Tivoli Asset Discovery for z/OS
Version 7 Release 5

Administration Guide and Reference

IBM
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About this document

The IBM® Tivoli® Asset Discovery for z/OS® Administration Guide and Reference explains how to install, configure, and use the product.

Who should read this document

This document is for system administrators who install and configure Tivoli Asset Discovery for z/OS, and for Software Asset Managers who perform daily system management tasks, such as asset discovery and reporting of software distribution.

What this document contains

The manual is divided into the following chapters:

- Chapter 1, “Overview of IBM Tivoli Asset Discovery for z/OS,” on page 1
- Chapter 5, “Reporting,” on page 75.
- Chapter 6, “Utilities,” on page 89.

At the back of the book the appendixes give information about the following topics:

- Appendix D, “Performance and tuning,” on page 239.
What's new in Tivoli Asset Discovery for z/OS 7.5

Tivoli Asset Discovery for z/OS 7.5 contains the following updates to the product:

**Usability enhancements:**
- Simplified flows
- Simplified installation and configuration
- Simplified reporting

**Performance improvements:**
- Reduction in CPU usage and elapsed time.

**Enhanced z/OS based reporting capability**
- New z/OS based Analyzer package, enabling interactive web output by specifying the option to download to html, csv, txt or xls.

Due to the restructuring of this manual, individual changes have not been flagged with change bars.
How to read the syntax diagrams

The syntactical structure of commands described in this document is shown by means of syntax diagrams.

Figure 1 shows a sample syntax diagram that includes the various notations used to indicate such things as whether:

- An item is a keyword or a variable.
- An item is required or optional.
- A choice is available.
- A default applies if you do not specify a value.
- You can repeat an item.

Here are some tips for reading and understanding syntax diagrams:

Figure 1. Sample syntax diagram
Order of reading
Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

The → symbol indicates the beginning of a statement.
The —— symbol indicates that a statement is continued on the next line.
The → symbol indicates that a statement is continued from the previous line.
The —— symbol indicates the end of a statement.

Keywords
Keywords appear in uppercase letters.

Sometimes you only need to type the first few letters of a keyword, The required part of the keyword appears in uppercase letters.

In this example, you could type "KEY", "KEYW", "KEYWO", "KEYWOR" or "KEYWORD".
The abbreviated or whole keyword you enter must be spelled exactly as shown.

Variables
Variables appear in lowercase letters. They represent user-supplied names or values.

Required items
Required items appear on the horizontal line (the main path).

Optional items
Optional items appear below the main path.

Choice of items
If you can choose from two or more items, they appear vertically, in a stack.
If you must choose one of the items, one item of the stack appears on the main path.
If choosing one of the items is optional, the entire stack appears below the main path.

If a default value applies when you do not choose any of the items, the default value appears above the main path.

**Repeatable items**
An arrow returning to the left above the main line indicates an item that can be repeated.

If you need to specify a separator character (such as a comma) between repeatable items, the line with the arrow returning to the left shows the separator character you must specify.

**Fragments**
Where it makes the syntax diagram easier to read, a section or fragment of the syntax is sometimes shown separately.
Chapter 1. Overview of IBM Tivoli Asset Discovery for z/OS

Tivoli Asset Discovery for z/OS is built on the concept of remote and central mainframe components which work together to produce reports on z/OS mainframe products and their usage. This section provides you with a high-level overview of the Tivoli Asset Discovery for z/OS core architecture.

Tivoli Asset Discovery for z/OS runs on z/Architecture® mainframes that use the z/OS operating system. Its purpose is to:

- Discover and identify products for the z/OS platform.
- Monitor software usage and trends.
- Report on the MSU capacity of each LPAR under which the product runs.
- Provide reporting for assets and usage.

The benefits of using this software are:

- Used and unused software are identified.
- Users of software are identified.
- Obsolete versions of software are identified and the usage of these versions determined.
- Usage trends of software and libraries are identified.

In an IBM z/OS environment, software is contained in load libraries, or as z/OS UNIX files. The installed software products are determined by scanning the content of these libraries and files. The usage of the software products is determined by monitoring the loaded program files. The discovered load libraries and z/OS UNIX files are then checked against a global database of product information. This database is supplied with the product. Using this global database, the product infers which products are installed and used on a system. Usage events for the libraries and files that are part of a product are then accumulated as usage events for the product itself on the system upon which they occurred.

The workflow is illustrated in Figure 2 on page 2, followed by a brief description of the components.
Inquisitor
A batch job which finds loadable programs in z/OS data sets and z/OS UNIX System Services file systems. One program locates load libraries on z/OS DASD devices, opens these load libraries, and captures information from the load modules in the libraries. This program is targeted to specific devices, libraries, or groups of libraries. It creates a compressed data set, which is then used as input to the Inquisitor Import process.

Another program locates and scans z/OS UNIX directories for program objects, and captures this information. It creates a compressed data set, which is then used as input to the Inquisitor Import for z/OS UNIX processing.

Usage Monitor
A started task which attaches to the z/OS program management functions by using standard IBM attachment protocols. It monitors and records the loaded modules of batch jobs, started tasks, and TSO users.

Usage Import
A batch job which copies the raw Usage Monitor data into the Repository
against matching load modules and aggregates the data against installed software products. After this process has been completed, you can view the usage data with the Analyzer reports.

Knowledge Base
The Global Knowledge Base, or GKB, is a database that is provided with Tivoli Asset Discovery for z/OS. It has a list of all z/OS globally identified products which are used by the product in the process of matching.

Inquisitor (IQ) Import
A batch job that loads raw Inquisitor data into IBM DB2® tables on z/OS, for z/OS load modules and z/OS UNIX program objects. The imported Inquisitor data is then matched against the Global Knowledge Base. The last step in the process is when the matched data is copied into the Repository.

Repository
A set of IBM DB2 for z/OS data tables that stores information about all of the software products discovered and their usage data.

Analyzer
The primary tool that is used to query the Tivoli Asset Discovery for z/OS database. It runs as a started task (STC), or batch job, on the same z/OS where the DB2 Subsystem runs. The output formats are HTML, Excel, Text, or Comma Separated Value (CSV). When configured in online mode, you can logon with your PC Browser; communicating directly with Analyzer on z/OS. The Analyzer can also be run in batch mode, where the results are saved to an output data set on z/OS.

(Optional) IBM Tivoli Common Reporting
A reporting tool, incorporating Cognos®, which can optionally be used to develop custom reports. This tool is useful if you want to combine data from Tivoli Asset Discovery for z/OS with other data sources. Logon with your PC browser, communicating with a distributed server where Tivoli Common Reporting is running, which then communicates with DB2 on z/OS.

Process flow
Data is collected on the target systems by the Inquisitor and the Usage Monitor, which are batch programs that do not require DB2 to be installed.

The collected data is then sent to the Repository database, where it is imported into the Repository tables. As the Repository is a set of DB2 objects, you must have DB2 installed where the Repository database is located.

In summary, the tasks as shown in Figure 2 on page 2 are:
1. Importing the data collected by the Inquisitor.
2. Matching the collected data with known product information from the Global and Local Knowledge Bases.
3. Loading the matched information into the Repository.
4. Importing the collected usage data into the Repository.
5. Running utilities to manage and maintain your data. This task is optional.
6. Reporting using the Analyzer, which consists of online and batch components. Optionally, you can use Tivoli Common Reporting Version 2 Release 1 to customize your reports.
Deployment

Tivoli Asset Discovery for z/OS is structured on several key data processes. They are:

Inquisitor data
The Inquisitor scans DASD volumes for libraries containing load modules and HFS/zFS volumes for z/OS UNIX program objects, producing Inquisitor data. The Match Engine then associates these libraries and load modules with a Vendor, Product, Option, and Release. The Load to Repository then loads this information into the DB2 Repository. These processes are all performed by running the Inquisitor Import Job. See "Running the Inquisitor Import" on page 65.

Usage event
A usage event describes a unique load of a load module, or UNIX program object, for a particular Job, User, and, optionally, an Account Code. The Usage Monitor records these usage events as they occur on a particular operating system. When the usage data is imported into a Repository, the SMF ID of the system is used to associate the usage event with the load module discovered on that system. After the usage data is imported into the Repository, each usage event is identified by the load module name, library name, and volume. It can then be associated to a particular product discovered on that system.

Repository
The Repository is a collection of DB2 tables that contains processed Inquisitor and Usage Monitor data. For all systems that are in a Repository, all DASD that is scanned must contain only unique volume serials; no duplicate SMF IDs. This means that any physically different volumes with identical volume names cannot be in the same Repository. Additionally, any physically different systems that are on a different OS/390® system, or LPAR, cannot coexist in the same Repository. Tivoli Asset Discovery for z/OS assumes that a library on a particular volume connected to one system is shared with other systems in the Repository that also contain that library and volume serial. The product also assumes that any SMF ID inside a Repository is unique, and any data that is imported from that SMF ID is to be merged with existing data associated with that SMF ID.

When you are designing the scope of a Repository, there are a few common scenarios that most installations fit into. It is common to define the scope of a Repository based upon a data center. In this scenario, each data center in the organization has a separate Repository.

CAUTION:
There is a restriction that any DASD volumes with the same VOLSER are assumed to be the same volume and to be shared among all systems that have them mounted.

The only way to stop this sharing from happening is to place the systems involved into different Repositories. This means that you end up running one Repository for each Sysplex or stand-alone system. As a data center usually does not contain duplicate volume serials, or duplicate SMF IDs, it fulfills the criteria for a Tivoli Asset Discovery for z/OS Repository. It is common for IT service providers to define a separate Repository for each customer. It is also common practice for a specific client to have access to one or more systems. Defining a Repository around these separate systems also satisfies the need for separation of data and ease of
reporting. Additionally, when a Repository is scoped around a single client, it fulfills the criteria of not having duplicate volume names and unique SMF IDs within a Tivoli Asset Discovery for z/OS Repository.

It is recommended to have a central DB2 subsystem that contains all the Repositories in your entire enterprise. The usage and Inquisitor data that require processing should be transmitted to this centralized DB2 subsystem by using the Tivoli Asset Discovery for z/OS Automation Server or equivalent automation product. See “Automation Server for z/OS” on page 66.

**Standard deployment**

The recommended procedure for deploying the Inquisitor and Usage Monitor to collect raw data is to deploy both components on every system in your organization. After you have scanned all available DASD on each system by running the Inquisitor, you can import all Inquisitor data from all systems into the relevant Repository by running the Inquisitor Import (see “Running the Inquisitor Import” on page 65). Tivoli Asset Discovery for z/OS analyzes this data and displays what products are installed on which systems. Usage data collected from every system by the Usage Monitor is imported and usage events are assigned to the discovered products so that you can analyze who has used a product on which system.

The first step in deploying Tivoli Asset Discovery for z/OS is to create a deployment test repository. This exercise is useful as it helps you to:

- Gain familiarity with the product.
- Check that your Repositories are defined correctly in terms of your business requirements and that the volumes and SMF IDs are unique.
- Determine database sizing.
- Analyze data integrity and correctness.

The next step is to run the SMP/E installation of the product, followed by the customization and creation of the required DB2 resources. You can then deploy the Inquisitor and Usage Monitor to all systems in your organization. It is advisable to first start the Usage Monitor on every system, in order to gather a significant amount of usage data for a specific time period. A usual scenario is for this deployment test repository to be placed on a test or development DB2 subsystem.

At this point you can start the Tivoli Asset Discovery for z/OS Analyzer and connect to the Repository. To verify the data collected by the Inquisitor and Usage Monitor, log on to the Analyzer and navigate to the Discovery menu tab. From this menu you can proceed to various reports on discovered products and module usage.

After data has been verified, it can be moved to a different subsystem with the appropriate backup strategies. However, in most cases this LPAR will not be a production LPAR.

Once you have moved your Repositories to their final location, you should consider setting up automation of the product. See “Automation Server for z/OS” on page 66.
Deployment for multiple Repositories

Some IT service providers will need to have multiple Repositories to cater for different sites. A site in this context means a logical split, for example, a data center, geographical region, or outsourcing customer. Having a Repository database for each site avoids the need to regularly transfer high volume usage data to a central site. It can also be easier to obtain DASD for several smaller databases than for one large database. The disadvantage of this set up is that reporting can only be performed on each specific Repository.

The amount of data a DB2 subsystem can accommodate is only limited by availability of disk space. For example, if your site has 50 or 100 z/OS systems, you can load all your data into a single Repository. However, for data management and performance reasons, it is recommended you consider grouping your data into logical units. You can define multiple Repositories under a DB2 subsystem, where each Repository might accommodate up to 30 systems. Each Repository must be defined with its own database. The advantage of this set up is that it makes it easier to generate reports across multiple Repositories.

You can implement multiple Repositories that share the same Global Knowledge Base. A shared Global Knowledge Base means that you only need to update a single copy of the Global Knowledge Base. Alternatively, each Repository can have its own Global Knowledge Base, but you will need to apply maintenance to each copy of the Global Knowledge Base.
Chapter 2. Installation

To set up Tivoli Asset Discovery for z/OS you need to perform a number of tasks. This section also details the prerequisites you need.

The tasks and prerequisites are described in the sections:

- “Setting up core components on a Test z/OS”
- “Populating the Test database with discovery data” on page 10
- “Setting up automated data collection and import” on page 11
- “Hardware requirements” on page 12
- “Software requirements” on page 13
- “Post-installation customization tasks for z/OS” on page 14.

Quick set up

Setting up core components on a Test z/OS

Table 1. Setting up core components on a Test z/OS

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Data sets and members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install target libraries.</td>
<td>hsi= TADz product prefix hsi.SHSIANL1 hsi.SHSIANL2 hsi.SHSIEXEC hsi.SHSIGKB1 hsi.SHSIMJPN hsi.SHSIMOD1 hsi.SHSIPARM hsi.SHSISAMP hsi.SHSITCR1</td>
</tr>
<tr>
<td></td>
<td>A z/OS system programmer is normally required to complete this step.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Order or download the installation image for IBM Tivoli Asset Discovery for z/OS, Release 7.5 (PID 5698-B39), and all available maintenance. Use ShopzSeries or your usual IBM ordering process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Using standard SMP/E for z/OS Receive and Apply, install as described in the Program Directory, GI11-8965.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Copy target libraries to the test z/OS LPAR where the DB2 for z/OS database is to be set up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dynamically define SHSIMOD1 to APF. For example, SETPROG APF,ADD,DSN=hsi.SHSIMOD1,SMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Schedule a change request to roll out target libraries to all z/OS LPARs and include APF authorization for SHSIMOD1. For example, update appropriate PROGxx member.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Confirm DB2 prerequisites on the test z/OS LPAR.</td>
<td>DB2 SDSNSAMP data set members:</td>
</tr>
<tr>
<td></td>
<td>A DBA is normally required for this step.</td>
<td>• DSNTIJTM</td>
</tr>
<tr>
<td></td>
<td>• DB2 for z/OS V8 (New Function Mode) or above.</td>
<td>• DSNTIJCL</td>
</tr>
<tr>
<td></td>
<td>• DSN_TIAD Dynamic SQL Program is enabled by using job SDSNSAMP(DSNTIJTM).</td>
<td>• DSNTIJRX</td>
</tr>
<tr>
<td></td>
<td>• CLI/ODBC is enabled by using bind job SDSNSAMP(DSNTIJCL).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• REXX is enabled by using bind job SDSNSAMP(DSNTIJRX), or SDSNSAMP(DSNTIJTM).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DB2 has access to a minimum of 4000 cylinders of 3390 DASD space.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 1. Setting up core components on a Test z/OS (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Data sets and members</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Define local environment settings.</td>
<td>hsiinst=hlq for JCLLIB, and PARMLIB libraries hsi.SHSISAMP data set member: hsiinst. &amp;DB.JCLLIB hsiinst. &amp;DB.PARMLIB</td>
</tr>
<tr>
<td></td>
<td>A DBA and a Tivoli Asset Discovery for z/OS Administrator to complete this step together.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Edit HSISCUST member in the SHSISAMP target library. Make changes within the SYSIN DD entry for local settings. Guidance is provided by documentation within the member.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• This job generates JCL jobs to be used in subsequent steps.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This job generates JCL jobs to be used in subsequent steps.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Create a Test system that contains new Storage Groups, GKB database, and the Repository database.</td>
<td>JCLLIB data set member: HSISDB01 HSISDB02 HSISDB03</td>
</tr>
<tr>
<td></td>
<td>• DBA submits HSISDB01 job.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DBA submits HSISDB02 job.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DBA submits HSISDB03 job.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> A database on DB2 for z/OS is required on a central z/OS LPAR (NOT every LPAR).</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Grant DB2 access.</td>
<td>JCLLIB data set member: HSISGRNT</td>
</tr>
<tr>
<td></td>
<td>• DBA submits HSISGRNT job.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Run Inquisitor DASD scan for z/OS product modules.</td>
<td>JCLLIB data set member: HSISINQZ</td>
</tr>
<tr>
<td></td>
<td>A Tivoli Asset Discovery for z/OS Administrator to perform this step and all subsequent steps.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Generate Inquisitor data in data set pointed to by DD HSIPZIP.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• For large sites, this job can take up to 1 hour to run. During this time you can continue with the subsequent tasks up to the Import Inquisitor data step.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>See</strong> “Running the Inquisitor” on page 31.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Start the Usage Monitor</td>
<td>JCLLIB data set member: HSISUMON</td>
</tr>
<tr>
<td></td>
<td>• The Usage Monitor is commonly run as a started task, but as a quick test you can run it initially as a batch job. This job runs continually until it is manually stopped. Most of the time this job is idle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <strong>Note:</strong> Usage is not captured for address spaces that are already active before the Usage Monitor job has been started.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>See</strong> “Running the Usage Monitor” on page 49.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Load Global Knowledge Base (GKB)</td>
<td>JCLLIB data set member: HSISGKBL</td>
</tr>
<tr>
<td></td>
<td>• Register for GKB update notification.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Load the GKB with HSISGKBL job. This process can take about 5 - 15 minutes, depending on your system capacity.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 1. Setting up core components on a Test z/OS (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Data sets and members</th>
</tr>
</thead>
</table>
| 9    | Import Inquisitor (IQ) data into the database.  
   - Wait for Inquisitor job HSISINQZ to complete.  
   - Submit HSISIQIM to import HSIPZIP data set created in Step 6 into the database.  
   - For large sites, this job might take up to 2 hours to run the first time. Subsequent processing is about 90% quicker.  
   See “Running the Inquisitor Import” on page 65. | JCLLIB data set member:  
   - HSISIQIM |
| 10   | Import usage data.  
   - This step is done by automation. However, as a quick test you can run it initially as a batch job.  
   - Usage Monitor generates an output file `hsiinst.UM&SMFID.D*.T*` (which by default is automatically created at midnight), either by stopping the Usage Monitor, or issuing the `Switch z/OS modify` command. For example,  
   - `P HSISUMON` or `F HSISUMON,SW1`  
   - Edit or submit HSISUIMP to import the Usage Monitor output data.  
   See “Running Usage Import” on page 66. | JCLLIB data set member:  
   - HSISUIMP |
| 11   | View the results with the Analyzer.  
   - Review or change settings in PARMLIB(HSISANP1)  
   - Submit JCLLIB(HSISANLO) on the same host as the database. This job runs continually until it is later manually stopped, for example  
   - `P HSISANLO`  
   - This job is idle for the remainder of the time.  
   - Logon to the Analyzer with your PC browser. The default settings, which can be changed in PARMLIB(HSISANP1), are:  
     - URL `http://hostname:9000`, where `hostname` is your z/OS IP host name or IP address.  
     - User ID `tadzadm`  
     - Password `tadz`  
   - Examine the Analyzer reports and confirm that all expected products have been identified. If products are missing:  
     - Check the GKB report to confirm the product is in the GKB. If it is not, open a PMR and IBM support will provide an updated GKB for the product.  
     - If the GKB has the product, it might be missing because the product is not installed on the Test z/OS. In this case, you must run the Inquisitor on a system where the product is installed and import the Inquisitor data into the database.  
   See “Running the Analyzer in online mode” on page 77. | PARMLIB data set member:  
   - HSISANP1 |
# Populating the Test database with discovery data

