'</td>
<td>INVORG</td>
<td></td>
<td>Invalid environment level</td>
</tr>
<tr>
<td>X'68'</td>
<td>INVORG</td>
<td></td>
<td>Invalid origin environment</td>
</tr>
<tr>
<td>X'70'</td>
<td>COPA</td>
<td></td>
<td>BSNPDS call failure</td>
</tr>
<tr>
<td></td>
<td>DELA</td>
<td></td>
<td>BSNPDS call failure</td>
</tr>
<tr>
<td></td>
<td>ENDL</td>
<td></td>
<td>BSNPDS call failure</td>
</tr>
<tr>
<td></td>
<td>VALA</td>
<td></td>
<td>BSNPDS call failure</td>
</tr>
<tr>
<td></td>
<td>RNMA</td>
<td></td>
<td>BSNPDS call failure</td>
</tr>
</tbody>
</table>

*continued*
Table 146. 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'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>
Return/reason codes: Association Manager (BSN1600-1799)

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 147. 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></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>X'08'</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'04'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'08'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'0C'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'10'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'14'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'18'</td>
<td></td>
<td>No RECON container data</td>
</tr>
<tr>
<td>X'1C'</td>
<td></td>
<td>Currently not used</td>
</tr>
<tr>
<td>X'20'</td>
<td></td>
<td>Currently not used</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</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>Currently not used</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>Reserved</td>
</tr>
<tr>
<td>X'64'</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>X'68'</td>
<td></td>
<td>Unable to obtain LISTAREA storage</td>
</tr>
<tr>
<td>X'6C'</td>
<td></td>
<td>Invalid POLICYBY= parm</td>
</tr>
<tr>
<td>X'70'</td>
<td></td>
<td>Domain is not in operation environment</td>
</tr>
<tr>
<td>X'74' - X'7C'</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>X'80' - X'90'</td>
<td></td>
<td>Not used by Association Manager</td>
</tr>
</tbody>
</table>
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 148. 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>X'00'</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>X'04'</td>
<td>X'04'</td>
<td>No more data</td>
</tr>
<tr>
<td>X'08'</td>
<td>X'08'</td>
<td>Member found in the repository</td>
</tr>
<tr>
<td>X'20'</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>X'04'</td>
<td>X'04'</td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td>X'04'</td>
<td>X'08'</td>
<td>Unable to obtain ETV storage</td>
</tr>
<tr>
<td>X'0C'</td>
<td>X'0C'</td>
<td>Unable to release ETV storage</td>
</tr>
<tr>
<td>X'10'</td>
<td>X'10'</td>
<td>No SMTP in the RECON</td>
</tr>
<tr>
<td>X'14'</td>
<td>X'14'</td>
<td>The default global SMTP not modified</td>
</tr>
<tr>
<td>X'20'</td>
<td>X'20'</td>
<td>No ETVT control block</td>
</tr>
<tr>
<td>X'24'</td>
<td>X'24'</td>
<td>No ETVH control block</td>
</tr>
<tr>
<td>X'28'</td>
<td>X'28'</td>
<td>No ETVL control block</td>
</tr>
<tr>
<td>X'2C'</td>
<td>X'2C'</td>
<td>No POCB control block</td>
</tr>
<tr>
<td>X'30'</td>
<td>X'30'</td>
<td>No variable type provided</td>
</tr>
<tr>
<td>X'34'</td>
<td>X'34'</td>
<td>No domain name provided</td>
</tr>
<tr>
<td>X'38'</td>
<td>X'38'</td>
<td>No input data</td>
</tr>
<tr>
<td>X'50'</td>
<td>X'50'</td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'54'</td>
<td>X'54'</td>
<td>Invalid mode</td>
</tr>
<tr>
<td>X'58'</td>
<td>X'58'</td>
<td>Invalid email variable</td>
</tr>
<tr>
<td>X'5C'</td>
<td>X'5C'</td>
<td>Invalid texting variable</td>
</tr>
<tr>
<td>X'64'</td>
<td>X'64'</td>
<td>Invalid locale</td>
</tr>
<tr>
<td>X'68'</td>
<td>X'68'</td>
<td>Invalid environment</td>
</tr>
<tr>
<td>X'6C'</td>
<td>X'6C'</td>
<td>Invalid RECON</td>
</tr>
<tr>
<td>X'6'</td>
<td>X'70'</td>
<td>Member not found in the repository</td>
</tr>
<tr>
<td>X'74'</td>
<td>X'74'</td>
<td>BSNETV call failure</td>
</tr>
<tr>
<td>X'78'</td>
<td>X'78'</td>
<td>No change to the repository allowed</td>
</tr>
<tr>
<td>X'7C'</td>
<td>X'7C'</td>
<td>Input string has invalid character</td>
</tr>
<tr>
<td>X'80'</td>
<td>X'80'</td>
<td>Member in use</td>
</tr>
<tr>
<td>X'84'</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 149. 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 150. 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></td>
<td>X'00'</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></td>
<td>X'04'</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></td>
<td>X'04' - X'20'</td>
<td>Not used by Action Manager</td>
</tr>
<tr>
<td></td>
<td>X'24'</td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'28' - X'6C'</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td>No Action Descriptor address</td>
</tr>
<tr>
<td></td>
<td>X'84'</td>
<td>No Action List address</td>
</tr>
<tr>
<td></td>
<td>X'88'</td>
<td>Storage Manager failure</td>
</tr>
<tr>
<td></td>
<td>X'8C'</td>
<td>No Action Manager AMCB control block</td>
</tr>
<tr>
<td></td>
<td>X'90'</td>
<td>Invalid Action Manager Phase</td>
</tr>
</tbody>
</table>
Return/reason codes: Journal Manager (BSN3400-3499)