## Table 2. Populating the Test database with discovery data

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Data sets and members</th>
</tr>
</thead>
</table>
| 12   | Discover z/OS module-based products on all other z/OS LPARs.  
  • Run HSISINQZ on other LPARs hsiinst.HSIPZIP.&SMFID.  
  • Import the Inquisitor with member HSISIQIM.  
  See “Running the Inquisitor Import” on page 65. | JCLLIB data set members:  
  • HSISINQZ  
  • HSISIQIM |
| 13   | Discover z/OS UNIX System Services based products on all other z/OS LPARs.  
  • Run z/OS UNIX System Services Inquisitor.  
  • Import hsiinst...HSIUZIP.&SMFID  
  See “Running the Inquisitor for z/OS UNIX” on page 44. | JCLLIB data set members:  
  • HSISINUQ  
  • HSISIQIM |
| 14   | Import Sub-Capacity Reporting Tool (SCRT) CSV data:  
  • If your site has subcapacity licenses, the SCRT utility runs every month to scan SMF records. This utility generates a CSV file that is sent to IBM for billing purposes. The SCRT output CSV files can be imported into the Tivoli Asset Discovery for z/OS DB2 database to see trends, and combined with detailed data the product has captured.  
  See “Running SCRT import utility” on page 98 | JCLLIB data set members:  
  • HSISSCRT |
| 15   | Convert Tivoli License Compliance Manager for z/OS Surveyor data into Inquisitor data.  
  • Not applicable if you do not have Tivoli License Compliance Manager for z/OS. | JCLLIB data set members:  
  • HSIS2D1  
  • HSISIQIM |
| 16   | Convert Tivoli License Compliance Manager for z/OS Monitor data into Usage Monitor data.  
  • Not applicable if you do not have Tivoli License Compliance Manager for z/OS. | JCLLIB data set members:  
  • HSISM2D1  
  • HSISUIMP |
| 17   | Optionally import historical usage data that has been collected by SMF  
  • Run SMF Scanner utility to convert SMF type 30 records and SMF type 14 records into Usage Monitor data format.  
  • Import the SMF Scanner output file.  
  See “Running SMF scanner utility” on page 100. | JCLLIB data set members:  
  • HSISSMF  
  • HSISUIMP |
## Setting up automated data collection and import

### Table 3. Setting up automated data collection and import

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Data sets and members</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Create a Production database cloned from the Test database. Most sites have a Test database (set up in previous steps) and a Production database (which runs on a Development LPAR, not a business workload LPAR).&lt;br&gt;• The Production database must be set up to automatically import the captured usage data, either nightly or weekly (recommended for best performance).&lt;br&gt;• Your database administrator should create the Production database by using the same process described in the steps that created the Test database. For example, HSISCUST, HSISDB01, HSISGRNT&lt;br&gt;• Import the latest GKB with the HSISGKBL job.&lt;br&gt;• Unload the Test database to a compressed file with the HSISUNLD job.&lt;br&gt;• Initially load the Production database from the unloaded compressed file with HSISLOAD job.&lt;br&gt;Note: The Production database has regular usage data imported. You can clone your Production database (with the usage data) and put it back into the Test database by performing an unload and load (in reverse). For example, HISISUNLD from Production, and HSISLOAD into Test.</td>
<td>JCLLIB data set members:&lt;br&gt;• HSISCUST&lt;br&gt;• HSISDB01&lt;br&gt;• HSISDB02&lt;br&gt;• HSISDB03&lt;br&gt;• HSISGRNT&lt;br&gt;• HISUNLD&lt;br&gt;• HSISLOAD</td>
</tr>
<tr>
<td>19</td>
<td>Security.&lt;br&gt;Using RACF® as an example:&lt;br&gt;• Define a profile in the STARTED Class to associate a user ID to the started tasks HSIJMON, HSIJAUTO, and HSIJANLO&lt;br&gt;• Ensure that user IDs have the following:&lt;br&gt;  – READ access to hsi** data sets&lt;br&gt;  – ALTER access to hsiinst.** data sets&lt;br&gt;See &quot;Security and authorization&quot; on page 13</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Usage Monitor started task.&lt;br&gt;A z/OS system programmer is required to perform this step.&lt;br&gt;• Review and Edit HSISMNPM settings.&lt;br&gt;DSN(hsiinst.UM&amp;SMFID) causes the output to generate hsiinst.UM&amp;SMFID.D*.T* data sets.&lt;br&gt;• Schedule change request to roll out new started task HSIJMON on all z/OS LPARs.&lt;br&gt;• Copy HSIJMON to system PROCLIB data set.&lt;br&gt;• Arrange for HSIJMON to be automatically started early in the IPL cycle to ensure that all activity is recorded.&lt;br&gt;See &quot;Setting up the Usage Monitor&quot; on page 47.</td>
<td>PARMLIB data set member:&lt;br&gt;• HSISMNPM&lt;br&gt;\ JCLLIB data set member&lt;br&gt;• HSIJMON</td>
</tr>
</tbody>
</table>
### Table 3. Setting up automated data collection and import (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>JCLLIB data set member:</th>
<th>PARMLIB data set members:</th>
</tr>
</thead>
</table>
| 21   | Automation Server started task.  
   A z/OS systems programmer is required to perform this step.  
   - Schedule change request to roll out new started task HSIJAUTO on all z/OS LPARs.  
   - Define Automation control VSAM data set with HSIASALC job.  
   - Customize HSIAPARM to run every weekend:  
     - Remote hosts: Inquisitor scan, ZCAT to amalgamate, and FTP to transfer.  
     - Database host: Inquisitor Import, Usage Monitor import, and aggregate.  
   - Copy HSIJAUTO to system PROCLIB data set.  
   - Arrange for HSIJAUTO to be automatically started. This task can be carried out any time in the IPL cycle.  
   See “Running the Automation Server” on page 67. | JCLLIB data set member:  
   - HSIASALC | PARMLIB data set members:  
   - HSIAPARM  
   - HSAISCAN  
   - HSIAZCAT  
   - HSIAFTP  
   - HSIAIQIM  
   - HSIAUIMP  
   - HSIAAGGR  
| 22   | Analyzer started task.  
   A z/OS systems programmer is required to perform this step.  
   - Schedule change request to roll out new started task HSIJANLO to the Production database host.  
   - Copy HSIJANLO to system PROCLIB data sets.  
   See “Getting started with the Analyzer” on page 75. | PARMLIB data set member:  
   - HSISANP1 | JCLLIB data set member:  
   - HSIJAUTO |
| 23   | Analyzer started task which uses Secure SSL (HTTPS) and logon with a RACF user ID and Password.  
   A z/OS systems programmer and a RACF administrator are required to perform this step. In addition to the tasks described in Step 21, make the following changes:  
   - Edit member HSISANP1 and change parameter to SECURITY=SYSTEM  
   - Review and edit the comments in members HSISANS1, HSISANS2, and HSISANS3, to create a digital certificate required for Secure SSL.  
   See “Analyzer JCLLIB and PARMLIB members” on page 76. | PARMLIB data set member:  
   - HSISANP1 | JCLLIB data set member:  
   - HSIJAUTO  
   - HSISANS1  
   - HSISANS2  
   - HSISANS3 |
| 24   | Arrange for regular reorganization and backups of your database.  
   A database administrator should carry out these tasks. | Only for Repository table spaces |
Software requirements

The software requirements for running Tivoli Asset Discovery for z/OS are:

- z/OS Version 1 Release 10 or later.
- DB2 Version 8 Release 1 (new function mode) or later.

**Note:** DB2 does not need to be installed on all your z/OS systems. However, the product needs DB2 to be installed on at least one z/OS system.
- Language Environment® for z/OS.
- Firefox Version 3.6.x, or Internet Explorer Version 6.
- (Optional) For Tivoli Common Reporting Version 2 Release 1, refer to Tivoli Common Reporting User Guide SC14-7613-00.

Security and authorization

A z/OS user ID is required with appropriate RACF access to submit the batch jobs used in the customizing and operation of Tivoli Asset Discovery for z/OS.

RACF customization

To run the Tivoli Asset Discovery for z/OS Started Tasks, Usage Monitor, Analyzer, and Automation Server, see the table shown here for the RACF authority required for each STC. Consult with your RACF Administrator to define the required RACF authority.

**Table 4. RACF authority required for each started task**

<table>
<thead>
<tr>
<th>Started task name</th>
<th>SHSIMOD1</th>
<th>PARMLIB</th>
<th>SHSIANL1</th>
<th>SHSIANL2</th>
<th>ACDS</th>
<th>SDSNLOAD and SDSNEXT</th>
<th>HLQIDS data set</th>
<th>Usage Monitor output database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage Monitor</td>
<td>READ</td>
<td>READ</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>READ</td>
<td>ALTER</td>
<td>READ ALTER</td>
</tr>
<tr>
<td>Analyzer</td>
<td>READ</td>
<td>READ</td>
<td>READ</td>
<td>n/a</td>
<td>n/a</td>
<td>READ</td>
<td>ALTER</td>
<td>n/a n/a</td>
</tr>
<tr>
<td>Automation Server</td>
<td>READ</td>
<td>n/a</td>
<td>n/a</td>
<td>CONTROL</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a n/a</td>
</tr>
</tbody>
</table>

The started task should be defined in the resource class STARTED, with additional detail in the STDATA segment of the resource. It can also be defined in the started task table ICHRIN03, but this requires an IPL to add or update a task definition. For example:

```
RDEFINE STARTED HS1*.* UACC(NONE) +
STDATA (USER(??????))
```

Replace ??????? with the name of the started task user for Tivoli Asset Discovery for z/OS.

```
SETROPTS RAONLY(STARTED) REFRESH
```

For non-RACF security products, consult your Security Administrator.

z/OS UNIX security

For more information see “Security considerations when running the Inquisitor for z/OS UNIX” on page 46.
**APF**

The Inquisitor and Usage Monitor use z/OS authorized system services. These programs are contained in the PDSE Load Library SHSIMOD1, which must be authorized using APF in order to run the Usage Monitor and/or the Inquisitor when the latter is not being run with PARM=NOAPF.

**DB2 authorization**

You need DB2 privileges to perform the following tasks:
- DBADM authority to access the product database. You need to drop and create DB2 resources.
- BIND plans and packages.
- EXECUTE authority to execute plans and packages.
- SELECT authority to access the DB2 Catalog tables.
- LOAD and STATS privileges to run DB2 utilities LOAD and RUNSTATS.
- Access to work file database or TEMP database for Declared Global Temporary table.

---

**Post-installation customization tasks for z/OS**

This section describes the post-installation tasks you need to perform to customize the product in a z/OS environment.

A Tivoli Asset Discovery for z/OS administrator, and a DB2 for z/OS database administrator, should have the necessary authorities to implement these tasks.

**z/OS customization**

A z/OS system programmer should have the necessary authorities to perform this task.

**MAXCAD parameter**

The Usage Monitor uses a SCOPE=COMMON data space. For this reason, it is necessary to have at least two additional system-wide data space PASN entries. Tivoli Asset Discovery for z/OS uses one data space, and after a switch, creates a new one. The older data space is not deleted until it is processed by the Usage Monitor writer task.

To enable the creation of the Usage Monitor data spaces, the Usage Monitor MAXCAD system parameter should be set to a value which is large enough to cater for the Usage Monitor data spaces. If specified, the MAXCAD parameter is located in the IEASYSxx member of the system PARMLIB library. For more information about the default and valid value range see the *MVS Initialization and Tuning Reference, SA22-7592*.

**DB2 customization**

A DB2 administrator should have the necessary authorities to perform the following tasks:

**DB2 accesses**

The product administrator needs to have DBADM access to the DB2 GKB and Repository databases.
For access to DB2 catalog tables for the Analyzer, see "Creating post-installation jobs" and read the definitions in HSI3GRNT.

DSNTIAD Dynamic SQL Program

This product uses the DB2 supplied DSNTIAD program. To bind the plan and create the DSNTIAD program, use the job hlq.SDSNSAMP(DSNTIJTM).

Bind Call Level Interface (CLI) / ODBC support

The product uses the DB2 supplied DSNACLI plan. To bind the DSNACLI plan, customize the job hlq.SDSNSAMP(DSNTIJCL) and submit to run.

To avoid a common error associated with SQL error code -805 (DBRM OR PACKAGE NAME NOT FOUND IN PLAN), you must rebind this plan with the latest DB2 maintenance, and include the following package in the job:

BIND PACKAGE (DSNAOCLI) MEMBER(DSNCLIMS) -
  CURRENTDATA(YES) ENCODING(EBCDIC)
  SQLERROR(CONTINUE)

Bind REXX language support

This product uses the DB2 supplied DSNREXX plan. To bind the DSNREXX plan, use the job hlq.SDSNSAMP(DSNTIJRX) in DB2 version 8, and job hlq.SDSNSAMP(DSNTIJTM) in version 9, and later.

TEMP database

If you are using DB2 Version 8, at least one 8 K table space must be defined in a TEMP database to support Declared Global Temporary tables. This is not necessary for DB2 Version 9, or later, and can be done using the SQL:

CREATE DATABASE TEMPDB AS TEMP;
COMMIT;

CREATE TABLESPACE DSN8K01 IN TEMPDB
  USING STOGROUP SYSDEFLT
  PRIQTY 720
  SECQTY 144
  ERASE NO
  BUFFERPOOL BP8K0 SEGSIZE 4
  CLOSE NO ;
COMMIT;

Creating post-installation jobs

To create a customized version of the post-installation JCLLIB and PARMLIB, take a copy of the job in member HSI3CUST in the hsi.SHISAMP data set and edit the job. This job contains parameters to define DB2 objects and jobs to run the product on the system. Contact your DB2 database administrator for assistance when you customize your DB2 parameters. For the SMS-related parameters, contact your system programmer.

Review the following table of parameters to customize the parameter values according to your requirements:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET HSI</td>
<td>This JCL parameter must be set to the high-level qualifiers of the target libraries created by the SMP/E installation process. These data sets all have low-level qualifiers beginning with SHSI.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SET ISP</td>
<td>The customization tool uses ISPF services to customize the parameters and JCL for the user. This parameter specifies the high-level qualifiers for the ISPF target libraries. These libraries all have low-level qualifiers beginning with SISP.</td>
</tr>
<tr>
<td>DB</td>
<td>This parameter specifies the name of the DB2 Repository database that the product uses to store all the non-Global Knowledge Base information that it gathers. This parameter is used as a full qualifier for the tables and index definitions belonging to the Repository, and as a part qualifier for the tables and index definitions belonging to the Inquisitor, Local Knowledge Base, and Local Knowledge Base for z/OS UNIX. The DB name must be less than, or equal to, 8 characters in length.</td>
</tr>
<tr>
<td>HSIINST</td>
<td>This parameter specifies the high-level qualifiers of the JCLLIB and PARMLIB data sets that are created by running the HSISCUST job. If the JCLLIB and PARMLIB data sets exist, they are reused and you can replace members with updated information. The name specified for this parameter must be less than, or equal to, 19 characters in length.</td>
</tr>
<tr>
<td>CEERUN</td>
<td>This parameter specifies the fully qualified Language Environment data set.</td>
</tr>
<tr>
<td>CBCDLL</td>
<td>This parameter specifies the fully qualified Language Environment C++ runtime data set.</td>
</tr>
<tr>
<td>DB2LOAD</td>
<td>This parameter specifies the fully qualified SDSNLOAD data set name.</td>
</tr>
<tr>
<td>DB2EXIT</td>
<td>This parameter specifies the fully qualified SDSNEXIT data set name. If the DB2EXIT library does not exist, use the same value as the DB2LOAD parameter.</td>
</tr>
<tr>
<td>DB2RUN</td>
<td>This parameter specifies the fully qualified RUNLIB data set name.</td>
</tr>
<tr>
<td>TIADPLAN</td>
<td>This parameter specifies the name of the DB2 plan used by the DSNTIAD utility. The DSNTIAD utility permits the use of dynamic SQL in a batch job, and is required by the post-installation jobs. The name of this DB2 plan can be obtained from your DB2 database administrator.</td>
</tr>
<tr>
<td>DBSSID</td>
<td>This parameter specifies the DB2 subsystem ID on the z/OS system.</td>
</tr>
<tr>
<td>LOC</td>
<td>This parameter specifies the ODBC(CLI) location for the DB2 subsystem ID on the z/OS system. You can use the DB2 DISPLAY DDF command to determine the location.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DBGKB</td>
<td>This parameter defines a single Knowledge Base database that is accessed by multiple Repositories under the same DB2 subsystem. It is used as part of the table qualifier and the index definitions qualifier belonging to the Global Knowledge Base, Global Knowledge Base for z/OS UNIX, and Inquisitor filters. The DBGKB name must be less than, or equal to, 8 characters in length, and must not have the same name as the name defined for the DB.</td>
</tr>
<tr>
<td>DBADMIN</td>
<td>This parameter specifies the list of user IDs that are to be granted ADMIN access to the database and its contents. DBADMIN is optional. Specify an empty string if you do not want to grant ADMIN access to user IDs for the database specified in DB and DBGKB.</td>
</tr>
<tr>
<td>SETSQLID</td>
<td>This parameter specifies the DB2 Secondary Authorization ID, as used in SET CURRENT SQLID. This parameter is optional. Specify an empty string if you do not want to use DB2 Secondary Authorization IDs. The SETSQLID value must be less than, or equal to, 8 characters in length.</td>
</tr>
<tr>
<td>SGHSITAB</td>
<td>This parameter specifies the storage group name for small tables in the database. The default value is SGHSITAB (same as the parameter name). Consult your DB2 database administrator for security implications and naming conventions. See the SQL statement CREATE STOGROUP for more information.</td>
</tr>
<tr>
<td>SGHSIBIG</td>
<td>This parameter specifies the storage group name for large tables in the database. The default value is SGHSIBIG (same as the parameter name). Consult your DB2 database administrator for security implications and naming conventions. See the SQL statement CREATE STOGROUP for more information.</td>
</tr>
<tr>
<td>SGHSIIDX</td>
<td>This parameter specifies the storage group name for indexes in the database. The default value is SGHSIIDX (same as the parameter name). Consult your DB2 database administrator for security implications and naming conventions. See the SQL statement CREATE STOGROUP for more information.</td>
</tr>
<tr>
<td>SGTABCAT</td>
<td>This parameter specifies the VCAT of the DB2 table space data set names for small tables in the database. Consult your DB2 database administrator for security implications and disk storage requirements. This parameter is referenced by storage group name parameter SGHSITAB.</td>
</tr>
<tr>
<td>SGTABVOL</td>
<td>This parameter specifies the names of the volumes that the table space data sets for small tables are allocated on. This parameter is referenced by storage group name parameter SGHSITAB.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SGBIGCAT</td>
<td>This parameter specifies the VCAT of the DB2 table space data set names for large tables in the database. Consult your DB2 database administrator for security implications and disk storage requirements. This parameter is referenced by storage group name parameter SGHSIBIG.</td>
</tr>
<tr>
<td>SGBIGVOL</td>
<td>This parameter specifies the names of the volumes that the table space data sets for large tables are allocated on. This parameter is referenced by storage group name parameter SGHSIBIG.</td>
</tr>
<tr>
<td>SGIDXCAT</td>
<td>This parameter specifies the VCAT of the DB2 data set names for indexes in the database. Consult your DB2 database administrator for security implications and disk storage requirements. This parameter is referenced by storage group name parameter SGHSIIIDX.</td>
</tr>
<tr>
<td>SGIDXVOL</td>
<td>This parameter specifies the names of the volumes that the data sets, for indexes, are allocated on. This parameter is referenced by storage group name parameter SGHSIIIDX.</td>
</tr>
<tr>
<td>BPDB, BPTS, BPIX</td>
<td>These parameters specify the buffer pool definitions for the database, table spaces, and indexes. See Appendix D, “Performance and tuning,” on page 239.</td>
</tr>
<tr>
<td>LOGGED</td>
<td>This parameter determines whether data changes to Inquisitor tables are recorded in the DB2 log. For DB2 Version 8, it must be set to Y. For DB2 Version 9 (new function mode) or later, you can improve performance by setting it to N. See Appendix D.</td>
</tr>
<tr>
<td>SIZE</td>
<td>This parameter specifies the initial space allocations for DB2 table spaces of the 4 largest tables. The default value of SIZE is 1. See Appendix D, “Performance and tuning,” on page 239.</td>
</tr>
<tr>
<td>CLASS</td>
<td>JES job class.</td>
</tr>
<tr>
<td>MSGCLASS</td>
<td>JES message class.</td>
</tr>
<tr>
<td>MSGLEVEL</td>
<td>JES message level.</td>
</tr>
</tbody>
</table>

Make the required changes to the copy of the customization job and submit it. The job creates or reuses two output PDSE libraries and one sequential data set. They are:

**JCLLIB**

The library contains JCL to implement and operate the product.

**PARMLIB**

The library is referenced by jobs in the JCLLIB, and contains pre-tailored parameters.

**UM.HLQIDS**

The sequential data set, referenced by the Usage Monitor when first created, contains a single record.

The JCLLIB members in the table are used to submit jobs to implement the product:
<table>
<thead>
<tr>
<th>Table 5. Customized SET statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSISDB00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 6. Post-installation jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSISDB01</strong></td>
</tr>
<tr>
<td><strong>HSISDB02</strong></td>
</tr>
<tr>
<td><strong>HSISDB03</strong></td>
</tr>
<tr>
<td><strong>HSISGKBL</strong></td>
</tr>
<tr>
<td><strong>HSISGRNT</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 7. Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSISGKBL</strong></td>
</tr>
<tr>
<td><strong>HSISINQZ</strong></td>
</tr>
<tr>
<td><strong>HSISINQU</strong></td>
</tr>
<tr>
<td><strong>HSISUMON</strong></td>
</tr>
<tr>
<td><strong>HSISIQIM</strong></td>
</tr>
<tr>
<td><strong>HSISUIMP</strong></td>
</tr>
<tr>
<td><strong>HSIASALC</strong></td>
</tr>
<tr>
<td><strong>HSIASSCT</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 8. Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSISANLO</strong></td>
</tr>
<tr>
<td><strong>HSISANLB</strong></td>
</tr>
<tr>
<td><strong>HSISCROGA</strong></td>
</tr>
<tr>
<td><strong>HSISCROGT</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 9. Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSISZCAT</strong></td>
</tr>
<tr>
<td><strong>HSISPTAG</strong></td>
</tr>
<tr>
<td><strong>HSISUSUM</strong></td>
</tr>
<tr>
<td><strong>HSISUDEL</strong></td>
</tr>
<tr>
<td><strong>HSISLLST</strong></td>
</tr>
<tr>
<td><strong>HSISTPRM</strong></td>
</tr>
<tr>
<td><strong>HSISSCRT</strong></td>
</tr>
<tr>
<td><strong>HSISKBT</strong></td>
</tr>
</tbody>
</table>

**Note:** The XML output is for Tivoli Asset Management for IT.
### Table 9. Utilities (continued)

<table>
<thead>
<tr>
<th>Job</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSSSFM</td>
<td>Job to get the historical usage information from existing SMF data.</td>
</tr>
<tr>
<td>HSSIBM</td>
<td>Job to filter out non-IBM programs from the Inquisitor and usage data.</td>
</tr>
</tbody>
</table>

### Table 10. Jobs to unload and load data between Repositories

<table>
<thead>
<tr>
<th>Job</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSISUNLD</td>
<td>Job to unload the Repository tables.</td>
</tr>
<tr>
<td>HSISLOAD</td>
<td>Job to load the Repository tables.</td>
</tr>
</tbody>
</table>

### Table 11. Globalization

<table>
<thead>
<tr>
<th>Job</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSSMCMP</td>
<td>Job to compile Japanese messages for MMS.</td>
</tr>
</tbody>
</table>

### Running post-installation jobs

This section describes how to run your post-installation jobs once you have set them up.

If you are setting up a new system for a single Repository, submit all the post-installation jobs in the sequence listed in Table 12.

If you want to create multiple Repositories in the same DB2 subsystem, refer to the instructions described in steps 1 and 2 in “Migration tasks” on page 24.

**Note:** You need to APF authorize the SHSIMOD1 library for all systems that the product is to be run on.

If you have made changes to the JCLLIB and PARMLIB data sets, either manually or by rerunning the HSISCUST customization job, you need to redistribute the data sets to all the systems that run the product.

### Table 12. Running post-installation jobs

<table>
<thead>
<tr>
<th>Job name</th>
<th>Rerunnable</th>
<th>Acceptable Condition Codes (CC)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSSDB01</td>
<td>YES</td>
<td>0 or 8</td>
<td>If storage groups have previously been created, then a CC of 8 is acceptable, otherwise investigate cause of failure.</td>
</tr>
<tr>
<td>HSSDB02</td>
<td>YES</td>
<td>0</td>
<td>If CC is not 0, then investigate cause of failure.</td>
</tr>
<tr>
<td>HSSDB03</td>
<td>YES</td>
<td>0</td>
<td>If CC is not 0, then investigate cause of failure.</td>
</tr>
<tr>
<td>HSSGKBL</td>
<td>YES</td>
<td>0 or 4</td>
<td>If CC is not 0 or 4, then investigate cause of failure.</td>
</tr>
<tr>
<td>HSSGRNT</td>
<td>YES</td>
<td>0 or 8</td>
<td>If grants for DB2 catalog tables have previously been run, then a CC of 8 is acceptable, otherwise investigate cause of failure.</td>
</tr>
</tbody>
</table>

Proceed to run the operation jobs, as described in Table 7 on page 19.
Verifying your installation

You can verify your installation by using the Analyzer to view the reports. If you have run the Inquisitor Import, the displayed output containing the Repository data tells you if you have been successful in your z/OS verification.
Chapter 3. Migration

This section describes how to migrate your data to the latest version of Tivoli Asset Discovery for z/OS if you are currently running one of the product versions listed here:

- IBM Tivoli Asset Discovery for z/OS V7.2.
- IBM Tivoli License Compliance Manager for z/OS V4.1, and V4.2

Migrating from V7.2 to V7.5

Before you migrate from V7.2 to V7.5, it is important to understand the improvements that have been made to the V7.5 database component.

1. There are no longer separate Inquisitor schema inventories in V7.5. The advantages of this change mean:
   - Less setup jobs.
   - Simpler structuring of Inquisitor schema inventories for shared and dedicated DASD pools.
   - Removes complexity of Usage Association.
   - Reduces database space.
   - Improves performance.
   
   Data is stored in the Repository for each unique module, library, and volume. In V7.2, this uniqueness was for each Inquisitor schema inventory, which could result in redundancy in the Repository. For example, one customer with 6 million modules had 300 million instances stored in their V7.2 database. In V7.5, they only had the 6 million instances.

2. Simplified processing jobs.
   - One job to import the Inquisitor data. This job includes steps to run the Match Engine and the Load to Repository.

3. Quicker processing.
   - Database component code is optimized to reduce processor consumption.
   - Inquisitor Import skips redundant processing.
     a. When processing freshly scanned Inquisitor data, the Repository is checked to see if there have been any changes to the library. By default, if the library content is the same, the Match Engine skips processing for that library.
     b. It is common for libraries to be cloned to different volumes and data set names. The Inquisitor Import detects cloned libraries and uses the information from the first time the library was matched in another library.

   This results in a significant reduction in the Inquisitor database processing time for repeat discoveries, making it possible to process fresh Inquisitor data weekly.

   - Usage Import REPMERGE step has been removed.
     The processing of REPMERGE is carried out internally in the raw Usage Import step, with optimized code for quicker processing.

   - The ZCAT utility optimizes weekly usage import processing.
The Usage Monitor collects usage statistics every day and, when these statistics are imported into the database, the information is stored in monthly granularity. The first and last day in the month the usage occurred is tracked. ZCAT is enhanced to condense the daily usage to monthly granularity. This enhancement reduces the number of records the Usage Import must process. For example, if the same job runs every day of the week, 10 times a day, there would be one usage record in seven daily usage files, each with a usage count of 10. ZCAT condenses the seven records into one record, with a total usage count of 70. If the usage period spans two months, there is one record per month.

Benchmarks with large customer data have shown ZCAT condenses weekly data by an average of 75%. This means that the Usage Import only needs to process 25% of the number of records it did in V7.2.

**Note:** ZCAT condensing requires the Usage Monitor to sort the data. In V7.2, this sorting was controlled with the SRT setting and you had to set this to SRT=Y. In V7.5, the SRT setting is removed, and data is always sorted.

- The ZCAT utility and the Usage Monitor have optional settings to reduce the level of usage detail imported into the database. By default, usage is stored in the database for each unique combination of month, module, library, volume, job name, user ID, and job account code.
  - JNM=N causes usage not to be tracked per individual job name and instead is tracked by job type.
  - UID=N causes usage not to be tracked per individual user ID.
  - JAC=N causes usage not to be tracked per job account code.

Benchmarks with large customer data show ZCAT condense weekly data with JNM=N by an average of 95%. The Usage Import needs only to process 5% of the number of records it did in V7.2.

ZCAT has a ZCATDETL DD that can be used to archive the detailed information. For example, you can have Usage Monitor capture all the information, use ZCAT JNM=N to reduce that amount of data imported into the database, and ZCATDETL to archive the details. Using this process, the database is smaller. If you want to know the specific job names, you can review the ZCATDETL archive with the **Usage Monitor File Detail** report in the Analyzer.

**Migration tasks**

Due to the database changes that have been explained in detail, the steps to migrate from V7.2 to V7.5 are as follows:

1. **Determine if you need multiple Repositories.**
   
   Data is stored in the Repository for each unique module, library, and volume. Volume names are unique for all systems in a data center. If you are combining data from multiple data centers, you might have different physical volumes that have the same name and usage data. These volumes are merged if you import the data into the same Repository. For this reason it is preferred to have a Repository set up for each data center. The separate repositories can be in the same central DB2 Subsystem, or you can choose to have a DB2 Subsystem for each data center.

   IT Service Providers often have customer dedicated systems. Each customer environment is typically represented in its own Repository, so that reporting can be done for each customer environment without the risk of accidentally including data from other customer systems.
Note: The Analyzer supports multiple Repositories in the same DB2 Subsystem. You can select which Repository you want to report on. The Product by Repository report can also be used to compare Repositories. Usage data can be imported into multiple Repositories concurrently.

2. Create a new V7.5 database for each Repository. This can be in the same DB2 Subsystem as the V7.2 database, or a different DB2 Subsystem.

HSISCUST must be run for each Repository. In V7.5, the Repository database name is a middle qualifier for the JCLLIB and PARMLIB data sets, for example HSIINST.TADZDB1.JCLLIB

Except for the Repository database DB setting, it is recommended you use the same HSISCUST settings for all Repositories in the same DB2 Subsystem.

a. Set up the first Repository, for example TADZDB1
   - View HSISCUST in the SHSISAMP data set.
     Define the settings in HSISCUST, and submit to generate HSIINST.TADZDB1.JCLLIB and HSIINST.TADZDB1.PARMLIB data sets.
   - View HSIINST.TADZDB1.JCLLIB
     - Run HSISDB01 to create the Storage Group.
     - Run HSISDB02 to create the Global Knowledge Base.
     - Run HSISGKBL to load the Global Knowledge Base.
     - Run HSISDB03 to create the Repository TADZDB1.
     - Run HSISGRNT to grant access to the DB2 tables.

b. Set up the second Repository, for example TADZDB2
   - View HSISCUST in HSIINST.TADZDB1.JCLLIB.
     - Change the DB setting for the second Repository (example DB = TADZDB2) and submit in order to generate HSIINST.TADZDB2.JCLLIB and HSIINST.TADZDB2.PARMLIB data sets.
   - View HSIINST.TADZDB2.JCLLIB
     - Run HSISDB03 to create the Repository TADZDB2.
     - Run HSISGRNT to grant access to the DB2 tables.

   Note: You do not run HSISDB01, HSISDB02 and HSISGKBL, as these jobs are for shared resources defined when the first Repository was set up.

c. Repeat this process for each Repository.

3. Import Inquisitor data from every system into the appropriate Repository.

The Inquisitor in V7.2 and V7.5 are similar, so it might be easier to capture the Inquisitor data with V7.2, and then import it into the V7.5 database. It is recommended that you initially scan every system. Systems that you think share all volumes might have some dedicated volumes. The only way to be sure is to scan each system. If the data scanned is shared, the V7.5 enhanced Inquisitor Import processing does not repeat the match processing for it, but tracks which systems have access to the library. After all the systems have been scanned and imported, you can review the Analyzer **Volume by System** and **Library by System** reports to confirm which systems share all data. In cases where all data is shared, you can choose to scan just one of the systems by using the Inquisitor PLX=Y setting for future rediscovers. Alternatively, you can scan everything and the Inquisitor Import processing can determine what is shared.

4. Export usage data from your V7.2 Repository and import to V7.5.
Run HSISMI75 job to export usage data from a V7.2 Repository. If you are splitting your V7.2 Repository into multiple V7.5 repositories, you must run multiple exports, specifying which systems to export by using the SIDLIST TPARAM setting. The exported data can then be imported into the V7.5 Repository with the standard V7.5 Usage Import job, HSISUIMP.

5. Import fresh usage data.

   - The Usage Monitor in V7.2 and V7.5 are similar, so you can import V7.2 captured usage data into the V7.5 database.

   **Note:** It is possible to use V7.5 ZCAT to condense data that has been concatenated with V7.2 ZCAT. The ZCAT72IN parameter causes ZCAT V7.5 to internally unconcatenate the input V7.2 data to work files, condense the data, and produce one output file.

---

**IBM Tivoli License Compliance Manager for z/OS conversion**

The conversion process allows you to manage when each system within the enterprise is to be converted from Tivoli License Compliance Manager for z/OS to Tivoli Asset Discovery for z/OS. It uses a staged approach which allows both products to run in parallel until you decide to cut over to Tivoli Asset Discovery for z/OS.

Tivoli Asset Discovery for z/OS and DB2 can be installed on the system of your choice, with Tivoli License Compliance Manager for z/OS continuing to run on the existing systems within the enterprise.

Once you have completed the conversion process, you can start using the Tivoli Asset Discovery for z/OS database and reporting capabilities against your entire enterprise, without having to install it on every system. It enables the data generated by your existing Tivoli License Compliance Manager for z/OS to be used by Tivoli Asset Discovery for z/OS.

**How to run the conversion**

In order to run the conversion, you need to follow these steps:

1. Ensure that you have already installed Tivoli Asset Discovery for z/OS. See Chapter 2, “Installation,” on page 7.
3. Run the conversion jobs
   - HSISM2D - Monitor conversion of MONDETL data for Tivoli License Compliance Manager for z/OS V4.1 and V4.2.
   - HSSI2D1 - Surveyor conversion of SURVDATA data for Tivoli License Compliance Manager for z/OS V4.1 and V4.2.

**Loading converted data into Tivoli Asset Discovery for z/OS**

To load converted data into Tivoli Asset Discovery for z/OS, you need to run the following jobs:

1. HSISIQIM - Job to run the Inquisitor Import. Input data for this job is derived from output of HSSI2D1.
2. HSISUIMP - Job to run the Usage Import. Input data for this job is obtained from output of HSISM2D.
Your Monitor and Surveyor data are now successfully imported into Tivoli Asset Discovery for z/OS.

For more information about the jobs that you have run, see "Creating post-installation jobs" on page 15.

**Post-conversion tasks**

- You can continue to run your existing Monitor and Surveyor as before. Tivoli Asset Discovery for z/OS, Usage Monitor, and the Inquisitor, can be run in parallel.
- When Tivoli Asset Discovery for z/OS has been fully implemented, and the new Usage Monitor and Inquisitor Scan are ready for use, the Tivoli License Compliance Manager for z/OS version of the Monitor and Surveyor can be discontinued, and no further conversion is necessary.

**Tivoli License Compliance Manager for z/OS Exporter compatibility**

To provide a set of functions like the ones used by the Exporter, four members are provided in the hsi.SHSIEEXEC data set. The members query the information stored in DB2, and return output stored in the four Tivoli License Compliance Manager for z/OS Exporter DSECT formats.

*Table 13. SHSIEXEC queries*

<table>
<thead>
<tr>
<th>REXX samples in SHSIEXEC</th>
<th>Tivoli License Compliance Manager for z/OS Exporter DSECT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSIIXPMO</td>
<td>XPMODS</td>
<td>Installed Load Modules</td>
</tr>
<tr>
<td>HSIIXPPR</td>
<td>XPPRODS</td>
<td>Installed Products</td>
</tr>
<tr>
<td>HSIIXPUM</td>
<td>XPUSAGEM</td>
<td>Load Module use</td>
</tr>
<tr>
<td>HSIIXPUP</td>
<td>XPUSAGEP</td>
<td>Product use</td>
</tr>
</tbody>
</table>

Some fields cannot be generated as they were in Tivoli License Compliance Manager for z/OS. These fields are marked with a question mark.

The description, function, and JCL required to run these samples is documented in each member.

The REXX samples TRNMODS, TRNUSGM, and TRNUSGP are provided with Tivoli License Compliance Manager for z/OS. They transform each record into transaction file format for import into a spreadsheet. If you run these records during migration, the date fields which are unavailable in Tivoli Asset Discovery for z/OS are displayed as ‘6F’; the hexadecimal EBCDIC representation of ‘?’

Before using these samples, ensure the DB2 REXX environment for the target DB2 system has been configured successfully.
DB2 resources affected by migration

To find out which DB2 resources are affected by application data migration, see Table 14. This table is provided as a reference, and definitions for these DB2 resources can be found in the PARMLIB members.