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 151. 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></td>
<td>X'00'</td>
<td>none</td>
<td>JMS 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>NODATA</td>
<td>No more data</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>HKTXXLI</td>
<td>HKTXACC call failure</td>
</tr>
<tr>
<td></td>
<td>X'08'</td>
<td>OBTJMSH</td>
<td>Unable to obtain JMS storage</td>
</tr>
<tr>
<td></td>
<td>X'0C'</td>
<td>FREERROR</td>
<td>Unable to release JMS storage (input buffer)</td>
</tr>
<tr>
<td></td>
<td>RELJMSH</td>
<td></td>
<td>Unable to release JMS storage (anchor block storage)</td>
</tr>
<tr>
<td>X'10'</td>
<td>NOJMSH</td>
<td></td>
<td>No JMSH control block</td>
</tr>
<tr>
<td>X'20'</td>
<td>NOJUOW</td>
<td></td>
<td>No JUOW control block</td>
</tr>
<tr>
<td>X'24'</td>
<td>NOPOCB</td>
<td></td>
<td>No POCB control block (no POCB)</td>
</tr>
<tr>
<td>X'28'</td>
<td>NOHEAD</td>
<td></td>
<td>No heading block provided</td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOSUBT</td>
<td></td>
<td>No sub title provided</td>
</tr>
<tr>
<td>X'30'</td>
<td>NOINPT</td>
<td></td>
<td>No input data</td>
</tr>
<tr>
<td>X'34'</td>
<td>INVFUN</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'38'</td>
<td>INVMOD</td>
<td></td>
<td>Invalid mode</td>
</tr>
<tr>
<td>X'3C'</td>
<td>NODDCARD</td>
<td></td>
<td>No JM DD card in the JCL</td>
</tr>
<tr>
<td>X'40'</td>
<td>dd_name</td>
<td></td>
<td>OPEN call failure</td>
</tr>
<tr>
<td>X'44'</td>
<td>PUTFAIL</td>
<td></td>
<td>PUT call failure</td>
</tr>
<tr>
<td>X'48'</td>
<td>dd_name</td>
<td></td>
<td>CLOSE call failure</td>
</tr>
<tr>
<td>X'4C'</td>
<td>ALLOCERR</td>
<td></td>
<td>Dynamic allocation failed</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 152. 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>X'00'</td>
<td>PVE 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'04'</td>
<td>Process ended with warning</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>Missing data is found in a policy evaluation processing</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>System error inside PVE</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>System error outside PVE</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>Policy validation error</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>Missing data is found in a policy evaluation processing</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>Critical error (Function is missing)</td>
<td></td>
</tr>
<tr>
<td>X'04'</td>
<td>PVE module is not loaded</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Incorrect data record list</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>API sequence error</td>
<td></td>
</tr>
<tr>
<td>X'10'</td>
<td>Any code</td>
<td>Save area obtain failure</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>
<tr>
<td>X'14'</td>
<td>Any code</td>
<td>Invalid Control Blocks passed</td>
</tr>
<tr>
<td>X'04'</td>
<td>Policy environment block (PSCB) address was null</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>Policy session block (POCB) address was null</td>
<td></td>
</tr>
</tbody>
</table>
Return/reason codes: Notification Manager (BSN4600-4799)

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 153. 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></td>
<td>X'00'</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></td>
<td>X'04'</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></td>
<td>X'04'</td>
<td>A system error occurred inside the Notification Manager module</td>
</tr>
<tr>
<td></td>
<td>X'08'</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></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 MVS key</td>
<td>Valid MVS KEY</td>
</tr>
<tr>
<td>X'00000000'</td>
<td>Callers KEY</td>
<td></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 154. 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></td>
<td>BSNNLDS 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>X'04'</td>
<td>NODATA</td>
<td></td>
<td>No more data provided</td>
</tr>
<tr>
<td>X'08'</td>
<td>NOENTR</td>
<td></td>
<td>No entry in notification list</td>
</tr>
<tr>
<td>X'0C'</td>
<td>NONLPD</td>
<td></td>
<td>No pending delete table</td>
</tr>
<tr>
<td>X'10'</td>
<td>FNDLST</td>
<td></td>
<td>Found list in the repository</td>
</tr>
<tr>
<td>X'14'</td>
<td>FNDPDR</td>
<td></td>
<td>Found pending delete record</td>
</tr>
<tr>
<td>X'20'</td>
<td>PDEMAX</td>
<td></td>
<td>Pending delete record exceeded maximum limit</td>
</tr>
<tr>
<td>X'24'</td>
<td>LEEMAX</td>
<td></td>
<td>List entry exceeded maximum limit</td>
</tr>
<tr>
<td>Return code</td>
<td>Reason code (Hex)</td>
<td>Reason code (Symbolic)</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>------------------------</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>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>OBTNLC</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>NONTFL</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>NODESNC</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>

*continued*
Table 154. 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>INVNTF</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 155. 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>X'00'</td>
<td>none</td>
<td></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>X'04'</td>
<td>UNKFUN</td>
<td></td>
<td>PDDS function unknown</td>
</tr>
<tr>
<td>X'08'</td>
<td>NOPDDH</td>
<td></td>
<td>Unable to locate PDDH control block</td>
</tr>
<tr>
<td>X'0C'</td>
<td>NODMNIM</td>
<td></td>
<td>No domain name provided</td>
</tr>
<tr>
<td>X'10'</td>
<td>INVDMT</td>
<td></td>
<td>Invalid domain type</td>
</tr>
<tr>
<td>X'14'</td>
<td>NOPOCB</td>
<td></td>
<td>No POCB control block</td>
</tr>
<tr>
<td>X'20'</td>
<td>OBTPDDH</td>
<td></td>
<td>Unable to obtain PDDS storage</td>
</tr>
<tr>
<td>X'24'</td>
<td>RELPDDH</td>
<td></td>
<td>Unable to release PDDS storage (PDDH block)</td>
</tr>
<tr>
<td>X'28'</td>
<td>FPQSRV</td>
<td></td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOPDNT</td>
<td></td>
<td>No domain name table</td>
</tr>
<tr>
<td>X'30'</td>
<td>NODTDN</td>
<td></td>
<td>No match domain name in the table</td>
</tr>
<tr>
<td>X'34'</td>
<td>NOPDDP</td>
<td></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 156. 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'</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>X'04'</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>
</tbody>
</table>
Table 156. 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>Any code</td>
<td>Any code</td>
<td>Error (Function completed with error)</td>
</tr>
<tr>
<td>X'08'</td>
<td>FPQSVR</td>
<td>FPQSRV</td>
<td>call failure</td>
</tr>
<tr>
<td>X'04'</td>
<td>OBTAIN</td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTRDSCL</td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTRDSL</td>
<td>Unable to obtain RDS storage (RDSL block)</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTDELT</td>
<td>Unable to obtain RDS storage (DELETE TRSD SET NAME TABLE)</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTRDSH</td>
<td>Unable to obtain RDS storage (RDSH block)</td>
<td></td>
</tr>
<tr>
<td>X'08'</td>
<td>OBTAIN</td>
<td>Unable to obtain RDS storage (RDSC block)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELRDSH</td>
<td>Unable to release RDS storage (RDSH block)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELRDSL</td>
<td>Unable to release RDS storage (RSHL block)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELMMSG</td>
<td>Unable to release RDS storage (Message Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELCEXP</td>
<td>Unable to release RDS storage (Condition Expression Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELRTYP</td>
<td>Unable to release RDS storage (Resource Type Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELLEXP</td>
<td>Unable to release RDS storage (Exception Expression Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELTRSD</td>
<td>Unable to release RDS storage (Threshold Set List storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELTRSD</td>
<td>Unable to release RDS storage (Original Threshold Set List storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELRCDE</td>
<td>Unable to release RDS storage (Rule Condition Description Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELDAEL</td>
<td>Unable to release RDS storage (Data Element List Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELMSGT</td>
<td>Unable to release RDS storage (Message Template Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>DELNMLST</td>
<td>Unable to release RDS storage (Deleted Threshold Name List storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>STREAM</td>
<td>Unable to release RDS storage (Rule Stream storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>WORKAREA</td>
<td>Unable to release RDS storage (Parsing Work Area storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>FREERDSR</td>
<td>Unable to release RDS storage (RDSR Parsing Work Area storage)</td>
<td></td>
</tr>
<tr>
<td>X'0C'</td>
<td>RELRCDE</td>
<td>Unable to release RDS storage (Rule Condition Description Clause storage)</td>
<td></td>
</tr>
<tr>
<td>X'20'</td>
<td>NORDSH</td>
<td>No RDSH control block</td>
<td></td>
</tr>
<tr>
<td>X'24'</td>
<td>INVRDSC</td>
<td>No RDSR control block</td>
<td></td>
</tr>
<tr>
<td>X'28'</td>
<td>NORDRL</td>
<td>No RDSL control block</td>
<td></td>
</tr>
</tbody>
</table>