Table 14. DB2 resources affected by migration

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Table Name</th>
<th>V7.2</th>
<th>V7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>PRODUCT</td>
<td>WVDRGKB</td>
<td>WVDRGKB</td>
</tr>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TPARAM</td>
<td>WRULGKB</td>
<td>WRULGKB</td>
</tr>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TPRODLMN</td>
<td>WVDRGKB</td>
<td>WVDRGKB</td>
</tr>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TPRODUCT</td>
<td>WPDTGKB</td>
<td>WPDTGKB</td>
</tr>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TPRSMAP</td>
<td>WRULGKB</td>
<td>WRULGKB</td>
</tr>
<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TPTFMMID</td>
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<td>WRULGKB</td>
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<tr>
<td>&amp;DBGKB_GKB7</td>
<td>TRULES</td>
<td>WRULGKB</td>
<td>WRULGKB</td>
</tr>
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<td>&amp;DBGKB_GKB7</td>
<td>TSCORPAT</td>
<td>WSCPGKB</td>
<td>WSCPGKB</td>
</tr>
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<td>WVDRGKB</td>
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<tr>
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<td>WVERGKB</td>
</tr>
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<tr>
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<td>WRULGKU</td>
<td>WRULGKU</td>
</tr>
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<td>&amp;DBGKB_GKU7</td>
<td>TSCORPAT</td>
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<td>WVDRGKU</td>
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</tr>
<tr>
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<td>TIQFILTERS</td>
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<td>WIQFILTR</td>
</tr>
<tr>
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<td>TPARAM</td>
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<td>TXVENDORS</td>
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<tr>
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<td>&amp;DB_LKB7</td>
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<td>WLOCLKB</td>
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<tr>
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<td>WLOCLKB</td>
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<tr>
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<td>TSCORPAT</td>
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<td>WLOCLKB</td>
</tr>
<tr>
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<td>WLOCLKB</td>
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</table>
Table 14. DB2 resources affected by migration (continued)

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Table Name</th>
<th>V7.2</th>
<th>V7.5</th>
</tr>
</thead>
<tbody>
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<td>&amp;DB_LKU7</td>
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<td>WLOCLKU</td>
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<td>&amp;DB_LKU7</td>
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<tr>
<td>&amp;DB_LKU7</td>
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<td>WLOCLKU</td>
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<td>&amp;DB_ZIQ</td>
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<td>WC*</td>
<td>WCZIQTS</td>
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<tr>
<td>&amp;DB_ZIQ</td>
<td>TDECISION</td>
<td>WD*</td>
<td>WDZIQTS</td>
</tr>
<tr>
<td>&amp;DB_ZIQ</td>
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<td>WL*</td>
<td>WLZIQTS</td>
</tr>
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<td>TMIGREPORT</td>
<td>WR*</td>
<td>WRZIQTS</td>
</tr>
<tr>
<td>&amp;DB_ZIQ</td>
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<td>WM*</td>
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</tr>
<tr>
<td>&amp;DB_ZIQ</td>
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<td>WLUIQTS</td>
</tr>
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<td>TMIGREPORT</td>
<td>WRU*</td>
<td>WRUIQTS</td>
</tr>
<tr>
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<td>TMODULE</td>
<td>WMU*</td>
<td>WMUIQTS</td>
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<td>TPARAM</td>
<td>WSU*</td>
<td>WSUIQTS</td>
</tr>
<tr>
<td>&amp;DB_UIQ</td>
<td>TSYSTEM</td>
<td>WSU*</td>
<td>WSUIQTS</td>
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<td>VAGGR</td>
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<td>VAGGR</td>
<td>VAGGR</td>
</tr>
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<td>VAGGR</td>
<td>VPRODUCT</td>
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<td>VAGGR</td>
<td>VPRODINS</td>
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<td>VAGGR</td>
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<td>VPRODUSE</td>
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<td>VSHARE</td>
<td>VLIBRARY</td>
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<tr>
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<td>TLIBSYS</td>
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<td>VTLIBSYS</td>
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Table 14. DB2 resources affected by migration (continued)

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<td>VMODULE</td>
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<td>TPARAM</td>
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<td>VSHARE</td>
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<tr>
<td>&amp;DB</td>
<td>TPERIODS</td>
<td>VSHARE</td>
<td>VSHARE</td>
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<tr>
<td>&amp;DB</td>
<td>TPOVINV</td>
<td>VSHARE</td>
<td>VPOVINV</td>
</tr>
<tr>
<td>&amp;DB</td>
<td>TPOVLIB</td>
<td>VSHARE</td>
<td>VPOVLIB</td>
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<td>TPRODUCT</td>
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<td>VSHARE</td>
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<tr>
<td>&amp;DB</td>
<td>TREGCLASS</td>
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<td>VSHARE</td>
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<tr>
<td>&amp;DB</td>
<td>TREGION</td>
<td>VSHARE</td>
<td>VSHARE</td>
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<tr>
<td>&amp;DB</td>
<td>TREGLEAF</td>
<td>VSHARE</td>
<td>VSHARE</td>
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<td>&amp;DB</td>
<td>TUIMPORTCTRL</td>
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<td>VSHARE</td>
</tr>
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<td>&amp;DB</td>
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<td>VSHARE</td>
<td>VUSELIB</td>
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<td>&amp;DB</td>
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<td>VUSEMTD</td>
<td>VUSEMTD</td>
</tr>
<tr>
<td>&amp;DB</td>
<td>TUSEPO</td>
<td>VSHARE</td>
<td>VUSEPO</td>
</tr>
<tr>
<td>&amp;DB</td>
<td>TUSEPOV</td>
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<td>VUSEPOV</td>
</tr>
<tr>
<td>&amp;DB</td>
<td>TUSEPOVLIB</td>
<td>VSHARE</td>
<td>VUPOVLIB</td>
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<td>&amp;DB</td>
<td>TUSEPRS</td>
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<td>VUSEPRS</td>
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<tr>
<td>&amp;DB</td>
<td>TUSERDATA</td>
<td>VSHARE</td>
<td>VUSRDATA</td>
</tr>
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<td>&amp;DB</td>
<td>TVENDOR</td>
<td>VSHARE</td>
<td>VSHARE</td>
</tr>
<tr>
<td>&amp;DB</td>
<td>TVERSION</td>
<td>VSHARE</td>
<td>VSHARE</td>
</tr>
</tbody>
</table>
Chapter 4. Operation

Knowledge Base updates

Updates to the knowledge databases are provided monthly. The GKB updates are available from the Fix Central website [http://www.ibm.com/support/fixcentral](http://www.ibm.com/support/fixcentral). To get the updates from Fix Central, you must have a valid IBM user ID and password.

The following files are downloaded:

**GKBLELVEyymdd.TXT**
- The first part of this file has instructions similar to those in “Running the Knowledge Base updates.” However, the instructions might include revisions to the procedure in this manual, or instructions that are specific to the accompanying update.

The second part of this file consists of a list of products affected by the change.

**TADZKB**
- This file contains the replacement GKB to be loaded to the DB2 tables.

Running the Knowledge Base updates

The name of the file that contains the updates is TADZKB.XMI.

2. Upload TADZKB.XMI to the mainframe into a pre-allocated file with the attributes FB 80.
3. Receive the file by issuing TSO command RECEIVE INDATASET(TADZKB.XMI).
4. When prompted for additional information, enter DA (name of file).
5. After receiving the file, run the Knowledge Base load job HSISGKBL. Before submitting this job, update SET INDSN= with the name of the file you have received.

If you want to be notified about Knowledge base updates by e-mail, proceed to the product web site [http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Asset_Discovery_for_z-OS](http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Asset_Discovery_for_z-OS) and click Subscribe to this product in the Notifications panel. Fill in the My notifications form and click Submit.

Inquisitor for z/OS

The Inquisitor is a program which scans and collects information about PDS and PDSE program libraries. The data collected by the Inquisitor is used as input to the Inquisitor Import, and forms the basis of your software inventory.

Running the Inquisitor

To run the Inquisitor, use the job HSISINQZ, that is found in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.
Run time for this job depends on the number of volumes and libraries to be scanned. It is a good idea to run this job during off-peak periods.

When the HSISINQZ JCL is created, it has the ALLMSG, PLX=N, and LLQ=Z&SMF settings specified. If you want to alter these settings, use the parameters listed in the following table. The optional program parameter string lets you specify a report message level, a job run identifier, and an override to the system identifier. Use commas to separate the various settings specified within the program parameter string.

**Table 15. Program parameter settings used for running the Inquisitor**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSNMSG</td>
<td>Requests that messages relating to processed data sets, which might otherwise be suppressed, are to be logged in the SYSPRINT report.</td>
</tr>
<tr>
<td>PGMMSG</td>
<td>Requests that messages relating to processed programs, which might otherwise be suppressed, are to be logged in the SYSPRINT report.</td>
</tr>
<tr>
<td>ALLMSG</td>
<td>Requests both DSNMSG and PGMMSG message logging.</td>
</tr>
<tr>
<td>NOAPF</td>
<td>Specifies that the Inquisitor is to run in an environment which is not APF authorized.</td>
</tr>
<tr>
<td>SID=</td>
<td>The value is up to 4 characters long, and specifies the system identifier to be contained in the data output from the Inquisitor. If the SID identifier override is omitted, the system SMF identifier is used. The SID parameter setting is used when the SMF system identifier of a system is not unique. For example: SID=SYS2</td>
</tr>
<tr>
<td>PLX=</td>
<td>The parameter is used to identify if the Inquisitor data being collected is part of a SYSPLEX. The value is either Y or N.</td>
</tr>
<tr>
<td>LLQ=</td>
<td>This parameter is used to specify a suffix string made up of one or more data set name qualifiers to be appended to the data set name of the HSIPZIP and HSIPOUT data set. Its maximum length is 44 characters. It may contain both static and dynamic system symbols, and the user symbols &amp;SMF (SMF system identifier) and &amp;SYSLPAR (LPAR name) supplied by the Inquisitor. Use the LLQ setting when you need to create uniquely named data sets without changing the JCL.</td>
</tr>
</tbody>
</table>

**Table 16. Files used by the Inquisitor**

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSPRINT</td>
<td>A mandatory report file.</td>
</tr>
<tr>
<td>TAGREP</td>
<td>An optional report file that summarizes tag data collected by the Inquisitor.</td>
</tr>
<tr>
<td>SYSIN</td>
<td>A mandatory request input file. It processes fixed length, variable length, and undefined record formats. Records shorter than 72 bytes will be logically extended by the Inquisitor with blanks.</td>
</tr>
<tr>
<td>HSIPZIP</td>
<td>An optional output file that contains compressed Inquisitor data. It is written using a variable length record format. You must provide DCB information to ensure optimal use of DASD space.</td>
</tr>
</tbody>
</table>
Table 16. Files used by the Inquisitor (continued)

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSIPOUT</td>
<td>An optional output file that contains uncompressed Inquisitor data. It is not specified in the packaged sample, as the use of HSIPZIP is preferred, due to its reduced space requirements. HSIPOUT also contains variable length records. The program supplies the appropriate LRECL. By default, system determined block size is used. If you want to the direct the Inquisitor output to a compressible extended-format data set, then you should use the HSIPOUT file. The HSIPZIP file employs update-in-place processing, which prevents the use of DFSMS compression.</td>
</tr>
<tr>
<td>MCDS</td>
<td>An optional file that allocates the DFHSM MCDS data set, and is required if any requests contain the REMIGRATE or NOML2 operands. Further, if supplied for other requests, you can use it to avoid recalling data sets which are not load libraries. If the DFHSM MCDS is spread over more than one data set, use the DD names MCDS2, MCDS3, and MCDS4 consecutively. This allocates all the MCDS data sets in key range order.</td>
</tr>
<tr>
<td>ABRIN</td>
<td>An optional SYSIN file belonging to the FDRABRP utility program that is required if any requests contain the ABRMIG or ABRARC operands. It is primed by the Inquisitor during execution. For this reason, a single track VIO file is an ideal allocation.</td>
</tr>
<tr>
<td>ABRPRINT</td>
<td>An optional SYSPRINT file belonging to the FDRABRP utility program that is required if any requests contain the ABRMIG or ABRARC operands. It is an output-only file, and is not processed by the Inquisitor.</td>
</tr>
</tbody>
</table>

Table 17. SYSIN commands used by the Inquisitor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCANCMD</td>
<td>Allows command syntax and operand consistency to be checked by the Inquisitor without initiating an actual scan for program libraries. It performs a parse only operation, although output files are opened. Error messages relating to syntax and operand errors are produced as usual. This verb is useful if you are formulating the best request combination when implementing on any given system.</td>
</tr>
<tr>
<td>SCANDIR</td>
<td>Collects data from program library directory entries. Contents of program members are not accessed. Compared to SCANPGM, its reduced data collection allows it to run faster. Although all syntactically correct operands are allowed, some operands relating to data from member contents are ignored during processing. SCANDIR collects all of the information needed for automated software identification, and is the command of choice for a production environment.</td>
</tr>
<tr>
<td>SCANPGM</td>
<td>Collects all data collected by SCANDIR, and information from member contents. Such information relates to program structure and history. Your IBM representative might request SCANPGM output data to assist with problem diagnosis and resolution.</td>
</tr>
</tbody>
</table>

Note:
The Inquisitor can process multiple requests in a single program run. The output of these requests is contained in the same file.
This syntax diagram shows the SYSIN commands and their operands.

**Syntax diagram of Inquisitor commands**

- **SCANCMD**
- **SCANDIR**
- **SCANPGM**
- **DATASET** (dsn-mask)
- **XDATASET** (dsn-masks)
- **VOLUME** (volser-masks)
- **XVOLUME** (volser-masks)
- **DEVICE** (devnum-masks)
- **XDEVICE** (devnum-masks)
- **PROGRAM** (pgmname-masks)
- **PGM**
- **STOGROUP** (storage-group-masks)
- **SG**
- **XSTOGROUP** (storage-group-masks)
- **XSG**
- **AUTHLIBS**
- **NOALIAS**
- **CATALOG**
- **NORECALL**
- **FULLIDR**
- **SYMVOL**
- **REMITRATE**
- **NOML2**
- **ABRMIG**
- **ABRARC**
- **NOTAGDATA**

Operand defaults are:

- **DSNAME(*)**
- **VOLUME(*)**
- **DEVICE(*)**
- **PROGRAM(*)**

All operands are optional. They are:

**DATASET** Alias: **DSNAME**

This operand specifies one or more 1 to 44 byte data set name masks. Only data sets with names matching any masks specified here are processed. Data sets with names not matching any masks specified here are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for selection matching. The precise treatment of asterisks in these masks is altered by the presence of the CATALOG keyword in the request. When CATALOG is specified, mask matching becomes qualifier aware and a single asterisk represents one, or part of, one qualifier only. When CATALOG is specified, use a double asterisk to specify any number of qualifiers. The data set name selection mask is the only mask affected by the CATALOG keyword. When the CATALOG keyword is present, exactly one DSNAME mask must be specified.
**XDATASET Alias: XDSNAME**

This operand specifies one or more 1 to 44 byte data set name masks. Data sets with names matching any mask specified here are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for exclusion matching. If this operand is used, each mask must specify a subset of a DATASET mask.

**VOLUME**

This operand specifies one or more 1 to 6 byte volume serial number masks. Only volumes with serial numbers matching any mask specified here are processed. Volumes with serial numbers not matching any mask specified here, are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for selection matching. A volume serial number mask of six asterisks specifies the current IPL volume, which is ascertained during execution.

**XVOLUME**

This operand specifies one or more 1 to 6 byte volume serial number masks. Volumes with serial numbers matching any mask specified here are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for exclusion matching. If this operand is used, each mask must specify a subset of a VOLUME mask. A volume serial number mask of six asterisks specifies the current IPL volume, which is ascertained during execution.

**DEVICE**

This operand specifies one or more 1 to 4 byte device number masks. Only volumes with device numbers matching any mask specified here are processed. Volumes with device numbers not matching any mask specified here, are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for selection matching. Standard character string mask matching is used. The use of characters which are not hexadecimal digits will not be detected by the program.

**XDEVICE**

This operand specifies one or more 1 to 4 byte device number masks. Volumes with device numbers matching any mask specified here are processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for exclusion matching. If this operand is used, each mask must specify a subset of a DEVICE mask. Standard character string mask matching is used. The use of characters which are not hexadecimal digits will not be detected by the program.

**PROGRAM Alias: PGM**

This operand specifies one or more 1 to 8 byte program name masks. Only programs with names matching any mask specified here are processed. Programs with names not matching any mask specified here, are not processed. Multiple masks must be separated by one or more delimiters.
This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for selection matching.

**XPROGRAM Alias: XPGM**

This operand specifies one or more 1 to 8 byte program name masks. Programs with names matching any mask specified here are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for exclusion matching. If this operand is used, each mask must specify a subset of a PROGRAM mask.

**STOGROUP Alias: SG**

This operand specifies one or more 1 to 8 byte storage group name masks. SMS-managed volumes in a storage group with a name matching any mask specified here are processed. SMS-managed volumes in a storage group with a name that does not match any mask specified here, are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for selection matching. Volumes which are not SMS-managed are not processed unless the NONSMS keyword operand is specified.

**XSTOGROUP Alias: XSG**

This operand specifies one or more 1 to 8 byte storage group name masks. SMS-managed volumes in a storage group with a name matching any mask specified here are not processed. Multiple masks must be separated by one or more delimiters. This operand can be specified more than once in a request, whereupon all masks specified in all occurrences of this operand are checked for exclusion matching. If both this mask and a STOGROUP mask are used, then each mask must specify a subset of a STOGROUP mask.

**NONSMS**

This keyword operand specifies that volumes which are not SMS-managed are eligible for processing. The presence of this operand means that SMS-managed volumes are not processed unless the STOGROUP operand was used to supply a storage group name mask.

**LINKLIST**

This keyword operand specifies that all link list data sets are to be unconditionally included for processing.

**AUTHLIBS**

This keyword operand specifies that all APF authorized data sets are to be unconditionally included for processing.

**NOALIAS**

This keyword operand specifies that any program member marked as an alias is to be excluded from processing.

**CATALOG**

This keyword operand specifies that data sets to be processed are located from a catalog search rather than VTOC searches. Data set alias names are not processed. The Inquisitor triggers and waits for a RECALL operation for each migrated data set which passes data set name mask processing, unless NORECALL is also specified.
NORECALL
This keyword specifies that migrated data sets are not to be recalled and are excluded from processing. This operand only has effect when the CATALOG operand is also specified. Data sets with a catalog entry indicating a volume serial number of MIGRAT, or ARCIVE, are deemed to be migrated.

FULLIDR
This keyword operand specifies that a full scan of CESD and IDR records is to be performed, even when a module would not have been selected for such processing. Depending upon the exact nature of the request being run, this operand can significantly elongate the elapsed time of Inquisitor runtime.

This operand is ignored for a SCANDIR request.

SYMVOL
This keyword operand specifies that when a load library resides on the IPL volume, or on a volume with a serial number which matches the value of a z/OS system symbol, then the output does not contain the actual volume serial number, but six asterisks for the IPL volume or the symbol name for other volumes. Only symbols with names which are six characters long, including the leading ampersand and excluding the trailing period, are considered for this processing.

If you use this keyword to collect your data, then you must also use the corresponding setting SYM(Y) in the Usage Monitor. You cannot use the SYMVOL parameter in the Inquisitor without using SYM(Y) in the Usage Monitor. By doing this, the Inquisitor data matches the usage data, otherwise the usage data is not imported to the correct products.

REMIGRATE
This keyword operand specifies that when a data set which had to be recalled has been processed, DFHSM is requested to migrate the data set again asynchronously. Migrated data sets can only be processed when the CATALOG operand is also specified. Only data sets with a catalog entry indicating a volume of MIGRAT are remigrated.

The presence of this operand requires that the MCDS file is allocated to the DFHSM MCDS. Access to the MCDS allows the Inquisitor to avoid recalls for data sets which are not partitioned, do not have an undefined record format, and do not have a block size of at least 1024.

NOML2
This keyword operand specifies that data sets migrated to level two are not to be recalled and are excluded from processing. Migrated data sets can only be processed when the CATALOG operand is also specified. Only data sets with a catalog entry indicating a volume of MIGRAT are checked for level two status.

The presence of this operand requires that the MCDS file is allocated to the DFHSM MCDS. Access to the MCDS allows the Inquisitor to avoid recalls for data sets which are not partitioned, do not have an undefined record format, and do not have a block size of at least 1024.

ABRMIG
This keyword operand indicates that when a catalog entry with a volume of MIGRAT is encountered, the FDRABR product is to be invoked to
determine whether a recallable archived copy of the data sets is available or not. If it is, then the data set is processed. If not, then the data set is not processed.

The NORECALL operand takes precedence over this operand.

The effect of ABRMIG is not affected by the ABRARC operand.

The presence of this operand requires that the ABRIN and ABRPRINT files are allocated.

**ABRARC**

This keyword indicates that, when a cataloged data set cannot be found on the volume, the FDRABR product is to be invoked in order to determine whether a recallable archived copy of the data set is available. If it is, then the data set is processed. If not, the data set is not processed.

The NORECALL operand takes precedence over this operand.

The effect of ABRARC is not affected by the ABRMIG operand.

The presence of this operand requires that the ABRIN and ABRPRINT files are allocated.

**NOTAGDATA**

This keyword indicates that data written to program libraries by the Product Tagger is not to be collected and written to the Inquisitor output file. Use this operand only when you do not want to update the Local Knowledge Base during the import process with the latest Tagger data that could be found by the Inquisitor.

**SYSIN syntax rules for the Inquisitor**

Syntax rules are as follows:

- Only the first 72 bytes of an input record are ever scanned.
- Short records are extended to 72 bytes with blanks.
- Blanks and commas are equivalent.
- Subparameters of value operands are specified in parentheses.
- A continuation to the next record is requested by a plus or a hyphen when it follows a delimiter, or is at the start of a record.
- A continuation cannot be requested in the middle of a word or value.
- The part of the record following a continuation character is ignored and can be used for comments.
- Records beginning with an asterisk are comment records.
- Records containing only blanks or commas are comment records.
- Comment records are ignored by syntax parsing logic, and do not alter continuation status.
- TSO conventions apply to abbreviations. That is, operands can be abbreviated to the minimum unambiguous length. Verbs cannot be abbreviated.
- If the input record contains an ampersand, the system symbol substitution routine ASASYMBM is called to perform symbol substitution processing.
- All input requests are parsed and stored before the first request is processed.
- If a syntax error is encountered, no requests are processed. This is to reduce the instance of incorrect or unproductive requests triggering lengthy DASD subsystem scans. The error is in the last record echoed in SYSPRINT.
Value masks are character strings which are compared to data found at run time. Comparison is performed one byte at a time, from left to right. For a match, the characters must compare equal, unless a generic mask character is found.