*continued*
### Table 156. 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'2C'</td>
<td>NOPOCB</td>
<td>No POCB control block</td>
<td></td>
</tr>
<tr>
<td>X'30'</td>
<td>NORUNM</td>
<td>No rule name provided</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>NODMNNM</td>
<td>No domain name provided</td>
<td></td>
</tr>
<tr>
<td>X'38'</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>X'54'</td>
<td>INVMOD</td>
<td>Invalid mode</td>
<td></td>
</tr>
<tr>
<td>X'58'</td>
<td>INVRTYP</td>
<td>Parsing error - Invalid resource type in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVTEN</td>
<td>Parsing error - Invalid domain name in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVTEN</td>
<td>Parsing error - Invalid file name in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVEEEXP</td>
<td>Parsing error - Invalid exception expression in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVTRSD</td>
<td>Parsing error - Invalid threshold list</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVCEXP</td>
<td>Parsing error - Invalid condition expression in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVDAL</td>
<td>Parsing error - Invalid data element List in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVMSGT</td>
<td>Parsing error - Invalid message in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOCEXP</td>
<td>No exception clause in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NORTYP</td>
<td>No resource type in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVTEN</td>
<td>Parsing error - Invalid domain name in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INVTEN</td>
<td>Parsing error - Invalid file name in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOTRSD</td>
<td>No threshold list</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOOTRSD</td>
<td>No original threshold list</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOEEXX</td>
<td>No exception expression in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NODAL</td>
<td>No data element list in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOMSGT</td>
<td>No message in template</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NORCDE</td>
<td>No rule condition description</td>
<td></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>
</tbody>
</table>

**continued**
Table 156. 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'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>None</td>
<td>DISC</td>
<td>Data Dictionary disconnect failed</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>CONN</td>
<td>Data Dictionary connect failed</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>VALE</td>
<td>Data Dictionary validation failed</td>
<td></td>
</tr>
</tbody>
</table>

Note:
1. The reason codes are displayed in messages without a return code.
**Return/reason codes: Policy Data Store (BSN7000-7199)**

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 157. 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>X'04'</td>
<td>NODATA</td>
<td></td>
<td>No more data</td>
</tr>
<tr>
<td>X'08'</td>
<td>FNDTMP</td>
<td></td>
<td>Found template in the repository</td>
</tr>
<tr>
<td>X'0C'</td>
<td>FNDSTR</td>
<td></td>
<td>Found stream in the repository</td>
</tr>
<tr>
<td>X'10'</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>X'04'</td>
<td>FPQSRV</td>
<td></td>
<td>FPQSRV call failure</td>
</tr>
<tr>
<td>X'08'</td>
<td>STGGET</td>
<td></td>
<td>Unable to obtain PDS storage</td>
</tr>
<tr>
<td>X'0C'</td>
<td>STGREL</td>
<td></td>
<td>Unable to release PDS storage</td>
</tr>
<tr>
<td>X'10'</td>
<td>PRNLOC</td>
<td></td>
<td>PRN latch failure</td>
</tr>
<tr>
<td>X'20'</td>
<td>NOPDSH</td>
<td></td>
<td>No PDSH control block</td>
</tr>
<tr>
<td>X'24'</td>
<td>NOPDSP</td>
<td></td>
<td>No PDSP control block</td>
</tr>
<tr>
<td>X'28'</td>
<td>NOPOCB</td>
<td></td>
<td>No POCB control block</td>
</tr>
<tr>
<td>X'2C'</td>
<td>NOPDSL</td>
<td></td>
<td>No PDSL control block</td>
</tr>
<tr>
<td>X'30'</td>
<td>NOPLNM</td>
<td></td>
<td>No policy name provided</td>
</tr>
<tr>
<td>X'34'</td>
<td>NODMNM</td>
<td></td>
<td>No domain name provided</td>
</tr>
<tr>
<td>X'38'</td>
<td>NOINPT</td>
<td></td>
<td>No input data</td>
</tr>
<tr>
<td>X'50'</td>
<td>INVFUNC</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'54'</td>
<td>INVMOD</td>
<td></td>
<td>Invalid mode</td>
</tr>
<tr>
<td>X'58'</td>
<td>INVTEM</td>
<td></td>
<td>Invalid policy template</td>
</tr>
<tr>
<td>X'5C'</td>
<td>INVSTR</td>
<td></td>
<td>Invalid policy stream</td>
</tr>
<tr>
<td>X'60'</td>
<td>INVCLS</td>
<td></td>
<td>Invalid policy clause</td>
</tr>
<tr>
<td>X'64'</td>
<td>INVLOC</td>
<td></td>
<td>Invalid locale</td>
</tr>
<tr>
<td>X'68'</td>
<td>INVENV</td>
<td></td>
<td>Invalid environment level</td>
</tr>
<tr>
<td>X'6C'</td>
<td>INVREC</td>
<td></td>
<td>Invalid RECON</td>
</tr>
<tr>
<td>X'70'</td>
<td>NOPOLY</td>
<td></td>
<td>No policies in repository</td>
</tr>
<tr>
<td>X'74'</td>
<td>MEMINU</td>
<td></td>
<td>Member in use</td>
</tr>
<tr>
<td>X'78'</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”
- “Pamlist return/reason code analysis” on page 518
- “Data Dictionary: Pamlist codes for all List functions” on page 519
- “Data Dictionary LKUP function: List and List Entry codes” on page 520
- “Data Dictionary CTAG(ID/NAME) function: List and List Entry codes” on page 521
- “Data Dictionary VALE function: List and List Entry codes” on page 522
- “Data Dictionary TRAN function: List and List Entry codes” on page 524
- “Data Dictionary COMP function: List and List Entry codes” on page 525
- “Data Dictionary FORM function: List and List Entry codes” on page 526
- “Data Dictionary: Codes for non-List function calls” on page 527

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_xxxxLIST_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|COMPL)

BSNDD_PARM_RETURN/BSNDD_PARM_REASON CODE DEFINITION

Table 158. 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 - BSNDDES invalid address defined in token</td>
</tr>
<tr>
<td>X'24'</td>
<td>Any code</td>
<td>Environment Error - BSNDDDS 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 519

List codes for Lookup (BSNDD FUNC=LKUP)

BSNDD_LKUPLIST_RETURN/BSNDD_LKUPLIST_REASON CODE DEFINITION

Table 159. 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>
<tr>
<td></td>
<td></td>
<td>No List Entry errors, call successful</td>
</tr>
</tbody>
</table>

List Entry codes for Lookup (BSNDD FUNC=LKUP)

BSNDD_LKUPLISTE_RETURN/BSNDD_LKUPLISTE_REASON CODE DEFINITION
Table 160. 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 519

List codes for Create Tag (BSNDD FUNC=CTAG(ID/NAME))

BSNDD_CTIIDLST_RETURN/BSNDD_CTIIDLST_REASON CODE DEFINITION

Table 161. 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>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_CTIIDLSTE_RETURN/BSNDD_CTIIDLSTE_REASON CODE DEFINITION

Table 162. 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>
</tbody>
</table>

List Entry return/reason codes need to be analyzed
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 519

List codes for Validate (BSNDD FUNC=VALE)

BSNDD_VALELIST_RETURN/BSNDD_VALELIST_REASON CODE DEFINITION

Table 163. List return and reason codes reported by Policy Services Data Dictionary VALE 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 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. 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 Validate (BSNDD FUNC=VALE)

BSNDD_VALELISTE_RETURN/BSNDD_VALELISTE_REASON CODE DEFINITION

Table 164. List Entry return and reason codes reported by Policy Services Data Dictionary VALE 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 - 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>
</tbody>
</table>
Table 164. List Entry return and reason codes reported by Policy Services Data Dictionary
VALE function  (continued)

<table>
<thead>
<tr>
<th>Return code</th>
<th>Reason code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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 - Incorrect SIGNED/UNIGNED setting</td>
<td></td>
</tr>
<tr>
<td>X'C0'</td>
<td>Tag Error - Incorrect SCALE setting</td>
<td></td>
</tr>
<tr>
<td>X'BC'</td>
<td>Tag Error - Invalid LOGICAL Type</td>
<td></td>
</tr>
<tr>
<td>X'B8'</td>
<td>LOGICAL(INTEGER) PHYSICAL(EXTERNAL) sign error</td>
<td></td>
</tr>
<tr>
<td>X'B4'</td>
<td>LOGICAL(INTEGER) PHYSICAL(EXTERNAL) validate error</td>
<td></td>
</tr>
<tr>
<td>X'B0'</td>
<td>LOGICAL(INTEGER) PHYSICAL(INTERNAL) invalid</td>
<td></td>
</tr>
<tr>
<td>X'AC'</td>
<td>LOGICAL(INTEGER) PHYSICAL(PACKED) validate error</td>
<td></td>
</tr>
<tr>
<td>X'A8'</td>
<td>LOGICAL(INTEGER) PHYSICAL(ZONED) validate error</td>
<td></td>
</tr>
<tr>
<td>X'A4'</td>
<td>LOGICAL(INTEGER) PHYSICAL(FLOATBHP) invalid</td>
<td></td>
</tr>
<tr>
<td>X'A0'</td>
<td>LOGICAL(INTEGER) PHYSICAL(FLOATHFP) invalid</td>
<td></td>
</tr>
<tr>
<td>X'9C'</td>
<td>LOGICAL(INTEGER) PHYSICAL(CHARACTER) validate error</td>
<td></td>
</tr>
<tr>
<td>X'98'</td>
<td>LOGICAL(INTEGER) PHYSICAL(unknown) invalid physical representation in file</td>
<td></td>
</tr>
<tr>
<td>X'94'</td>
<td>LOGICAL(FLOATINGPOINT) not implement</td>
<td></td>
</tr>
<tr>
<td>X'90'</td>
<td>LOGICAL(CHARACTER) sign error</td>
<td></td>
</tr>
<tr>
<td>X'8C'</td>
<td>LOGICAL(CHARACTER) not one of the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(EXTERNAL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(BINARY)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(FIXEDCHARACTER)</td>
<td></td>
</tr>
<tr>
<td>X'88'</td>
<td>LOGICAL(CHARACTER) value not char</td>
<td></td>
</tr>
<tr>
<td>X'80'</td>
<td>LOGICAL(BOOLEAN) sign error</td>
<td></td>
</tr>
<tr>
<td>X'7C'</td>
<td>LOGICAL(BOOLEAN) not one of the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(EXTERNAL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(BINARY)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PHYSICAL(FIXEDCHARACTER)</td>
<td></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 - Tag ID is zero</td>
<td></td>
</tr>
<tr>
<td>X'124'</td>
<td>DDEF error - RANGE not found</td>
<td></td>
</tr>
<tr>
<td>X'120'</td>
<td>BOUNDARY List error - Tag value less than Low Boundary</td>
<td></td>
</tr>
<tr>
<td>X'11C'</td>
<td>BOUNDARY List error - Tag value greater than High Boundary</td>
<td></td>
</tr>
<tr>
<td>X'118'</td>
<td>VALUE List error - Tag value not found in list</td>
<td></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 519

**List codes for Transform (BSNDD FUNC=TRAN)**

<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)**

<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</td>
</tr>
<tr>
<td></td>
<td></td>
<td>external format failed (CTEFF)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>CTEFF = Conversion to external format failed</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(STRINGLLLLBB) Not supported</td>
</tr>
</tbody>
</table>
Table 166. 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 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(FLOATFP) 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 519