System static symbols, system dynamic symbols, and &SMF (SMF system identifier) and &SYSLPAR (LPAR name), can be used to construct value masks. &SYSLPAR may resolve to a null string if z/OS is running in a virtual machine.

Valid generic mask characters are a percent (%), to flag a match for any single character, and an asterisk (*), to flag a match for any character string segment of zero or greater length.

Examples

These examples are provided to illustrate some possible scenarios where the scope and type of processing is customized.

Example 1: These three statements are equivalent, and request data collection for all programs on all online DASD volumes.

```
SCANDIR
SCANDIR DA(*) PGM(*)
SCANDIR VOL(*) DS(*)
```

Example 2:

To scan all SMS-managed volumes except volumes in storage group SGWORK use:

```
SCANDIR STOGROUP(*) XSTOGROUP(SGWORK)
```

Example 3:

To scan all volumes except volumes in storage groups with names beginning with SGW use:

```
SCANDIR XSTOGROUP(SGW*)
```

Example 4:

To scan all volumes with serial numbers beginning with TSO and WRK, these two requests are used in a single program run:

```
SCANDIR VOLUME(TSO*)
SCANDIR VOLUME(WRK*)
```

Example 5:

To scan all volumes except those with serial numbers beginning with TSO and WRK use:

```
SCANDIR XVOLUME(TSO* WRK*)
```

Example 6:

To scan all volumes with serial numbers beginning with USR which are also in SMS storage groups with names beginning with SG for programs with names beginning with UTIL, use:

```
SCANDIR VOLUME(USR*) STOGROUP(SG*) PROGRAM(UTIL*)
```

Example 7:
To scan all data sets with high level qualifiers of SYS1, SYS2, SYS3, except z/OS
distribution libraries, use:

```
SCANDIR DSNAME(SYS%.*) XDSNAME(SYS1.A*)
```

**Example 8:**

To restrict the data in the previous example to cataloged data sets, use:

```
SCANDIR DSNAME(SYS%.**) XDSNAME(SYS1.A*) CATALOG
```

**Note:** Note the extra asterisk in the data set name selection mask. Without this,
only data set names with two qualifiers are selected. Data set name exclusion
processing is not changed by the CATALOG operand.

**Example 9:**

To scan the current IPL volume, and any other link, list, and APF authorized
libraries use:

```
SCANDIR VOLUME(******) LINKLIST AUTHLIBS
```

**Example 10:**

To scan the single cataloged data set SYS1.PPLIB without a lengthy DASD
subsystem scan use:

```
SCANDIR DATASET(SYS1.PPLIB) CATALOG
```

**Example 11:**

To scan all cataloged SYS1 and SYS2 data sets use (a) two requests in a single
program run, or (b) a single request. The two approaches exhibit similar resource
consumption:

```
SCANDIR DA(SYS1.**) CAT
SCANDIR DA(SYS2.**) CAT

SCANDIR DS(SYS%.**) CAT XDSN(SYS3.*,SYS4.*,SYSA.*)
```

The XDSN values are coded as shown under the assumption that SYS1, SYS2,
SYS3, SYS4 and SYSA are the only 4 character high-level qualifiers beginning with
SYS on the system being scanned.

**Note:** SCANDIR DS(SYS1.**,SYS2.**) CAT is not allowed.

**Example 12:**

These examples are all equivalent. They scan the entire DASD subsystem for all
data sets with a first qualifier of SYS1 or SYS2, excluding those with a second
qualifier beginning with A.

(a)

```
SCANDIR DA(SYS1.*,SYS2.*) XDA(SYS1.A*,SYS2.A*)
```

(b)

```
SCANDIR DA(SYS1.* + SYS2.*) +
XDA(SYS1.A* + SYS2.A*)
```
Example 13:

Here, the entire DASD subsystem is processed, but the volume serial numbers are replaced in the output data by the name of a corresponding symbol, if one is defined, or by six asterisks for the IPL volume.

SCANDIR SYMVOL

The SYMVOL operand must be used in conjunction with the SYM command of the Usage Monitor otherwise the Usage data does not match the Inquisitor data.

**Designing Inquisitor requests**

When constructing statements for the Inquisitor SYSIN file, you need to ensure that a program library is never scanned more than once. A single Inquisitor request will not scan a VTOC or a library more than once. For this reason it is optimal to combine all selection and exclusion criteria to form a single SCANDIR request.

It can be difficult to formulate a system scan into a single CATALOG request, meaning that when the CATALOG operand is used, multiple requests are coded. Ensure that no data set will be scanned by more than one SCANDIR CATALOG request by excluding as many data set name patterns from each request as necessary. Data set name exclusions may not be necessary if all CATALOG search selection masks represent disjoint parts of the name space.

The example shown here uses the XDA operand to prevent SYS1.LINKLIB from being scanned more than once:

```
SCANDIR DA(SYS1.*) CATALOG
SCANDIR DA(SYS%.LINKLIB) XDA(SYS1.LINKLIB) CATALOG
```

As well as using the selection and exclusion facilities to ensure completeness, they can also be used to improve performance and efficiency by excluding DASD volumes which do not contain program libraries. Although a volume with no program libraries can be scanned quickly, processing duration might be reduced if such volumes can be excluded from an Inquisitor scan.

For example, volumes that only contain databases, or temporary data sets, do not have any files suitable for Inquisitor processing, but the VTOCs of those volumes are still read unless excluded by the appropriate selection criteria.

To illustrate this further, consider a system with these DASD subsystem usage elements:

**System platform**

Non-SMS and storage group SYSTEM.
Work pool
Storage group TEMP containing temporary and short-lived (two days) permanent files.

TSO  Storage groups TSOONE and TSOTWO.

Non-DB application
Non-SMS and storage groups BATCH1 and BATCH2.

Databases
Non-SMS volumes DBA001 to DBA099 and SMS storage groups DB01, DB02, and DB03.

The scanning of this configuration is to be carried out with the following assumptions:
• No need for data from libraries that do not exist for more than two days.
• No program libraries on database volumes.
• Applications combine their program libraries and non-database files.
• TSO users can have program libraries.
• Management requires information regarding all potentially permanent executable software.

To acquire Inquisitor data from all useful sources without processing volumes more than once, and without processing irrelevant volumes, you can specify multiple requests in a single Inquisitor run. For example:

SCANDIR SG(SYSTEM)
SCANDIR SG(TSO+)
SCANDIR SG(BATCH+)
SCANDIR NONSMS XVOL(DB*)

This can be consolidated into a single request giving the same result. For example:

SCANDIR SG(SYSTEM TSO* BATCH*) NONSMS XVOL (DB*)

Scanning migrated libraries

The Inquisitor locates load libraries by either scanning the VTOC of online volumes, or by searching the system catalog (CATALOG) for relevant data sets. When the keyword CATALOG is specified in a request statement, the Inquisitor passes the data set name selection mask to the Catalog Search Interface (CSI) to search for the catalog entries. It is possible that one or more of the catalog entries returned by the CSI are for a data set that has been migrated. In contrast, VTOC scans do not find migrated data sets.

Inquisitor processing of migrated data sets found by the CSI involves dynamic allocation which then triggers the recall of the data set. Recalls increase Inquisitor processing time. The processing leaves the data set in a recalled status.

The Inquisitor looks at the volume serial number in the catalog entry to determine if a data set is migrated or not. A data set is considered to have been migrated if its catalog entry indicates a volume serial number of either MIGRAT or ARCIVE.

To suppress the processing of all migrated data sets, specify the NORECALL keyword on each Inquisitor request.
Integration with DFHSM

If you are using the MCDS file allocation, and a data set cataloged on volume MIGRAT is encountered, the Inquisitor can read the data set record from the DFHSM Migration Control Data Set (MCDS) to verify that the data has the attributes of a program library. If the MCDS record is not found, the data set is ignored and processing is bypassed, avoiding a DFHSM error condition. If the data set does not have partitioned organization, an undefined record format, and a block size of at least 1024, the Inquisitor ignores the data set, avoiding the recall of many data sets which are not program libraries.

For systems with DFHSM space management functions, you can use the request keywords NOML2 and REMIG. The MCDS file allocation is a prerequisite for using the following keywords:

**NOML2**
Specifies that data sets migrated to level 2 are excluded from the scan.

**REMIG**
Specifies that after a recalled data set is processed by the Inquisitor, the Inquisitor requests DFHSM to remigrate the data set. The Inquisitor does not wait for the migration to complete, but begins to process the next data set immediately after making the request to DFHSM. Migration level 2 is never specified by the Inquisitor for the migration, even if the data set was recalled from ML2. (However, it might be selected by DFHSM as a result of SMS management class settings.)

**Note:**
Any combination of REMIGRATE, NOML2, and NORECALL is valid. Specifying NORECALL means NOML2 and REMIGRATE have no effect.

In the case where you want to scan all relevant migrated program libraries and do not want any such libraries explicitly remigrated afterward, you would not code any of the NORECALL, NOML2 and REMIGRATE keywords. In this instance, the MCDS file allocation, though optional, can still be used to great advantage.

**Scanning generation data sets**
Inquisitor CSI requests are limited to NONVSAM type A catalog entries. Generation data sets (which are members of a generation data group) are not scanned by Inquisitor CATALOG requests, though they can be processed by Inquisitor VTOC scans. Consider excluding generation data sets if you back up program libraries using generation data sets.

To exclude generation data sets from a VTOC scan request, specify a suitable data set exclusion mask, for example:

```
XDA(*.G%%%%V00)
```

---

**Inquisitor for z/OS UNIX**

The Inquisitor for z/OS UNIX collects information about executable software existing in HFS and zFS data sets currently mounted and accessible to z/OS UNIX. The data output by the Inquisitor is used as input to the Inquisitor Import, and forms the basis of your z/OS UNIX software inventory.

The Inquisitor for z/OS UNIX produces a set of record types which are different from those produced by the Inquisitor for z/OS. However, both programs collect the same types of information about installed software.
The Inquisitor for z/OS UNIX processes the HFS root directory, as well as all subdirectories. For this reason it needs to run with a UID which allows access to all directories and programs to be examined. If the Inquisitor for z/OS UNIX does not have permission to access a directory, then no information is collected from that directory, or any of its subdirectories.

The HSIXROOT file is used to nominate one or more directories to be considered root directories. When specified, only the nominated directories and their subdirectories are processed. This facility is useful when only a subset of the file hierarchy needs to be scanned.

The HSIXOMIT file is used to nominate one or more directories which are to be omitted or excluded from the scan, together with all of their subdirectories. This facility can be used to reduce resource consumption by preventing parts of the UNIX file hierarchy known not to have any executable software from being scanned.

Running the Inquisitor for z/OS UNIX

To run the Inquisitor for z/OS UNIX, use the job HSISINQU that is found in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

Run time for this job depends on the size and complexity of the UNIX directory structure to be scanned. It is a good idea to run this job during off-peak periods.

When HSISINQU JCL is created, it specifies the SYMLNK, PLX=N, and LLQ=U&SMF settings. If you want to alter this setting, use the parameters listed in the following table. The optional program parameter string of the Inquisitor enables you to specify a report message level, a job identifier, and override to the system identifier, and whether you want compressed or uncompressed output. If a program parameter is specified, it must start with a slash. Use commas to separate the various settings specified within the program parameter string.

Table 18. Program parameter settings used for running the Inquisitor for z/OS UNIX

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTHMSG</td>
<td>Requests that a message is written to HSIXMSG each time a directory is opened or closed.</td>
</tr>
<tr>
<td>PGMMSG</td>
<td>Requests that a message is written to HSIXMSG each time an executable file is processed.</td>
</tr>
<tr>
<td>ALLMSG</td>
<td>Requests both PTHMSG and PGMMSG message logging.</td>
</tr>
<tr>
<td>SYMLNK</td>
<td>Requests that symbolic links in the UNIX file system are to be processed in the scan. Use this parameter to improve the matching of UNIX program usage to identified software. Omit this to reduce UNIX file system scan time if you run the Usage Monitor with the USS(N) setting.</td>
</tr>
<tr>
<td>SID=</td>
<td>The value is up to 4 characters long and specifies the system identifier to be contained in the data output from the Inquisitor. If the SID identifier override is omitted, the system SMF identifier is used. The SID parameter setting is used when the SMF system identifier of a system is not unique. For example: SID=SYS2</td>
</tr>
</tbody>
</table>
Table 18. Program parameter settings used for running the Inquisitor for z/OS UNIX (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLX=</td>
<td>The setting is used to identify if the Inquisitor data being collected is a SYSPLEX. The value is either Y or N. If the PLX parameter is not used, the field is left blank in the Inquisitor header record.</td>
</tr>
</tbody>
</table>
| OUT=      | Specifies output file usage. The default value is Z.  
• A value of Z requests zipped output to HSIXZIP.  
• A value of T requests text output to HSIXOUT.  
• A value of B requests output to both HSIXZIP and HSIXOUT files. |
| LLQ=      | This parameter is used to specify a suffix string made up of one or more data set name qualifiers to be appended to the data set name of the HSIXZIP and HSIXOUT data set. Its maximum length is 44 characters. It may contain both static and dynamic system symbols, and the user symbols &SMF. (SMF system identifier) and &SYSLPAR. (LPAR name) supplied by the Inquisitor. Use the LLQ setting when you need to create uniquely named data sets without changing the JCL. |

Files used by the Inquisitor for z/OS UNIX

The files needed to run the Inquisitor for UNIX are listed in the following table:

Table 19. Files used by the Inquisitor for z/OS UNIX

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HISIXMSG</td>
<td>Report file used by HSIXINQ.</td>
</tr>
<tr>
<td>SYSPRINT</td>
<td>Used by Language Environment (LE), which is required to be in the standard module search path, and by IDCAMS when LLQ= is specified.</td>
</tr>
<tr>
<td>SYSOUT</td>
<td>Used by Language Environment (LE), which is required to be in the standard module search path.</td>
</tr>
<tr>
<td>SYSIN</td>
<td>A mandatory request input file. It processes fixed length, variable length, and undefined record formats. Records shorter than 72 bytes will be logically extended by the Inquisitor with blanks.</td>
</tr>
</tbody>
</table>
| HSIXZIP   | An optional output file that contains compressed Inquisitor for z/OS data. It is written using a variable length record format. You need to provide DCB information to ensure optimal use of DASD space.  
The HSIXZIP file must never undergo any translation when being transferred, whatever the architecture of the target system. That is, only BINARY transfers are to be used to transport the file. |
| HSIXOUT   | An optional output file that contains uncompressed Inquisitor for z/OS UNIX data. It is not specified in the packaged sample, as the use of HSIPZIP is preferred, due to its reduced space requirements. HSIXOUT also contains variable length records. The program supplies the appropriate LRECL. By default, system determined block size is used.  
If you want to direct the Inquisitor for z/OS UNIX output to a compressible extended-format data set, then you should use the HSIPZIP file. The HSIPZIP file employs update-in-place processing, which prevents the use of DFSMS compression. |
Table 19. Files used by the Inquisitor for z/OS UNIX (continued)

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSIXROOT</td>
<td>An optional file which can contain one or more records; each of which specifies a directory path to be considered as a root directory to be processed. If HSIXROOT is not allocated or empty, then a forward slash (/) is considered to be the only root directory to be processed.</td>
</tr>
<tr>
<td>HSIXOMIT</td>
<td>An optional file which can contain one or more records; each of which specifies a directory path which is to be omitted from the scan. Root directories cannot be omitted.</td>
</tr>
</tbody>
</table>

The HSIXROOT and HSIXOMIT files have the following characteristics and attributes in common:

- There is no requirement for the file to be allocated.
- The file might be empty or allocated to DUMMY.
- The file might contain fixed length or variable length records.
- Records must not contain more than 1024 bytes of data.
- Blank records are deemed to be comments and discarded.
- Leading and trailing blanks are discarded when the directory name is extracted.
- Records with an asterisk as the first nonblank are deemed to be comments and discarded.
- If the directory path does not end in a slash, then one is appended.

**Security considerations when running the Inquisitor for z/OS UNIX**

If you want to collect all relevant z/OS UNIX data, you must have access to all UNIX directories, including the root directory. This access ensures that all z/OS UNIX data is collected. To allow the Inquisitor unrestricted read access to all z/OS UNIX files, consider using the UNIXPRIV RACF Resource Class, which alleviates the need for UID(0).

The following sample definition can be used by your Security Administrator to define, permit, activate, and RACLST the RACF UNIXPRIV Class:

```
RDEL UNIXPRIV SUPERUSER.FILESYS.**
RDEF UNIXPRIV SUPERUSER.FILESYS.** UACC(NONE) OWNER(IBMUSER)
P E  SUPERUSER.FILESYS.** CLASSUNIXPRIV) RESET
P E  SUPERUSER.FILESYS.** CLASSUNIXPRIV) ID(USERONE) ACCESS(READ)
SETR CLASSACT(UNIXPRIV)
SETR RACLSTUNIXPRIV)
SETR RACLSTUNIXPRIV) REF
```

**Usage Monitor**

The Usage Monitor is a server address space which runs as a started task. Work is queued to it from all address spaces where programs are used. The Usage Monitor address space needs to be given a reasonably high dispatching priority.

Two different types of work can run in the server address space:

1. Moving of captured data into the data space repository. This is CPU bound, but of short duration.
2. Writing of the accumulated program usage data from the data space to a sequential file by the writer task. This is usually I/O bound.
The Usage Monitor runs APF authorized and is nonswappable.

**Setting up the Usage Monitor**

To configure the Usage Monitor you use the job that is found in the JCLLIB. This job is generated from the HSISCUST post-installation customization job. The name of this job is HSISUMON. This job will call the procedure HSIJMON from the JCLLIB.

Parameters for the Usage Monitor job are found in the PARMLIB member HSISMNPM.

**Files used by the Usage Monitor**

The Usage Monitor has three product-specific files. They are:

- **HSIZIN**
  A sequential file consisting of fixed length 80 byte records. It contains initial commands which are run before data collection becomes active. It must contain the data set prefix to be used for dynamically created output files. The prefix can be changed later by an operator MODIFY command.

  HSIZIN is opened, read, and closed during initialization processing. Do not specify FREE=CLOSE in the JCL for HSIZIN, or refresh processing is not possible.

- **HSIZMSG**
  A log file which contains the initial commands issued, and which indicates their degree of success. It also contains regular status reports, refresh reports (when appropriate), and a termination report. It consists of fixed length 121 byte records.

- **SYSOUT**
  A report file used by the SORT program.

Output files containing program usage data are dynamically allocated by the Usage Monitor. The data set name prefix, the allocation unit, and the primary and secondary space allocation quantities (in tracks), need to be customized for the target system. This is done in the PARMLIB member HSISMNPM.

**Using exclusion masks to reduce data**

The data from a significant number of program usage events does not contribute meaningfully to the task of managing the software inventory. To reduce the processing of this unnecessary data, two mechanisms which allow some data to be excluded from collection have been provided. They are exclusion masking based on program name, and exclusion masking based on data set name.

**Filtering program names:**

A program name exclusion table exists which contains program name masks. When a program usage event is detected by the Usage Monitor, the program name is checked against entries in the program name exclusion table. When a match is found, the usage event data is discarded.

Each table entry contains a program name comparison string up to 8 bytes long. The string is either an 8 byte program name, or a shorter program name prefix. When entering these strings with the EXC command, a prefix is denoted by using an asterisk as the last character.
The program name exclusion table resides in key zero common storage, and its size is always a multiple of 4,096 bytes. The minimum table size can house up to 339 entries, and the table size increases dynamically, as required. The default program name exclusion table contains entries to exclude data pertaining to the usage of many programs which are part of the operating system.

In order to add, reset, remove, or display the entries to the table, use these commands:

- **EXC**  To add entries to the program name exclusion table, or to reset the table to its default contents.
- **DEL**  To remove some, or all, entries from the table.
- **D-X**  To display the current contents of the table.

**Filtering a data set name:**

Once the Usage Monitor has ascertained the name of the data set from which a used program was fetched, it is used to decide if the usage data is retained for collection or discarded. To perform this process, two lists of data set name masks are scanned; the first is the data set name inclusion mask list, and the second is the data set name exclusion mask list.

To avoid excessive storage and processor resource consumption, it is preferable to keep the number of elements in each list to a minimum. This is achieved by using generic masks to cover many data set names. The inclusion mask list is provided so that specific exceptions to broad exclusion rules can be specified. Unless data set name exclusion is to be used, the inclusion list cannot provide any useful function.

Elements of both lists reside in key zero common storage. Each element occupies 48 bytes, and contains a data set name mask up to 44 bytes in length. You can use the percent sign as a wildcard to match a single character. A trailing asterisk can be used to match the rest of the data set name.

In order to add, reset, remove, or display the entries to the tables, use these commands:

- **XDS**  To add a data set name mask to the exclusion list.
- **IDS**  To add a data set name mask to the inclusion list.
- **XDD**  To deactivate a data set name exclusion mask.
- **IDD**  To deactivate a data set name inclusion mask.
- **D-D**  To display the currently active masks in both lists.

Both lists have no elements until an XDS or IDS command is processed. Storage is dynamically acquired for each element as required. To ensure system integrity, XDD and IDD commands do not cause the storage of a deactivated element to be freed, but mark the element as inactive. When a deactivated mask is reactivated, the existing entry is marked as active without the further acquisition of storage.

When the Usage Monitor address space first initializes, all elements of both lists left in storage from a previous run are freed before the processing of initial commands and the commencement of data collection.

There is no requirement to use either data set name mask list at any stage.
Running the Usage Monitor

A Usage Monitor member named HSIJMON is provided in SHSIPROC. If you want to start HSIJMON as a started task, copy the customized member from the JCLLIB to an authorized PROCLIB.

To start the Usage Monitor in normal mode, issue:
S HSIJMON

Stopping the Usage Monitor

To stop the Usage Monitor, you can issue any of these commands:
P HSIJMON
F HSIJMON,STOP
F HSIJMON,END

These commands cause the Usage Monitor to stop data collection, attach a writer task to process the existing data in the data space, wait for the writer task to sort and output the data, and then terminate.

QUICK Stop

For a quick stop, issue:
F HSIJMON,QUICK

This command causes the server address space to stop collecting data, attach a writer task to process the existing data in the data space, wait for the writer task to complete, and then terminate without sorting the data.

Immediate Termination

For an immediate termination, issue:
F HSIJMON,CAN

This command causes the server address space to stop data collection, detaches any running writer task which renders the output data set unusable, deletes the current data space without writing out its contents, and terminates.

Note: If you use the command CANCEL to stop the Usage Monitor, its data space is left in storage. To clear the data space from storage you must restart the Usage Monitor.

Refreshing Usage Monitor settings

The Usage Monitor has a range of commands to alter processing, any of which can be issued dynamically. However, these commands are only active for the duration of the current Usage Monitor session.

If you want to implement a change to both the running Usage Monitor, and to the initialization commands to be used by subsequent Usage Monitor sessions on startup, use the refresh facility.

Refresh processing involves the execution of the command stream placed in the HSIZIN file, without the requirement of stopping and restarting the Usage Monitor. As a result, refresh processing can verify the validity of the initialization
command stream so that changes are made and tested dynamically. This ensures that future Usage Monitor sessions do not encounter initialization command stream errors.

Some commands set a switch for logic control, or set a numeric value to be used during processing. These commands specify the values to be used in the future. Other commands pertaining to inclusion and exclusion masking add a mask to, or remove a mask from, the active mask list, so are part of an accumulation of commands which specify future processing.

Consider the example where several exclusion masks are active, and a change to deactivate one of the masks is required. A command to deactivate the mask might be issued dynamically, but if this change is to be made permanent, then the HSIZIN file needs to be updated. The alternative is to remove the command setting the exclusion from the HSIZIN file, and to then issue the Usage Monitor REF command to initiate a refresh.

Before the first HSIZIN command is run during refresh processing, the program mask exclusion list is set to the default list. Further, all data set name exclusion masks are deactivated, and all data set name inclusion masks are deactivated. This order of deactivation ensures that there is no loss of data that would otherwise be collected. However, there is the possibility that data which would have been excluded is collected during the short window between the reset of the mask lists and the processing of the HSIZIN commands.

The response to each command in the HSIZIN file is written to the HSIZMSG file. A summary WTO message, indicating whether any errors are found or not, is issued after refresh processing has finished.

Stopping the Usage Monitor and restarting it, produces the same active exclusion masks as a refresh. It also produces a data collection outage. For more information, see REF command in "Usage Monitor commands" for a list of the processes performed during a refresh operation.

**Usage Monitor commands**

The Usage Monitor commands are passed to the Usage Monitor from the HSIZIN input file, or by an operator MODIFY command.

The syntax rules are as follows:

- All commands are three characters long.
- Operands or subparameters are specified in parentheses.
- Multiple subparameters are separated by commas.
- The command must not contain any embedded blanks.
- Commands must start in column one.

To record the settings the Usage Monitor is using, place the display commands at the end of the HSIZIN file.

Details of each command follow.

**CAP - Set hardware capacity collection status**

CAP is used to specify if the Usage Monitor is to produce records
containing information about the hardware capacity of the system. Collecting this information is important when hardware capacity changes dynamically.

A change to this setting does not take effect until the next data space repository switch.

\[ \text{CAP}( Y ) \]  
\[ \text{CAP}( N ) \]

Y  Specifies that hardware capacity data is collected and written out.
N  Specifies that hardware capacity is not collected or written out.

If no CAP command is issued after IPL, the default is CAP(Y).

**Example 1**
Collect hardware capacity data.
F HSIJMON,CAP(Y)

**Example 2**
Do not collect hardware capacity data.
F HSIJMON,CAP(N)

**CSA - Set the (E)CSA queuing storage limit**
CSA is used to specify a limit to the quantity of (E)CSA storage used to queue work. If the Usage Monitor address space is not dispatched in a timely fashion, then many work elements can exist concurrently before being processed. Such work is queued in ECSA until it is transferred to the Usage Monitor repository.

If ECSA is exhausted, then CSA is used.

Data from program usage events occurring while this limit has been reached might not be collected.

An active CSA limit setting stays in force unless overridden, even if the Usage Monitor is stopped and restarted.

\[ \text{CSA}( \text{limit} ) \]

**limit**  Specifies a number of kilobytes from 0 to 200,000.

If no CSA command is issued after IPL, the default is CSA(0). CSA(0) specifies that the Usage Monitor does not attempt to limit the (E)CSA storage used by work elements awaiting processing.

**Example 1**
Limit queuing in (E)CSA to 50,000 KB (almost 50 MB).
F HSIJMON,CSA(50000)

**Example 2**
Do not enable explicit (E)CSA limit for storing queued data.
F HSIJMON,CSA(0)

**D-A - Display output allocation parameters**
D-A is used to display dynamic allocation details to be used in the creation
of output data files. The data set name, primary and secondary space quantities, and unit and optional volume serial number are shown.

Example
Display the current dynamic allocation values.
F HSJMON,D-A

D-C - Display the counters and statistics
D-C is used to display the Usage Monitor activity and status indicators. The purpose of this command is to assist IBM technical support in problem diagnosis. The meaning of the output generated by this command is not published.

Example
Display the current value of internal Usage Monitor counters.
F HSJMON,D-C

D-D - Display the data set name inclusion and exclusion lists
D-D is used to display the data set name masks in the inclusion list, followed by the data set name masks in the exclusion list.

The inclusion and exclusion lists do not need to be populated in order to collect data. The absence of any entries in the exclusion list means that data collection is not filtered by program library data set names.

Example
Display the current data set name inclusion and exclusion lists.
F HSJMON,D-D

D-I - Display the system identifier
D-I is used to display the system identifier, which is written in the output header record. It can be altered by the SID command.

Example
Display the current system identifier used by the Usage Monitor.
F HSJMON,D-I

D-S - Display the status settings
D-S is used to display several miscellaneous settings. Other commands are used to alter the individual settings, but this command provides a convenient way to list the current values.

Example
Display the current values of settings.
F HSJMON,D-S
D-T - Display the automatic switch-and-write time setting
D-T is used to display the time-of-day specified for automatic data space switching and consequent writer task creation. When data from after this time-of-day is detected, data collection is automatically switched to a new data space, and write-out of data in the old data space is started.

The UTC or GMT switch time is calculated using local time current at data space creation time. The time when a data space is terminated is set when it is created. Changes to the system local time offset, such as those caused by a change to daylight saving time, do not alter the UTC or GMT that the current data space is closed. The time of the switch after the next switch is calculated using the new local time.

Example
Display the current automatic switch-and-write time setting.
F HSIJMON,D-T

D-X - Display the active exclude list
D-X is used to display the active program name mask exclude list. Data is not collected for programs with names that match the mask in any active entry in the exclude list.

Example
Display the current exclude list entries.
F HSIJMON,D-X

DCB - Set output DCB attributes
DCB is used to set DCB attributes, which are optimal for a specific device type.

If no DCB command is issued, the default is DCB(3390).

DCB(3390)
Sets the output DCB to
RECFM=VB,LRECL=27994,BLKSIZ=27998
Use when the output device has 3390 compatible geometry.

DCB(3380)
Sets the output DCB to
RECFM=VB,LRECL=23472,BLKSIZ=23476
Use when the output device has 3380 compatible geometry.

DCB(UNKN)
Sets the output DCB to
RECFM=VBS,LRECL=32756,BLKSIZ=0
The system determines the optimal block size for the device used by dynamic allocation. Use when the output device type is not known until allocation time.

Some FTP products do not process a file with RECFM=VBS correctly, even when no records are actually spanned.

**DEL - Deleting program mask entries**

DEL is used to remove program name masks from filter tables. Both default and user-added entries can be removed. The required operand specifies one or more program name masks.

```
DEL(mask,mask,...)
```

*mask* Specifies a 1 - 8 character program name mask. Any wildcard characters in the mask are treated as literals for the purposes of finding the mask to delete.

*ALL* Specifies every currently active mask. This mask cannot be specified with any other mask.

Except for short test periods, it is expected that default exclusion masks such as IGG* remain active.

**Example 1**

Remove all entries, so that all possible programs are monitored.

```
F HSTMON,DEL(*ALL*)
```

**Example 2**

Remove exclusion masks to monitor LE and REXX modules.

```
F HSTMON,DEL(CEE*,IRX*)
```

**Example 3**

Remove an exclusion mask to monitor the program called CEE.

```
F HSTMON,DEL(CEE)
```

**DSN - Setting the data set name prefix**

DSN is used to specify the first part of the data set names used for the output files. The prefix is specified in the required operand.

```
DSN(dsnpref)
```

*dsnpref* Specifies a 1 - 26 character data set name prefix. It can contain one or more data set qualifiers, and must not end in a period after any symbol substitution.

**Note:** Usage Monitor needs RACF ALTER access to the data sets to be able to create them.

**Example**

To get output files with names of the form
EXC - Adding program mask exclusion entries
EXC is used to add program name masks to the exclusion table. The required operand specifies one or more program name masks.

```
EXC(mask
  mask
*DFLT*)
```

*mask* Specifies a 1 - 8 character program name mask. If the mask ends in an asterisk only, characters before the asterisk are compared. Otherwise, an exact program name is deemed to have been specified.

*DFLT* Specifies every supplied default entry in the exclusion table is to be made active, and all user-added entries are to be removed from the exclusion table. This mask cannot be specified with any other mask.

Except for short test periods, it is expected that default exclusion masks such as IGG* would remain active.

Example 1
Reset the exclusion table to its default status.
F HSIJMON,EXC(*DFLT*)

Example 2
Exclude the collection of data for Language Environment modules and REXX modules.
F HSIJMON,EXC(CEE*,IRX*)

Example 3
Exclude the collection of data for the program CEE.
F HSIJMON,EXC(CEE)

IDD - Deleting data set name inclusion entries
IDD is used to remove data set name masks previously added by the IDS command.

```
IDD(mask)
```

*mask* Specifies a 1 - 44 character data set name mask. Any wildcard characters in the mask are treated as literals for the purposes of finding the mask to delete.

Example
Deactivate the SYS3.LINKLIB inclusion mask.
F HSIJMON,IDD(SYS3.LINKLIB)

IDL - Control idle work element usage
IDL is used to control whether the Usage Monitor uses idle work elements.
When the data in a work element has been processed, the element is normally freed in order to return the storage to the system. Enabling idle elements means that processed elements are retained on the idle chain. This chain is used before acquiring more storage when a new work element is needed.

Enabling idle elements reduces system storage management cost. The storage used by idle elements is included in the storage limit set by the CSA command.

IDL(\text{Y})

Y Specifies the Usage Monitor retains processed elements for reuse, subject to the CSA limit setting.

N Specifies that all processed work elements are to be freed.

If no IDL command is issued after IPL, then the idle chain is used. IDL(Y) is the default setting.

**IDS - Adding data set name inclusion entries**

IDS is used to supply data set name masks, which specify data set names to be excluded from exclusion processing. Program usage data fetched from data sets with names matching inclusion masks, is collected without reference to the data set name mask exclusion list.

Inclusion masks are only useful if there are active exclusion masks. An inclusion mask is normally expected to match a subset of data set names, which would match an exclusion mask.

IDS(mask)

*mask* Specifies a 1-44 character data set name mask. If the mask ends in an asterisk only characters before the asterisk are compared. Percent signs in the mask indicate that any character in that location is considered a match.

**Example** If your intention is to not collect program usage data for data sets with a high-level qualifier of SYS3, except for SYS3.LINKLIB. SYS3.LINKLIB is the only data set with a high-level qualifier of SYS3 for which program usage data is to be collected.

\[\text{IDS(SYS3.*)}\]
\[\text{IDS(SYS3.LINKLIB)}\]

**JAC - Set job account collection status**

JAC is used to specify if the Usage Monitor is to consider the account code of jobs significant when aggregating data. The Usage Monitor normally aggregates data based on the program name, the job name, and the user ID. This setting is used to add the job account, truncated after 20 characters, to the aggregation key.

Do not instruct the Usage Monitor to collect and preserve all job account codes if they are not important to the administration of your system. Collecting and preserving job accounts significantly increases data volumes.

A change to this setting does not take effect until the next data space repository switch.
JAC - Job account codes

Y Specifies that job account codes are used.
N Specifies that job account codes are ignored.

If no JAC command is issued after IPL, then job accounts are not used. The default is JAC(N).

JNM - Control the collection of job names

JNM is used to specify whether the Usage Monitor collects the names of jobs which use programs or not. If the names of jobs which use the various programs are not considered to be important, you can dispense with the collection of these names. The advantage of not collecting individual job names is the reduction in processing times and data volumes caused by the aggregation of data into fewer records. When individual job names are not collected, usage is summed over broad address space categories, such as JOB, STC, TSO, and SYS. The total usage counts collected by the Usage Monitor for each program are not affected by this setting.

A change to this setting takes effect at the next data space repository switch.

Y Specifies that the name of each job running a program is to be collected.
N Specifies that only a broad address space category of each job running a program is to be collected, instead of the individual job name.

If no JNM command has been issued since IPL, then job names are collected. JNM(Y) is the default.

LLC - Link list correction

LLC is used where sites make a number of dynamic link list changes. This command updates the HSIJMON data to point to the correct load library. Use this command only if you enable dynamic link list updates, which alter the relative concatenation numbers of persisting libraries.

Y A BLDL is performed at write time by the writer task and, if found, the data set name is overlaid.
N Do not check for dynamic list updates.

If no LLC command is issued after IPL, then the default setting of LLC(N) is current.

LPA - Set link pack area program monitoring status

LPA is used to specify whether the monitoring of programs in the Link Pack Area (LPA) is to occur or not. All types of LPA are included in this category.
LPA(Y)  Specifies that LPA program usage is to be monitored.
N     Specifies that LPA program usage is not to be monitored.

If no LPA command is issued after IPL, then LPA program usage data is collected. LPA(Y) is the default setting.

PRI - Set the data set space primary allocation
PRI is used to specify the primary space allocation quantity in tracks. It is used for output data set allocations.

PRI(trks)

trks   Specifies a number of tracks from 0 to 150,000.

If no PRI command is issued, the primary space allocation is 750 tracks. The Usage Monitor uses the RLSE space allocation attribute.

Example
Set the primary space allocation to 900 tracks.
F HSIJMON, PRI(900)

PRS - Set registered software activity data collection status
PRS is used to specify if the Usage Monitor is to output records containing information about the activity of registered software. Registered software uses the system Register service. The data contains information about the usage of registered software, and information about software registration settings from member ISAPRDxx.

A change to this setting does not take effect until the next data space repository switch.

PRS(Y)

Y     Specifies that registered software information is collected and output.
N     Specifies that registered software information is neither collected or output.

If no PRS command is issued after IPL, then registered software data is collected. PRS(Y) is the default.

REF - Refresh Usage Monitor settings
REF is used at any time to reset Usage Monitor settings according to commands in the HSIZIN file, without stopping and starting the Usage Monitor. The detailed results of the refresh operation are written to the HSIZMSG file.

The processes of a refresh operation include:
• Verify that HSIZIN is still allocated.
• Open HSIZIN.
• Set the program exclusion list to the default list.
• Deactivate all data set exclusion list elements.
• Deactivate all data set inclusion list elements.
• Process the commands in HSIZIN.
• Close HSIZIN.
• Issue either HSIZ059I or HSIZ060I, as appropriate.

Example
Change Usage Monitor settings to updated values from HSIZIN.
F HSIJMON,REF

SEC - Set the data set space secondary allocation
SEC is used to specify the secondary space allocation quantity in tracks. It is used for output data set allocations.

trks specifies a number of tracks from 0 to 150,000.
If no SEC command is issued, the secondary space allocation is 300 tracks. The Usage Monitor uses the RLSE space allocation attribute.

Example
Set the secondary space allocation to 600 tracks.
F HSIJMON,SEC(600)

SID - Set the Usage Monitor system identifier
SID is used to override the system identifier contained in the output header record. The SMF system identifier is used as a norm, but an override enables the data from separate systems to be differentiated in all instances where duplicate SMF identifiers are in use. Symbols can be employed in the construction of the system identifier. Available symbols include all z/OS system symbols, &SMF, the SMF identifier for the system, and &SYSLPAR, the logical partition name for the system.

sid specifies a string which is to be resolved to an identifier 1-4 bytes in length.

Example 1
Set the output system identifier to PROD.
F HSIJMON,SID(PROD)

Example 2
Set the header record system identifier to the current LPAR name. The LPAR name must not exceed four characters in length.
F HSIJMON,SID(&SYSLPAR)

SIZ - Set the data space repository size
SIZ is used to specify the maximum number of entries that the data space repository can hold.
entry (entries)  Specifies a number of entries from 100 to 6,000,000.

If no SIZ command is issued, a data space capacity of 200,000 entries is used. Each entry occupies 272 bytes. As each data space page has data placed in it for the first time, that page must be backed physically by the system. When a data space is full, a repository switch is triggered automatically. A repository switch also occurs when data stamped after the switch time is detected, or when a manual switch is registered by the SWI command.

Example
Set the size of future data spaces to 1,000,000 entries.
F HSIJMON,SIZ(1000000)

SWI - Switch to a new data space repository
SWI causes a new data space repository to be created and used for subsequent data collection. The data space being used at the time of SWI command is issued, has its data contents processed by a writer task.

The SWI command has no operands. It is invalid in the HSIZIN initial command file. As well as the switch caused by an explicit SWI command, automatic switches occur when a repository becomes full, and when data stamped after the switch time is detected. The SWI command might be rejected if the writer task is busy.