List codes for Compare (BSNDD FUNC=COMP)

BSNDD_COMPLIST_RETURN/BSNDD_COMPLIST_REASON CODE TARGET CODE DEFINITION

Table 167. 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 167. 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. List entry return/reason codes can be analyzed.</td>
</tr>
<tr>
<td>X'08'</td>
<td>Any code</td>
<td>List Error - A list entry had a failure. List entry return/reason codes need to be analyzed</td>
</tr>
<tr>
<td>X'0C'</td>
<td>Any code</td>
<td>Environmental error. See reason code for details.</td>
</tr>
<tr>
<td></td>
<td>X'10'</td>
<td>Incorrect parameter list</td>
</tr>
<tr>
<td></td>
<td>X'14'</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 168. 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>
</tbody>
</table>
| X'04'       | Any code    | Process ended with warning  
|             | X'04'       | Source tag value for target tag value was not found |
| X'08'       | Any code    | Process ended with error  
|             | X'08'       | Incomparable value was found |

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 519

List codes for Format (BSNDD FUNC=FORM)

BSNDD_FORMPLIST_RETURN/BSNDD_FORMLIST_REASON CODE TARGET CODE DEFINITION

Table 169. 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 170. List Entry 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>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></td>
<td>X'C4'</td>
<td>Invalid Tag - LOGICAL(FLOATINGPOINT)</td>
</tr>
<tr>
<td></td>
<td>X'C0'</td>
<td>Invalid Tag - LOGICAL(STRING)</td>
</tr>
<tr>
<td></td>
<td>X'BC'</td>
<td>Invalid Tag - LOGICAL(TIMEVALUE)</td>
</tr>
<tr>
<td></td>
<td>X'B8'</td>
<td>Invalid Tag - LOGICAL(TIMESTAMP)</td>
</tr>
<tr>
<td></td>
<td>X'94'</td>
<td>Invalid Tag - LOGICAL(UNKNOWN)</td>
</tr>
<tr>
<td></td>
<td>X'90'</td>
<td>Invalid Tag - PHYSICAL(INTERNAL)</td>
</tr>
<tr>
<td></td>
<td>X'8C'</td>
<td>Invalid Tag - PHYSICAL(BINARY)</td>
</tr>
<tr>
<td></td>
<td>X'88'</td>
<td>Invalid Tag - PHYSICAL(PACKED)</td>
</tr>
<tr>
<td></td>
<td>X'84'</td>
<td>Invalid Tag - PHYSICAL(ZONED)</td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td>Invalid Tag - PHYSICAL(FLOATBHP)</td>
</tr>
<tr>
<td></td>
<td>X'7C'</td>
<td>Invalid Tag - PHYSICAL(FLOATHFP)</td>
</tr>
<tr>
<td></td>
<td>X'78'</td>
<td>Invalid Value - PHYSICAL(FIXEDCHARACTER)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHYSICAL(BOOLEAN)</td>
</tr>
<tr>
<td></td>
<td>X'68'</td>
<td>Invalid Tag - PHYSICAL(UNKNOWN)</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>Transform successful</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 171. 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</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 172. 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 173. 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 174. 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>
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 175. 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>No log file open</td>
<td></td>
</tr>
<tr>
<td>X'27'</td>
<td>No member access</td>
<td></td>
</tr>
<tr>
<td>X'2A'</td>
<td>Non-queued record in set</td>
<td></td>
</tr>
<tr>
<td>X'34'</td>
<td>Read entry not found</td>
<td></td>
</tr>
<tr>
<td>X'3A'</td>
<td>Return length truncated</td>
<td></td>
</tr>
<tr>
<td>X'3B'</td>
<td>Memory key not found</td>
<td></td>
</tr>
<tr>
<td>X'44'</td>
<td>Null GET elements</td>
<td></td>
</tr>
<tr>
<td>X'49'</td>
<td>End of list</td>
<td></td>
</tr>
<tr>
<td>X'52'</td>
<td>The required key field definitions are incomplete.</td>
<td></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*. 

---
Table 175. 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'00'</td>
<td>X'08'</td>
<td>Any code Error (Function completed with error)</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'02'</td>
<td>Bad packed option: must be 'C' or 'A'</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'08'</td>
<td>Bad application name</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'0C'</td>
<td>Element list is invalid</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'13'</td>
<td>Member not found</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'15'</td>
<td>Bad packed data area</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'16'</td>
<td>Bad packed data length</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'1C'</td>
<td>Invalid owner</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'1E'</td>
<td>Bad record set</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'1F'</td>
<td>Type not record set</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'20'</td>
<td>Bad record</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'21'</td>
<td>Type not record set</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'24'</td>
<td>No log file access</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'2B'</td>
<td>Bad location: must be 'N' or 'O'</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'30'</td>
<td>Invalid location for reading: must be 'R', 'M', or 'B'</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'35'</td>
<td>KEEP value is invalid: must be 'Y' or 'N'</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'39'</td>
<td>Invalid read option: must be 'H' or 'D'</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'3C'</td>
<td>Begin read entry not found</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'3D'</td>
<td>Bad time sequence setting</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'3E'</td>
<td>Invalid time locale</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'3F'</td>
<td>Invalid time zone</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'40'</td>
<td>Invalid leap seconds</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'41'</td>
<td>Invalid time type</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'42'</td>
<td>Invalid time value</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'47'</td>
<td>GET failed</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'48'</td>
<td>Key not found</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'4B'</td>
<td>Write null data to ADD</td>
</tr>
<tr>
<td>X'00'</td>
<td>X'51'</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 175. 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>
<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>X'0F'</td>
<td></td>
<td>Application not found</td>
</tr>
<tr>
<td>X'21'</td>
<td></td>
<td>Invalid time locale</td>
</tr>
<tr>
<td>X'22'</td>
<td></td>
<td>Invalid time zone</td>
</tr>
<tr>
<td>X'23'</td>
<td></td>
<td>Invalid leap seconds</td>
</tr>
<tr>
<td>X'24'</td>
<td></td>
<td>Invalid time type</td>
</tr>
<tr>
<td>X'25'</td>
<td></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>X'06'</td>
<td></td>
<td>Parser error</td>
</tr>
<tr>
<td>X'08'</td>
<td></td>
<td>No input commands to process</td>
</tr>
<tr>
<td>X'0D'</td>
<td></td>
<td>Connection to server repository failed</td>
</tr>
<tr>
<td>X'0E'</td>
<td></td>
<td>Undefined set clock error</td>
</tr>
<tr>
<td>X'10'</td>
<td></td>
<td>Invalid function</td>
</tr>
<tr>
<td>X'14'</td>
<td></td>
<td>Both date and age specified</td>
</tr>
<tr>
<td>X'15'</td>
<td></td>
<td>Invalid age specified</td>
</tr>
<tr>
<td>X'16'</td>
<td></td>
<td>Required one of date or age</td>
</tr>
<tr>
<td>X'17'</td>
<td></td>
<td>Invalid date specified</td>
</tr>
<tr>
<td>X'1A'</td>
<td></td>
<td>Command does not allow for server</td>
</tr>
<tr>
<td>X'1B'</td>
<td></td>
<td>Command does not allow for application</td>
</tr>
<tr>
<td>X'1C'</td>
<td></td>
<td>Command does not allow for RECON ID</td>
</tr>
<tr>
<td>X'1D'</td>
<td></td>
<td>Command does not allow for database</td>
</tr>
<tr>
<td>X'1E'</td>
<td></td>
<td>At least one process failed</td>
</tr>
<tr>
<td>X'28'</td>
<td></td>
<td>Delete by version failed</td>
</tr>
</tbody>
</table>
Table 176. 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>Open files failed</td>
<td></td>
</tr>
<tr>
<td>X’02’</td>
<td>Input commands missing</td>
<td></td>
</tr>
<tr>
<td>X’03’</td>
<td>Input command length missing</td>
<td></td>
</tr>
<tr>
<td>X’04’</td>
<td>Input line count exceeded</td>
<td></td>
</tr>
<tr>
<td>X’05’</td>
<td>Input command length invalid</td>
<td></td>
</tr>
<tr>
<td>X’07’</td>
<td>Unable to access BPE CSCD for parsing</td>
<td></td>
</tr>
<tr>
<td>X’09’</td>
<td>Null input to parse</td>
<td></td>
</tr>
<tr>
<td>X’0A’</td>
<td>Load error</td>
<td></td>
</tr>
<tr>
<td>X’0B’</td>
<td>Unable to open RECON log</td>
<td></td>
</tr>
<tr>
<td>X’0C’</td>
<td>RECON translation failed</td>
<td></td>
</tr>
<tr>
<td>X’11’</td>
<td>Bad conversion to time of day</td>
<td></td>
</tr>
<tr>
<td>X’12’</td>
<td>Bad store clock conversion</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 30. 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 8. Appendixes
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Index

A
accessibility overview 19
action modify for policy 111
action list entry 40
action, overview 40

B
BSNGLOBL locale, overview 57

C
components overview 12
conditional reorganization example 53
cookie policy 541, 543

D
data elements
database attribute 134
reference 133
related to AREA definition 159
related to change accumulation groups 177
related to data set backup status 174
related to data set CI/CA splits 147
related to database backup 176
related to database data set space 140
related to database records 138
related to database records in a UOW 166
related to database records in a UOW group 167
related to database records in an area 156
related to database recovery 175
related to free space in a data set group 151
related to free space in a UOW 162
related to free space in a UOW group 163
related to free space in an area 153
related to index 139
related to overflow in a UOW 164
related to overflow in a UOW group 165
related to overflow in an area 154
related to physical I/O in a UOW 170
related to physical I/O in a UOW group 171, 172
related to physical I/O in an area 158
related to pointers in a data set group 150
data elements (continued) related to randomizing parameter 137
related to repository group information 161
related to root segments 135
related to segment occurrences in an area 155
related to segments in a data set group 148
related to synonym in a UOW 168
related to synonym in a UOW group 169
related to synonym in an area 157
related to the dates of events 173
related to UOW statistics information 160
used by rule condition 33
database health management 9
diagnostic information gathering 537
directory entries
add delivery type 103
create 96
delete 103
update 103
view 103
Directory Entry Update report 187
directory entry, overview 45
documentation
accessing 17
sending feedback 17
documentation changes 4
domains, overview 56

e
email
settings
update 107
view 107
SMTP
update 107
view 107
environment promote 123
exception
reference 403, 435
exception class, overview 37
exception message format 40
exception, overview 37
exception severity level, overview 37
exception to action mapping 40
exception, overview 37
exporting
guidelines 127
overview 48