Example
Manually switch to a new repository.
F HSIJMON,SWI

SYM - Set the symbolic volume serial on output switch
SYM enables the logged volume serial number of a load library to be either the actual volume serial number or a symbolic value. When symbolic volume serial numbers are used, the IPL volume is always reported as six asterisks. For other volumes, if the serial number is found to match the value of a static system symbol, then the name of the symbol is reported instead of the actual volume serial number. Only symbols with names exactly six characters long are considered for this processing. The symbol name includes the leading ampersand (&), but excludes the trailing period (.).

SYM(Y)  The actual volume serial number is replaced by a symbolic value.
SYM(N)  The actual volume serial number is always output.

If no SYM command is issued, then the actual volume serial number collected is always output. SYM(N) is the default setting.

SYM(Y) is used with the SYMVOL operand of the Inquisitor.

TRG - Set the cache trigger event count
TRG enables the setting of the program usage event cache trigger.
Repository entries with usage counts greater than the trigger value are cached if there is space available. When usage events are captured for cached entries, usage of common storage and cross-memory POST processing is avoided.

When the cache is full, no additional entries can be cached. About every two hours, a status report, indicating cache usage, is written to the HSIZMSG file. The cache is then emptied, if at least half full. The cache is also emptied when the collection for a repository is stopped. A repository is stopped when the repository is switched, or when the Usage Monitor is shut down.

The maximum benefit of the cache occurs when the cache contains the entries which are collecting the most frequent program usage events. The regular status reports in the HSIZMSG file should be examined to help determine the optimal cache trigger count which is often orders of magnitude larger than the default value.

```
TRG(count)
```

*count*  A number in the range from 0 to 999,999,999.

If no TRG command is issued after IPL, then the trigger count is set at 1000. TRG(0) specifies that the cache is to be filled as quickly as possible from the next captured program usage event data.

**Example**

Set the cache trigger event count to 1,200.

```
F HS1JMON,TRG(1200)
```

**UID - Control the collection of user details**

UID is used to specify whether the Usage Monitor collects the identifiers and names of users who use programs or not. If the details of users who use the various programs are not considered to be important, then you can dispense with the collection of this information. The advantage of not collecting user information is the reduction in processing times and data volumes.

When user information is not collected, the user ID data item is left blank, and user names are not output, regardless which UNM setting is current. The total usage counts collected by the Usage Monitor for each program are not affected by this setting.

If you want program usage attributed to individual users but do not want the names of users to be retained, use UID(Y) and UNM(N).

A change to this setting does not take effect until the next data space repository switch.

```
UID(Y N)
```

*Y*  Specifies that details of each user using a program are to be collected.

*N*  Specifies that details of each user using a program are **not** to be collected.
If no UID command is issued after IPL, user details are collected. UID(Y) is the default.

**UNK - Set the unknown event collection switch**
UNK is used to specify whether events with incomplete data are to be collected or not. The database content is not affected. Collecting extra data is useful in determining why some usage events are not captured. It must be set only when requested by IBM support.

\[ \text{UNK}(Y) \]

\[ \text{UNK}(N) \]

Y  Specifies that the "unknown" events are to be collected.
N  Specifies that the "unknown" events are not to be collected.

If no UNK command is issued after IPL, the unknown events are not collected. UNK(N) is the default setting.

**UNM - Set user name collection status**
Software security packages, such as RACF, have a name field for each user ID defined to the system. The Usage Monitor collects the user ID (up to eight characters long), and the contents of the name field (up to 20 characters long), as part of the data collection performed when programs are used. UNM is used to specify whether the names of users collected from the security package are output. The output of the user ID is controlled by the UID setting. This setting is checked by the writer task when the data in a data space repository is being processed for output.

\[ \text{UNM}(Y) \]

\[ \text{UNM}(N) \]

Y  Specifies that collected user names are written to the output file.
N  Specifies that collected user names are discarded.

If no UNM command is issued since after IPL, then user names are collected. UNM(Y) is the default.

**UNT - Set the data set allocation unit**
UNT is used to specify the allocation unit to be used for output data set allocations.

\[ \text{UNT}(\text{unitname}) \]

Unitname  Specifies a 1 - 8 character long unit name.

If no UNT command is issued, SYSALLDA is used.

**Example**
Set the allocation unit to WORKDA.

\[ \text{F HSTJMON, UNT (WORKDA)} \]

**USS - Set UNIX program monitoring status**
USS is used to determine if the programs retrieved from Hierarchical File System (HFS) files are to be monitored.
Y Programs fetched from HFS files are to be monitored.
N Programs fetched from HFS files are not to be monitored.

If no USS command is issued after IPL, the programs retrieved from HFS files are not monitored. USS(N) is the default setting.

**VOL** - Set the data set allocation volume

VOL is used to specify the allocation volume to be used for output data set allocations. The explicit nomination of a specific volume is necessary when there are no PUBLIC or STORAGE volumes in the allocation unit pool.

```plaintext
VOL(volume)
```

`volume` specifies a 1 - 6 character long volume serial number.

If no VOL command is issued, a specific volume is not explicitly requested. You must then have PUBLIC or STORAGE volumes in the public allocation pool, unless the data sets are managed by SMS.

**Example**

Set the allocation volume to SCR001.

F HSIJMON, VOL(SCR001)

**WRT**- Set the automatic switch-and-write time of day

WRT is used to specify a time-of-day to end data collection for the current data space, and automatically switch to a new data space. The data write-out for the closed data space is also initiated. These events are triggered when data from after the specified time is detected.

The UTC or GMT switch time is calculated using the local time when the data space is created. The time that a data space is terminated is set when it is created. Changes to the system local time offset, such as those caused by a change to daylight saving time status, do not alter the UTC or GMT time that the current data space is closed. The time of the switch, after the next switch, is calculated using the new local time.

```plaintext
WRT(hhmm)
```

`hhmm` Specifies a 24-hour time-of-day in hour and minute notation. The value must be four decimal digits. The first two digits (hh) must be in the 00 - 23 range. The last two digits (mm) must be in the 00 - 59 range.

If no WRT command is issued, the automatic switch time of midnight is used. That is, WRT(0000) is the default.

**Example**

Set the automatic switch-and-write time to 10 minutes before midnight.

F HSIJMON, WRT(2350)

**XDD** - Deleting data set name exclusion entries

XDD is used to remove data set name masks which were added by the XDS command.
### XDD(mask)

*mask* Specifies a 1 - 44 character data set name mask. Any wildcard characters in the mask are treated as literals for the purposes of finding the mask to delete.

#### Example
Deactivate the SYS3.* exclusion mask.

F HSIJMON,XDD(SYS3.*)

### XDS - Adding data set name exclusion entries

XDS is used to supply data set name masks which specify data set names to be excluded from data collection. Program usage data for programs fetched from data sets with names matching exclusion masks is discarded. When the captured data set name has been matched to an inclusion mask set by the IDS command, the data is collected without reference to the exclusion mask list.

#### XDS(mask)

*mask* Specifies a 1 - 44 character data set name mask. If the mask ends in an asterisk, only characters before the asterisk are compared. Percent signs in the mask indicate that any character in that location is considered a match.

#### Example
Exclude program usage data from collection for programs fetched from data sets with a high-level qualifier of SYS3.

F HSIJMON,XDS(SYS3.*)

### ZIP - Set the compressed output data switch

ZIP is used to control whether the writer task is to compress output data or not. Compressing the output data reduces data volume, in turn reducing data transfer time and storage space requirements.

#### ZIP(Y)

*Y* Specifies that output data is to be compressed.

*N* Specifies that output data is not to be compressed.

If no ZIP command is issued, then compressed data is output. ZIP(Y) is the default setting.

## Inquisitor Import

The Inquisitor Import is the process of loading Inquisitor data into the Repository tables and does the following:

- Imports Inquisitor data generated from Inquisitor scans into Inquisitor tables. To exclude importing specific libraries, the Inquisitor data is filtered against a set of supplied Inquisitor Filter tables. These Inquisitor Filter tables are updated monthly, together with the Knowledge databases. The filtering excludes, for example, the ISV distribution libraries.
• Matches load modules in the Inquisitor tables to best fitting products at the Version Release Modification (VRM) level. Best matches for modules are found based on module names and sizes, and information in the Global Knowledge Base (GKB) and Local Knowledge Base (LKB). Temporary scorecard tables are used to hold all the possible scorecards for modules in a given library while they are matched. At the end of the matching step, data in the Inquisitor tables are updated with matched product information.

• Copies the Inquisitor data, including matching information, from the Inquisitor tables into the Repository tables. Data from the Repository tables are now ready for viewing or reporting using the Analyzer reporting facility.

• Aggregates usage data for rediscovered modules in the Repository tables.

Note: The Match Engine programs uses DB2 temporary work files as intermediate work areas and, by default, DB2 Global Temporary Tables are used. This means that temporary tables and indexes are created and dropped after each Match Engine session. Note: In DB2 Version 8, Declare Global Temporary Table requires at least one 8K table space to be defined in a TEMP database.

Running the Inquisitor Import

To run the Inquisitor Import, use the job HSISIQIM, in the JCLLIB. This job is generated from the HSISCUST post-installation customization job. Run time for this job depends on the number of modules to be imported into the DB2 Inquisitor tables. It is recommended to run HSISIQIM during off-peak periods.

When running job HSISIQIM, two parameters, FULLREMATCH and PRODUCTONLY, will influence the duration of the run. These two parameters are provided explicitly in the HSISIQIM job for you to update according to your requirements. See the description of these parameters below. Other parameters, which are less likely to be modified, are in a PARMLIB member.

TPARAM parameters

**COMMIT**
Default is 1000. Number of records stored before issuing a COMMIT.

**DSN**
DB2 location. Value assigned, as defined in job HSISCUST

**FILTERSCHEMA**
Inquisitor Import filter qualifier. Name of qualifier is &DBGKB_IQF7

**FULLREMATCH**
Default is N, which means import and match processing will be skipped for scanned libraries that have had no member directory changes since a previous Inquisitor Import and into the same Repository. Y means that all libraries will be imported and matched.

**GKBSHEMA**
Global Knowledge Base qualifier for z/OS. Name of qualifier is &DBGKB_GKB7

**GKUSCHEMA**
Global Knowledge Base qualifier for z/OS UNIX. Name of qualifier is &DBGKB_GKU7

**IQSCHEMA**
Inquisitor qualifier for z/OS. Name of qualifier is &DB_ZIQ
IQUSCHEMA=
  Inquisitor qualifier for z/OS UNIX. Name of qualifier is &DB_UIQ

LKBSHEMA=
  Local Knowledge Base qualifier for z/OS. Name of qualifier is &DB_LKB7

LKUSCHEMA=
  Local Knowledge Base qualifier for z/OS UNIX. Name of qualifier is &DB_LKU7

PRODUCTONLY=
  Default is N, which means all modules, including unidentified modules, are loaded into the Repository. Y means only modules that have been matched to known products are loaded into the Repository, meaning, application modules are excluded.

REPSHEMA=
  Repository qualifier. Name of qualifier is &DB.

Usage Import

Usage Import is the process of importing usage data into the Repository tables.
Usage Import performs these tasks:
  • Imports usage data generated from the Usage Monitor.
  • Aggregates usage data for discovered or identified modules in the Repository tables.

Running Usage Import

To run the Usage Import, use the job HSISUIMP in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

Run time for this job depends on the amount of usage data to be loaded into the DB2 repository tables. It is recommended to run this job during off-peak periods.

TPARAM parameters

COMMIT=
  Default is 1000. Number of records stored before issuing a COMMIT.

DSN=
  DB2 location. Value assigned, as defined in job HSISCUST.

REPSHEMA=
  Repository qualifier. Name of qualifier is &DB.

Automation Server for z/OS

The Automation Server is a utility that automates data set processing. It discovers newly created data sets and processes them by starting a set of predefined actions. Each action definition is associated with one or more data set name masks that are used as arguments in a catalog search. This search determines if any data set names matching the mask are to be processed. The ability to select data sets is useful if you have data set names that are variables, such as those created by the Usage Monitor, which have low-level qualifiers containing time stamps.

The Automation Server runs in its own address space as a started task. You must ensure that the user ID employed by the Automation Server has an OMVS segment and UID, or use of a default UID.
Input control statements define the processing to be performed by the Automation Server. There are two types of control statements, action statements and DSN statements:

- **Action statements** name the template member which forms the basic input for the action to be performed when a relevant data set is newly discovered by a catalog search. They have optional operands to specify time-of-day, day-of-week, and day-of-month restrictions.

- **DSN statements** provide a data set name mask to be associated with the preceding action statement. There can be many DSN statements after each action statement.

There are currently two types of action statement:

- **FTP** Starts the FTP utility to perform a file transfer.

  For the FTP action, the template member is read and, after symbol substitution processing, is written to the file defined by the INPUT DD statement. The FTP program is attached as a subtask and scans the INPUT file to process the FTP requests. This INPUT file is allocated to a temporary data set. The report messages it generates are written to the OUTPUT file.

  Upon completion of the FTP subtask, the Automation Server examines the completion code. If the program ends normally with a zero return code, the Automation Server deems the action to have been successful and updates the action status in the HSIACDS file so the action is not repeated for this data set.

  If the FTP program abends, the Automation Server deems the action to have failed. A failed transfer is tried again at a later time. A retry is subject to specified time-of-day window constraints. The OUTPUT FTP report file contains information to track the exact cause of a transfer failure.

- **JOB** Submits a batch job.

  For the JOB action, the template member is read and, after symbol substitution processing, is written to the file defined by the INTRDR DD statement. This file is directed to the internal reader used by the system, and the jobs submitted by the Automation Server become available for JCL conversion as soon as the INTRDR file is closed, or another JOB card image is found by the reader.

  The Automation Server deems all JOB submissions successful, so there are no retries. Any failure should be investigated using the appropriate procedures used by your installation.

  **Note:** The job stream in a JOB action template member may define more than one job.

The Automation Server does not check template member records for either FTP or JCL validity.

**Running the Automation Server**

This section details the following tasks:

- “1. Creating the Automation Server control data set” on page 68.
- “2. Copying the started task JCL to a library” on page 68.
- “3. Designing request control data sets” on page 69.
1. **Creating the Automation Server control data set**

To create the Automation Server control data set, use member HSIASALC in the JCLLIB. This member is generated from the HSISCUST post-installation customization job.

Member HSIASALC contains IDCAMS JCL and control statements to create the control data set.

The Automation Server control data set is a VSAM KSDS that is allocated by the Automation Server with the HSIACDS ddname.

**Note:** The Automation Server control data set must have sufficient space allocated for it to handle the workload required by the installation. One 96 byte record (including the 52 byte key) is required for each data set processed by the Automation Server.

2. **Copying the started task JCL to a library**

The Automation Server started task JCL **HSIJAUTO** is supplied in the SHSIPROC data set.

To start HSIJAUTO as a Started Task, copy the customized member from the JCLLIB to an authorized PROCLIB.

Use the parameters listed in this table in the started task JCL:

<table>
<thead>
<tr>
<th>Statement Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSI</td>
<td>High-level qualifiers for the Installation Target Libraries months</td>
</tr>
<tr>
<td>HSIINST</td>
<td>High-level qualifiers for the &amp;HSIINST.PARMLIB data set created by the HSISCUST job.</td>
</tr>
<tr>
<td>ACDS</td>
<td>Data set name of the Automation Control Data Set (ACDS).</td>
</tr>
</tbody>
</table>

**Files used by the Automation Server:**

**STEPLIB**

Load library containing the product software. Not required if Tivoli Asset Discovery for z/OS is installed into the system link list.

**HSIACNTL**

Partitioned data set containing fixed length 80 byte records. Member HSIAPARM of this partitioned data set contains the Automation Server control statements that specify the actions to be performed. For each action in the HSIAPARM member, there is a corresponding member of the same name containing the template data for that action. The template data is made up of JCL or an FTP command stream containing symbolic references, to be resolved by the Automation Server when the action is performed.
HSIACDS
A VSAM KSDS control data set used by the Automation Server.

HSIAMSG
Specifies the message report file for the Automation Server. Initialization statements, error messages, and activity logging messages, are written to this file.

SYSPRINT
Specifies the message report file for Language Environment.

SYSOUT
Specifies the message report file for Language Environment.

OUTPUT
Specifies the message report file for the FTP program. The contents are determined by the FTP program installed in the system.

INPUT
Specifies a fixed length 120 byte record file containing FTP commands read by the FTP program. The FTP commands are written to this file before the Automation Server FTP action is performed.

INTRDR
Specifies a fixed length 80 byte record file to be directed to the internal reader used by the system. The Automation Server writes a job stream to this file whenever a JOB action is to be performed.

3. Designing request control data sets

The Automation Server action requests are specified in the HSIAPARM member of the SHSIPARM file.

Syntax rules are as follows:
• Records with an asterisk in column 1 are comments.
• Blank records are comments.
• A parameter record has one or more parameters, each with a value specified within parentheses after the parameter name.
• The first parameter specifies the statement type.
• All parameters must begin before column 72.
• Blanks can be used before and after parameter names, parentheses, and parameter values.
• Continuations on to subsequent records are not possible.

Action statement
Each statement requests that an action is performed for a data set when it matches an associated data set name mask, and is detected for the first time. An action is performed once for each match, but the presence of a data set triggers the action for each specified data set name mask it matches.

Action statements have several optional operands to provide control over when Automation Server processing is to occur.

These operands can specify:
• time-of-day window
• day-of-week control string
• day-of-month window
When all these constraints have been satisfied, the Automation Server searches the catalog for data sets with names that match the masks associated with an action.

**Data set name mask statement**

Each data set name mask statement associates the specified data set name mask with the preceding action statement. It is invalid for the HSIAPARM member to begin with a data set name mask statement. When a data set with a name matching the specified mask is first located, the action specified in the preceding action statement is triggered.

The data set name mask of NULLFILE is an exception. When a data set name mask with this exact value is processed by the Automation Server, a catalog search is not performed, but the associated action is triggered as if a new cataloged data set matching the mask has been located. Automation Server symbols for the data set name, and symbols for the first qualifier of the data set name, both have values of the 8 byte string NULLFILE. Use the data set name mask of NULLFILE to trigger scheduled actions which do not depend on the creation of a particular data set.

**Action statement and DSN syntax**

```
action(template) action
```

```
TIME.hhmm-hhmm WEEK(wkflags) NOTB(d1) NOTA(d2) DSN(data-set-name-mask) action FTP or JOB
```

**action** FTP or JOB

**template**

Name of a member in the HSICNTL file.

**TIME** This operand is optional, and the default is TIME(0000-2400), which specifies no time-of-day constraint.

**hhmm-hhmm**

Specifies a time-of-day range. Each *hhmm* value is four contiguous decimal digits that specify a time-of-day using the 24 hour clock. The minimum value is 0000 and the maximum value is 2400; the last two digits must not exceed 59. The two values are separated by a hyphen. Zero or additional blanks are also permitted. The first *hhmm* specifies the time-of-day window start, while the second specifies the time-of-day window end. The window includes times which are after the window start and before the window end. However, if the second *hhmm* value is lower than the first, the window includes times which are after the window start or before the window end.

**WEEK** This operand is optional. The default is WEEK(YYYYYYY), which specifies that the *action* can be run on every day of the week.

**wkflags**

Specifies a single contiguous 7 byte string, consisting of the uppercase characters Y or N. Each Y or N corresponds to a day of the week depending on its position in the string; the first corresponding to Sunday, the last to Saturday. If the character corresponding to a day of the week is N, the action is not processed on that day.
NOTB This operand is optional. The default NOTB(1) specifies that the monthly window starts on the first possible day of the month. NOTB means "not before".

d1 Specifies a one or two digit decimal number in the 1-31 range. This number denotes the first possible day of the month on which the action is permitted.

NOTA This operand is optional. The default NOTA(31) specifies that the monthly window extends to the last day of the month. NOTA means "not after".

d2 Specifies a one or two digit decimal number in the 1-31 range. This number denotes the last possible day of the month on which the action is permitted.

DSN Data set name.

data-set-name-mask
Specifies a data set name mask pattern which does not exceed 44 characters in length, and is used by the Catalog Search Interface. The generic match mask for a single character is the percent sign. The generic mask variable number of characters is the asterisk. A double asterisk can be used to match a variable number of data set name qualifiers.