G
global locale, overview 57

H
history levels 63

I
IBM.AVG_DBREC_LEN.10 217
IBM.BACKOUT_NEEDED 411
IBM.CAGRQ_DEFAULT 432
IBM.CICA_SPLITS.10 219
IBM.DBDS_EXENTS.10 221
IBM.DBDS_GROWTH.10 224
IBM.DBDS_GROWTH.20 227
IBM.DBDS_GROWTH.30 229
IBM.DBDTYPE.DEDB 361
IBM.DBDTYPE.FIDB 365
IBM.DBDTYPE.FIIDB 369
IBM.DBDTYPE.HIDAM 373
IBM.DBDTYPE.HIDAMB 376
IBM.DBDTYPE.HIDAMF 379
IBM.DBDTYPE.HISAM 382
IBM.DBDTYPE.INDIM 385
IBM.DBDTYPE.PHIDAM 388
IBM.DBDTYPE.PHIDAMB 391
IBM.DBDTYPE.PHIDAMF 394
IBM.DBDTYPE.PSINDEX 397
IBM.DBDTYPE.SHISAM 400
IBM.DEDB_DBREC_IO.10 232
IBM.DEDB_DBREC_IO.20 234
IBM.DEDB_DBRECCNT.10 236
IBM.DEDB_DDBF_FS.10 238
IBM.DEDB_DDBF_FS.20 240
IBM.DEDB_DDBF_FS.30 242
IBM.DEDB_DDBF_FS.40 246
IBM.DEDB_DDBF_FS.50 248
IBM.DEDB_DDBF_FS.60 250
IBM.DEDB_DDBF_FS.70 252
IBM.DEDB_DDBF_FS.80 254
IBM.DEDB_FS.31 244
IBM.DEDB_FS.81 256
IBM.DEDB_OVERFLOW.10 258
IBM.DEDB_OVERFLOW.20 260
IBM.DEDB_OVERFLOW.30 262
IBM.DEDB_OVERFLOW.40 264
IBM.DEDB_OVERFLOW.50 266
IBM.DEDB_OVERFLOW.60 268
IBM.DEDB_OVERFLOW.70 270
IBM.DEDB_OVERFLOW.80 272
IBM.DEDB_OVERFLOW.90 274
IBM.DEDB_RFS.10 276
IBM.DEDB_RFS.11 278
IBM.DEDB_RFS.20 280
IBM.DEDB_RFS.21 282
IBM.DEDB_ROOT_IO.10 284
IBM.DEDB_ROOT_IO.20 286
IBM.DEDB_SEGMB.CNT.10 288
IBM.DEBD_SYN_LEN.10 290
IBM.DEBD_SYN_LEN.20 292
IBM.EEOE_COUNT 413
IBM.FFDB_FRAGDFSE.10 294
IBM.FFDB_NREUSFS.10 296
IBM.FRAGMENTATION.10 298
IBM.FREE_SPACES.10 301
IBM.HDAM_OVERFLOW.10 304
IBM.HDAM_SYN_LEN.10 306
IBM.HISAM_SEG_DEL.10 308
IBM.HRS_SINCE_LASTCA 415
IBM.HRS_SINCE_LASTIC 417
IBM.ROOTS_NOTHOME.10
IBM.ROOT_OVERFLOW
IBM.RECOV
IBM.RAP_SYNONYMS.10
IBM.NUM_DBRECORDS.10
IBM.NOT_IN_CAGRP
IBM.IX_OVERFLOW
IBM.IX_NUM_SEGM.10
IBM.IX_GROWTH.20
IBM.IX_GROWTH.21
IBM.IX_EXTENTS.1
IBM.IX_EXTENTS.10
IBM.IX_CICA_SPLIT
IBM.IX_CICA_SPLIT
IBM.IC_NEEDED 419
IBM.IC_RECOMMENDED 421
IBM.IX_CICA_SPLIT.10 328
IBM.IX_CICA_SPLIT.11 330
IBM.IX_EXTENTS.10 314
IBM.IX_EXTENTS.11 317
IBM.IX_GROWTH.10 319
IBM.IX_GROWTH.11 322
IBM.IX_GROWTH.20 324
IBM.IX_GROWTH.21 326
IBM.IX_NUM_SEGM.10 310
IBM.IX_OVERFLOW.10 312
IBM.LAST_REORG.10 332
IBM.ROOT_OVERFLOW.10 342
IBM.RANDOMIZING.10 338
IBM.RAP_SYNONYMS.10 340
IBM.RECOV_NEEDED 425
IBM.RECOV_DEFAULT 429
IBM.DBDTYPE.PHIDAM
IBM.DBDTYPE.HIDAM
IBM.DBDTYPE.HDDB
IBM.DBDTYPE.HDAM
IBM.DBDTYPE.FFDBALL
IBM.DBDTYPE.DEDB
IBM.CAGRP
IBM.ROOT_OVERFLOW.10
IBM.ROOTS_NOTHOME.10
IBM.SEGM_COUNT.10
IBM.SEGM_SPREAD.10
IBM.SLACK_BYTES.10
IBM.UNUSED_RAPS.10
IBM.VL_SEGSEP.10
IBM.NOT_IN_CAGRP
IBM.LAST_REORG.10
IBM.RECOV_NEEDED
IBM.RECOV_DEFAULT
IBM.DBDTYPE.PHIDAM
IBM.DBDTYPE.HIDAM
IBM.DBDTYPE.HDDB
IBM.DBDTYPE.HDAM
IBM.DBDTYPE.FFDBALL
IBM.DBDTYPE.DEDB
IBM.CAGRP
IBM.ROOT_OVERFLOW.10
IBM.ROOTS_NOTHOME.10
IBM.SEGM_COUNT.10
IBM.SEGM_SPREAD.10
IBM.SLACK_BYTES.10
IBM.UNUSED_RAPS.10
IBM.VL_SEGSEP.10
importing
guidelines 127
overview 48
installation, initial domain
start user interface 73

journal reports 179
Directory Entry Update report 187
Notification List and Directory Entry Import report 184
Notification List and Directory Entry List report 182
Notification List Delete report 183
Notification List Update report 186
overview 180
Policy Decision Making report 188
Policy Environment Service Environment Create report 191
Policy Environment Service Environment Delete report 192
Policy Environment Service Environment Select and Validate report 193
Policy Environment Service Worklist Maintenance Process report 196

journal reports (continued)
Policy Rule Template and Stream List report 197
Policy Stream Delete report 199
Policy Stream Import report 200
Policy Template Delete report 202
Policy Template Import report 203
Policy Template Update report 206
Rule Template Import report 209

overview, Policy Services (continued)
IMS Tools integration 5
locales 55
notification lists 27
policies 27
policy-based database health management 9
rules 27
sensor data service 23

L
legal notices
cookie policy 541, 543
notices 541
programming interface information 541
trademarks 541, 542
locales, overview 57

M
maintenance environment
best practices 65
connections 61
levels 63
overview 59
messages
overview, BSN 441
overview, IRO 489

N
notices 541
notification list
phase 1 policy evaluation 109
Notification List and Directory Entry Import report 184
Notification List and Directory Entry List report 182
Notification List Delete report 183
Notification List Update report 186
notification list, overview 46
notification lists
copy 106
create 104
dele 106
expand 106
list policies used 106
update 106
view 106

O
operation environment
best practices 65
connections 61
levels 63
overview 59
overview, Policy Services components 12
DBA responsibilities 5
domains 55
environments 55
features and benefits 5

P
policy
copying 115
create from SYS. policy 115
creating 119
IBM.CAGRP_DEFAULT 432
IBM.DBDTYPE.DEDB 361
IBM.DBDTYPE.FFDB 365
IBM.DBDTYPE.FFDBALL 369
IBM.DBDTYPE.HDAM 373
IBM.DBDTYPE.HIDAM 376
IBM.DBDTYPE.HISAM 379
IBM.DBDTYPE.INDEX 385
IBM.DBDTYPE.PHIDAM 388
IBM.DBDTYPE.PHIDAM.A 394
IBM.DBDTYPE.PSINDEX 397
IBM.DBDTYPE.SHSAM 400
IBM.RECOV_DEFAULT 429
modify actions 111
overview 28
RECOVERY domain reference 427
reference 359, 427
reference overview 359, 427
REORG domain reference 359
Policy Decision Making report 188
Policy Environment Service Environment Create report 191
Policy Environment Service Environment Delete report 192
Policy Environment Service Environment Select and Validate report 193
Policy Environment Service Worklist Maintenance Process report 196
policy evaluation process flow 50
Policy Rule Template and Stream List report 197
Policy Stream Delete report 199
Policy Stream Import report 200
policy stream, overview 28
Policy Template Delete report 202
Policy Template Import report 203
Policy Template Update report 206
policy template, overview 28
problems
gathering diagnostic information 537
process flow, policy evaluation 50
programming interface information 541
promote
best practices 65
maintenance to operation 123
R
reader comment form 17
reason codes
Action Manager 504
Association Manager 501
Client API interface 492
COMP function: List and List Entry
codes 525
CTAG(ID/NAME) function: List and
List Entry codes 521
Data Dictionary 517
Data Dictionary overview 517
Data Dictionary: Codes for non-List
function calls 528
Email/Texting Variable 502
FORM function: List and List Entry
codes 526
Journal Manager 505
LKUP function: List and List Entry
codes 520
Notification List Data Store 508
Notification Manager 507
parmlist analysis 518
parmlist codes for all List
functions 520
Parser, Validation, Evaluation 506
Policy Data Store 516
Policy Domain Data Store 511
Policy Environment Services 498
reference 491
Rules Data Store 512
Sensor Data delete 534
Sensor Data read/write 530
Storage Manager 503
TRAN function: List and List Entry
codes 524
VALE function: List and List Entry
codes 522
RECON ID, deleted from IMS Tools
KB 57
recovery 131
RECOVERY domain
exception reference 435
policy reference 427
RECOVERY actions 437
rule reference 409
REORG domain
exception reference 403
policy reference 359
rule reference 215
return codes
Action Manager 504
Association Manager 501
Client API interface 492
COMP function: List and List Entry
codes 525
CTAG(ID/NAME) function: List and
List Entry codes 521
Data Dictionary 517
Data Dictionary overview 517
Data Dictionary: Codes for non-List
function calls 528
Email/Texting Variable 502
FORM function: List and List Entry
codes 526
Journal Manager 505

return codes (continued)
LKUP function: List and List Entry
codes 520
Notification List Data Store 508
Notification Manager 507
parmlist analysis 518
parmlist codes for all List
functions 520
Parser, Validation, Evaluation 506
Policy Data Store 516
Policy Domain Data Store 511
Policy Environment Services 498
reference 491
Rules Data Store 512
Sensor Data delete 534
Sensor Data read/write 530
Storage Manager 503
TRAN function: List and List Entry
codes 524
VALE function: List and List Entry
codes 522
Rule Template Import report 209
rules
copy 75
copy scenarios 75
custom thresholds for multiple
databases 87
customize 79
customizing scenarios 79
IBM.AVG_DBREC_LEN.10 217
IBM.BACKOUT_NEEDED 411
IBM.CICA_SPLITS.10 219
IBM.DBDS_EXTENTS.10 221
IBM.DBDS_GROWTH.10 224
IBM.DBDS_GROWTH.20 227
IBM.DBDS_GROWTH.30 229
IBM.DEDB_DBREC_IO.10 232
IBM.DEDB_DBREC_IO.20 234
IBM.DEDB_DBRECCNT.10 236
IBM.DEDB_DEDB_FS.10 238
IBM.DEDB_DEDB_FS.20 240
IBM.DEDB_DEDB_FS.30 242
IBM.DEDB_DEDB_FS.40 246
IBM.DEDB_DEDB_FS.50 248
IBM.DEDB_DEDB_FS.60 250
IBM.DEDB_DEDB_FS.70 252
IBM.DEDB_DEDB_FS.80 254
IBM.DEDB_FS.31 244
IBM.DEDB_FS.81 256
IBM.DEDB_OVERFLOW.10 258
IBM.DEDB_OVERFLOW.20 260
IBM.DEDB_OVERFLOW.30 262
IBM.DEDB_OVERFLOW.40 264
IBM.DEDB_OVERFLOW.50 266
IBM.DEDB_OVERFLOW.60 268
IBM.DEDB_OVERFLOW.70 270
IBM.DEDB_OVERFLOW.80 272
IBM.DEDB_OVERFLOW.90 274
IBM.DEDB_RFS.10 276
IBM.DEDB_RFS.11 278
IBM.DEDB_RFS.20 280
IBM.DEDB_RFS.21 282
IBM.DEDB_ROOT_IO.10 284
IBM.DEDB_ROOT_IO.20 286
IBM.DEDB_SEGM_CNT.10 288
IBM.DEDB_SYN_LEN.10 290
IBM.DEDB_SYN_LEN.20 292

rules (continued)
IBM.EEQE_COUNT 413
IBM.FFDB_FRAGDFSE.10 294
IBM.FFDB_NREUSFSE.10 296
IBM.FRAGMENTATION.10 298
IBM.FREE_SPACES.10 301
IBM.HDAM_OVERFLOW.10 304
IBM.HDAM_SYN_LEN.10 306
IBM.HISAM_SEG_DEL.10 308
IBM.HRS_SINCE_LASTCA 415
IBM.HRS_SINCE_LASTIC 417
IBM.IC_NEEDED 419
IBM.IC_RECOMMENDED 421
IBM.IX_CICA_SPLIT.10 328
IBM.IX_CICA_SPLIT.11 330
IBM.IX_EXTENTS.10 314
IBM.IX_EXTENTS.11 317
IBM.IX_GROWTH.10 319
IBM.IX_GROWTH.11 322
IBM.IX_GROWTH.20 324
IBM.IX_GROWTH.21 326
IBM.IX_NUM_SEGM.10 310
IBM.IX_OVERFLOW.10 312
IBM.LAST_REORG.10 332
IBM.NOT_IN_CAGRP 423
IBM.NUM_DBRECORDS.10 334
IBM.RAA_DENSITY.10 336
IBM.RANDOMIZING.10 338
IBM.RAP_SYNONYMS.10 340
IBM.RECOV_NEEDED 425
IBM.ROOT_OVERFLOW.10 342
IBM.ROOTS_NOTHOME.10 344
IBM.SEGM_COUNT.10 346
IBM.SEGM_SPREAD.10 348
IBM.SLACK_BYTES.10 350
IBM.UNUSED_RAPS.10 353
IBM.VL_SEGM_SPLIT.10 356
modify message and thresholds 83
overview 33
RECOVERY domain reference 409
reference 215, 409
reference overview 215, 409
REORG domain reference 215

S
scenario example, conditional
reorganization 53
screen readers and magnifiers 19
sensor data
overview 32
sensor data service
overview 23
service information 16
summary message, overview 40
summary of changes 4
support
gathering diagnostic information
support information 16

537

T
technotes 17
texting
settings
update 107
Index

547


texting (continued)
settings (continued)
view 107
SMTP
update 107
view 107
threshold sets, overview 33
trademarks 541, 542
troubleshooting
gathering diagnostic information 537
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