Control statement examples

Example 1:
Files created by the Usage Monitor undergo two independent processes, both within the 8:00 p.m. to 11:30 p.m. window. They are processed by a job based on the JCL contained in member HSISJOB, and are separately transferred to a z/OS system using the FTP commands in member HSISFTP1. All members are pointed to by the HSIACNTL ddname.

* TRANSFER USAGE MONITOR FILES TO Z/OS SYSTEM
  JOB(HSISJOB1) TIME(2000-2330)
  DSN(USER.OMU+.D+.T*)
  FTP(HSISFTP1) TIME(2000-2330)
  DSN(USER.OMU+.D+.T*)

Example 2:
Files created by the Usage Monitor are to be imported to the appropriate database.

* PERFORM USAGE MONITOR IMPORT
  JOB(HSISUIMP)
  DSN(USER.UMON.*.*)

In this example HSISUIMP contains the necessary JCL to run Usage Import on a z/OS system.

Note: The JCL can route the job to any connected NJE node, or specify an affinity to any system sharing the SPOOL. You do not need to run the job on the z/OS system where the Automation Server is running. The template name, HSISUIMP in this example, does not need to match the job name submitted by the Automation Server action.

Example 3:
A job stream stored in member WED2MNTH is to be submitted unconditionally on the second Wednesday of every month.

* RUN MONTHLY JOBSTREAM ON THE SECOND WEDNESDAY OF EVERY MONTH
  JOB(WED2MNTH) WEEK( NNNYNNN ) NOTB( 8 ) NOTA( 14 )
  DSN( NULLFILE )
Automation Server symbol processing:

Whenever an action is performed, the contents of the template member are written to an appropriate output file. Each 80 byte record is written unchanged, unless symbol substitution is required. If an ampersand character is present in a record from the template member, the system symbol substitution routine ASASYMBM is started, which processes the record before it is written. You can use more than one symbol in a record. If an ampersand character does not denote the start of a recognized symbol, then that part of the data remains unchanged. Symbols available for use in template members include all z/OS system symbols and symbols defined locally by the Automation Server. Most Automation Server local symbols are derived from the catalog entry data set name which, when discovered, triggers the instance of the action.

System symbols supplied by the operating system, as well as the &SMF and &SYSLPAR symbols supplied by the Automation Server, are available for use in the HSIAPARM member. The &SYSLPAR symbol might resolve to a null string if the system is running in a virtual machine.

Automation Server local symbols are provided in the following table:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;SMF</td>
<td>System SMF identifier.</td>
</tr>
<tr>
<td>&amp;SYSLPAR</td>
<td>System LPAR name.</td>
</tr>
<tr>
<td>&amp;DATASETNAME</td>
<td>The entire data set name.</td>
</tr>
<tr>
<td>&amp;QUAL1</td>
<td>The first qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL2</td>
<td>The second qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL3</td>
<td>The third qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL4</td>
<td>The fourth qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL5</td>
<td>The fifth qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL6</td>
<td>The sixth qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL7</td>
<td>The seventh qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL8</td>
<td>The eighth qualifier of the data set name.</td>
</tr>
<tr>
<td>&amp;QUAL9</td>
<td>The ninth qualifier of the data set name.</td>
</tr>
</tbody>
</table>

Automation Server symbol processing example

Example:

The data set triggering a JOB action is IBMUSER.IQ.ZIP. As a result, JCL DD statements referencing the data set in a template member can be represented as shown in this example:

```plaintext
//BR14 EXEC PGM=IEFBR14
//DD1 DD DSN=&&DATASETNAME.,DISP=SHR
//DD2 DD DSN=&&QUAL1..&&QUAL2..&&QUAL3.,DISP=SHR
```

Both JCL DD statements would be resolved by symbol substitution to:

```
DSN=IBMUSER.IQ.ZIP,DISP=SHR
```

This is the DSN= JCL statement output to the internal reader.
4. Starting and stopping the Automation Server

Starting
When installed as a started task, the Automation Server must be started by an operator `START` command. Ensure that the user ID assigned to the Automation Server has RACF CONTROL access to the VSAM data set.

Stopping
When running as a started task or as a batch job, the Automation Server is stopped by an `MVS STOP` command.

5. Excluding data sets from Automation Server processing

In the HSIAPARM member you define actions to be performed, and supply data set name masks specifying the data sets to be processed. Data sets with these name patterns might already exist and been processed before the Automation Server was implemented. Data sets that you want excluded from the Automation Server processing must have a record in the Automation Server control data set indicating that the data set has already been processed. The name of the data set you want to exclude must satisfy a selection mask pattern. To implement this exclusion, you can use the Automation Server data set name scouting program. The program reads the HSIAPARM member and searches the catalog for every specified data set name mask. If a data set is found, a record is written, then sorted into key order, and copied into the VSAM control data set. Every record loaded into the control data set in this way indicates a specific action, and has that action flagged as complete.

You can edit the sequential data set before the data is copied into the control data set. This process manually deletes any records for data sets you still want processed by the Automation Server.

To run the scouting program, the HSISCUST post-installation customization job creates member HSIASSCT in the JCLLIB.

Automation Server control data set maintenance

A record is kept for every data set processed by the Automation Server in the Automation Server control data set, ACDS. The purpose of this record is to prevent the repeated processing of a data set for the same data set name mask. As records accrue, the size of the data in the ACDS continues to grow.

If a processed data set is deleted, or a data set name mask is removed from the set of masks processed by the Automation Server, then there is no reason to keep a record of that data set in the ACDS. The Automation Server performs a cleanup cycle for the ACDS on a daily basis. This cleanup cycle consists of reading the ACDS sequentially, and deleting records for data sets which have not been found by catalog search. This is based on the relevant data set name mask in the current calendar month, or in the prior calendar month.

As with most VSAM data sets with ongoing record insertion and deletion activity, it is advisable to periodically reorganize the ACDS.
Chapter 5. Reporting

The primary reporting facility in Tivoli Asset Discovery for z/OS is the Analyzer. In addition, you can optionally use Tivoli Common Reporting to develop your own custom reports.

The Analyzer

The Analyzer runs as a started task or batch job on the same central z/OS host as the DB2 Subsystem that contains the Tivoli Asset Discovery for z/OS database(s).

The Analyzer has two modes:

**Online mode**
A PC Browser, for example Firefox, is used to communicate with the Analyzer for interactive queries.

**Batch mode**
This mode uses the Analyzer to generate the report to an output file. The Batch mode is useful when you want to automate report your own reports.

All Analyzer reports can be run in online and batch modes and can produce the following output formats:

- HTML (htm)
- Excel (Excel)
- Text line (txt)
- Comma Separated Value (csv)

This section explains:

- Analyzer - Getting Started
- Analyzer Pre-Requisites
- Analyzer JCLLIB and PARMLIB members
- Analyzer National Language Support
- Running Analyzer in online mode
- Running Analyzer in batch mode
- Controlling the Analyzer Address Space
- Analyzer Custom Queries

See Appendix B, “Analyzer,” on page 169 for information on:

- Analyzer online mode navigation
- Analyzer reports
- Analyzer report parameters
- Analyzer report output columns

Getting started with the Analyzer

The Analyzer has several configuration options. In order to familiarize yourself with the Analyzer, it is a good idea to first run the Analyzer with the default settings. To get started, follow these steps:
1. Run the HSISANLO batch job, which is found in the JCLLIB, on the same z/OS host as the DB2 Subsystem that contains the Tivoli Asset Discovery for z/OS database(s). The person who submits the HSISANLO batch job must have already been granted access to the databases by using the HSISGRNT job in the JCLLIB. By default, HSISANLO runs the Analyzer in online mode with basic security and http port 9000.

2. Use your PC web browser to logon with the URL http://hostname:9000, where hostname is your z/OS IP host name or IP address. If you are not sure of the name, look at the Analyzer log, where the URL is listed.

3. At the login screen specify a user ID of TADZADM and a password of TADZ.

For more information, see Appendix B, “Analyzer,” on page 169.

**Analyzer prerequisites**

The Analyzer uses the DB2 Call Library Interface, also used by the Usage Import component, and the z/OS socket application programming interface.

There is no dependency on any other middleware components. For example, no dependency exists on the HTTP Server, WebSphere® Application Server, or Java.

The Analyzer has been designed with minimal prerequisites. These are:

- The Analyzer must be run on the same z/OS host as the DB2 Subsystem that contains the Tivoli Asset Discovery for z/OS databases.
- The user ID of the Analyzer address space must have previously been granted access to the databases. See the HSISGRNT job in the JCLLIB for sample JCL to grant access.
- When running the Analyzer in the online mode, you need access to a TCP/IP port. The default is port 9000.
- When running the Analyzer in online mode with SECURITY=SYSTEM, the Analyzer SHSIMOD1 load library must be defined to the z/OS Authorized Program Facility (APF). In addition, all data sets in the Analyzer STEPLIB, or JOBLIB DD concatenation, must be defined to APF.

**Analyzer JCLLIB and PARMLIB members**

The members in the JCLLIB contain sample JCL to run the Analyzer.

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSIJANLO</td>
<td>Analyzer PROC for online mode. Copy this PROC from the JCLLIB to a system PROCLIB data set to run the Analyzer as a started task</td>
</tr>
<tr>
<td>HSISANLB</td>
<td>Analyzer batch job for batch mode</td>
</tr>
<tr>
<td>HSISANLO</td>
<td>Analyzer batch job for online mode</td>
</tr>
<tr>
<td>HSISANS1</td>
<td>Define the Analyzer security profiles in RACF (only applicable for Analyzer SECURITY=SYSTEM setting)</td>
</tr>
<tr>
<td>HSISANS2</td>
<td>Generate the Analyzer SSL certificate in RACF (only applicable for Analyzer SECURITY=SYSTEM setting)</td>
</tr>
<tr>
<td>HSISANS3</td>
<td>Connect the Analyzer user ID to an existing SSL certificate in RACF (only applicable for Analyzer SECURITY=SYSTEM setting)</td>
</tr>
</tbody>
</table>
The following members in the PARMLIB contain sample configuration settings for the Analyzer in online mode. These members are referenced with the TPARAM setting in the HSJANLO PROC.

Table 23. PARMLIB members for Analyzer

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSISANP1</td>
<td>Basic Security:</td>
</tr>
<tr>
<td></td>
<td>• Security settings as defined in the Analyzer TPARAM DD</td>
</tr>
<tr>
<td></td>
<td>• HTTPS (SSL encrypted) communications</td>
</tr>
<tr>
<td>HSISANP2</td>
<td>Analyzer batch job for batch mode</td>
</tr>
</tbody>
</table>

Analyzer globalization support

By default, the Analyzer uses English for all report titles, headings, and descriptions. To change to Japanese, define the HSINLS DD to point to the HSINLSJP member in the SHSIANL1 data set.

You can also define your own custom language settings with the HSINLS DD. The HSINLSEN member in SHSIANL1 data set provides a template. It contains English key phrases on the left of the screen assigned to text that is used on the reports.

Running the Analyzer in online mode

To run the Analyzer in online mode as a Started Task, copy the HSJANLO from the JCLLIB to a system PROCLIB data set.

```
//HSIJANLO PROC HSI='TADZ.V750', TADz Target library HLQ.
//                   HSISCLI='HSISCLI', DB2 CLI Parms
//                   TPARAM='HSISANP1' TPARAM input parms
//*
//ANALYZER EXEC PGM=HSICANLZ,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DISP=SHR,DSN=&HSI..SHSIMOD1
//                   DD DISP=SHR,DSN=4DB2EXIT
//SYSPRINT DD SYSOUT=*,HOLD=YES,LRECL=500
//HSIANL1 DD DISP=SHR,DSN=5HSI..SHSIANL1
//HSIANL2 DD DISP=SHR,DSN=5HSI..SHSIANL2
//DSNAOINI DD DISP=SHR,DSN=5HSIINST..PARMLIB(5HSISCLI)
//HSICUST DD DISP=SHR,DSN=5HSIINST..PARMLIB(5HSISANQ)
//5HSINLS DD DISP=SHR,DSN=5HSI..SHSIANL1(5HSINLSJP)
//TPARAM DD DISP=SHR,DSN=5HSIINST..PARMLIB(5TPARAM)
```

The HSISANLO job in the JCLLIB is used to run Analyzer in online mode as a batch job.

```
//HSISANLO EXEC HSIJANLO,TPARAM=HSISANP1
```

When the Analyzer is run with online mode, configuration options must be defined in the TPARAM DD, including the communication port and security mode.

Analyzer communication port

The Analyzer communication port is defined by using the HTTPPORT setting. Both sample PARMLIB members HSISANP1 (basic security), and HSISANP2 (system security), have the following:
* HTTPPORT defines the TCP/IP port used for communications. *
* 
* If HTTPPORT = 9000 is defined on a system with a TCP/IP host *
* called sys1.mycompany.com, to access the TADz Analyzer the user *
* would specify the following URL in their PC Browser: *
*  
*    http://sys1.mycompany.com:9000 if SECURITY=BASIC *
*    or https://sys1.mycompany.com:9000 if SECURITY=SYSTEM *
*  
* The port specified must be available on your system. *
* 
* TSO NETSTAT can be used to check if a port is available e.g.: *
*  
*    TSO NETSTAT (PORT 9000 --- is port 9000 in use? *
*    TSO NETSTAT PORTL(PORT 9000 --- is port 9000 reserved? *
*  
* If no entries are returned from these NETSTAT commands, the port *
* is most probably available. At some sites, you may need your *
* Network Systems Programmer to reserve a port for TADz Analyzer. *
* 
***********************************************************************

HTTPPORT = 9000

If HTTPPORT is not specified, or is set to 0, the Analyzer runs in batch mode
instead of in online mode

**Analyzer BASIC security**

HSISANP1 in the PARMLIB defines the following basic user ID security settings.

**Note:** User IDs TADZADM and TADZUSR can be used without any prior
configuration. User ID AUID001 is a sample of how to restrict a user ID to certain
databases.

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

SECURITY = BASIC

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

* The following settings are only applicable for *
* SECURITY=BASIC:
* 
* AUTH_USER defines Userids and passwords for Analyzer logon
* AUTH_DB defines the databases access
* AUTH_MENU defines the menus access
* 
* The sample settings profile:
* 
* - TADZADM userid:
*   - Password TADZ
*   - Access to all databases
*   - Access to all menu tabs
* - TADZUSR userid:
*   - Password TADZ
*   - Access to all databases
*   - Access to menu tabs ASSET, DISC + CUSTOM only (not ADMIN)
* - AUID001 userid:
*   - Password PW01
*   - Access to databases AUDB01 + AUDB02 only
*   - Access to menu tab ASSET only

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

*AUTH_USER= USERID , PASSWORD

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

78  Administration Guide and Reference
Analyzer SYSTEM security

HSISANP2 in the PARMLIB defines the following system security settings:

***********************************************************************
* SECURITY=SYSTEM - HTTPS (SSL encrypted) communications          *
* with z/OS system security (SAF/RACF).                             *
* Refer to HSISANS1/2/3 in JCLLIB for sample JCL                   *
* to define RACF profiles/certificates.                            *
***********************************************************************
SECURITY = SYSTEM
***********************************************************************

The following settings are only applicable for SECURITY=SYSTEM:

- AUTH_HLQ defines SAF/RACF profile high level qualifier
- AUTH_UPPERCASE=Y Analyzer will uppercase passwords when invoking SAF/RACF password authentication
- AUTH_UPPERCASE=N Analyzer will pass through mixed case passwords when invoking SAF/RACF password authentication
- GSK_KEYRING_FILE defines SAF/RACF Keyring name of SSL Certificate
- GSK_KEY_LABEL defines SAF/RACF Label name of SSL Certificate
- GSK_... defines optional z/OS SSL environment variables.
- The z/OS Cryptographic Cryptographic Services Secure Sockets Layer Programming manual SC24-5901-07 explains the environment variables.
- For example, define GSK_HW_CRYPTO = 32 for SHA-256 digest generation.

* JCLLIB(HSISANS1) contains sample JCL to define RACF profiles, using a high level qualifier of 'TADZ'. If you have changed HSISANS1, you may also need to change the AUTH_HLQ TPARAM setting.
* JCLLIB(HSISANS2/3) contains sample JCL to define RACF SSL Certificates. If you have changes HSISANS2/3, you may also need to change the GSK_KEYRING_FILE and GSK_KEY_LABEL TPARAM settings.

***********************************************************************
AUTH_HLQ = TADZ
AUTH_UPPERCASE = Y
GSK_KEYRING_FILE = TADZ_KEYRING
GSK_KEY_LABEL = TADZCERT
***********************************************************************

HSISANP1 in the JCLLIB has sample JCL to define RACF security profiles.
**Note:** The RACF ID can be an existing RACF group (which user IDs have been connected to) and/or existing RACF user IDs.

If your z/OS system has been set up to use a third party alternative to RACF, you must define comparable settings in your third party security product.

```
/* TADZ ANALYZER DATABASE PROFILES */
RDELETE FACILITY TADZ.DB.AU*
RDEFINE FACILITY TADZ.DB.AU* UACC(NONE)
PERMIT TADZ.DB.AU* ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR,AUID001)

RDELETE FACILITY TADZ.DB.*
RDEFINE FACILITY TADZ.DB.* UACC(NONE)
PERMIT TADZ.DB.* ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)
PERMIT TADZ.DB.* ACCESS(NONE) -
   CLASS(FACILITY) ID(AUID001)

/*--------------------------------------------------------------*/
/* TADZ ANALYZER MENU PROFILES */
/*--------------------------------------------------------------*/
RDELETE FACILITY TADZ.MENU.ASSET
RDEFINE FACILITY TADZ.MENU.ASSET UACC(NONE)
PERMIT TADZ.MENU.ASSET ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR,AUID001)

RDELETE FACILITY TADZ.MENU.DISC
RDEFINE FACILITY TADZ.MENU.DISC UACC(NONE)
PERMIT TADZ.MENU.DISC ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)

RDELETE FACILITY TADZ.MENU.ADMIN
RDEFINE FACILITY TADZ.MENU.ADMIN UACC(NONE)
PERMIT TADZ.MENU.ADMIN ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM)

RDELETE FACILITY TADZ.MENU.CUSTOM
RDEFINE FACILITY TADZ.MENU.CUSTOM UACC(NONE)
PERMIT TADZ.MENU.CUSTOM ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)

SETROPTS RACLIST(FACILITY) REFRESH
```

**SSL Certificates**

When the Analyzer is running with SYSTEM=SECURITY, you must have an SSL Certificate defined in your SAF/RACF security system. You can either generate your own certificate, or connect to an existing certificate.

HSISANS2 in JCLLIB has sample JCL to generate SSL certificates in RACF.

```
/* TADZ ANALYZER DATABASE PROFILES */
RDELETE FACILITY TADZ.DB.AU*
RDEFINE FACILITY TADZ.DB.AU* UACC(NONE)
PERMIT TADZ.DB.AU* ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR,AUID001)

RDELETE FACILITY TADZ.DB.*
RDEFINE FACILITY TADZ.DB.* UACC(NONE)
PERMIT TADZ.DB.* ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)
PERMIT TADZ.DB.* ACCESS(NONE) -
   CLASS(FACILITY) ID(AUID001)

/*--------------------------------------------------------------*/
/* TADZ ANALYZER MENU PROFILES */
/*--------------------------------------------------------------*/
RDELETE FACILITY TADZ.MENU.ASSET
RDEFINE FACILITY TADZ.MENU.ASSET UACC(NONE)
PERMIT TADZ.MENU.ASSET ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR,AUID001)

RDELETE FACILITY TADZ.MENU.DISC
RDEFINE FACILITY TADZ.MENU.DISC UACC(NONE)
PERMIT TADZ.MENU.DISC ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)

RDELETE FACILITY TADZ.MENU.ADMIN
RDEFINE FACILITY TADZ.MENU.ADMIN UACC(NONE)
PERMIT TADZ.MENU.ADMIN ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM)

RDELETE FACILITY TADZ.MENU.CUSTOM
RDEFINE FACILITY TADZ.MENU.CUSTOM UACC(NONE)
PERMIT TADZ.MENU.CUSTOM ACCESS(READ) -
   CLASS(FACILITY) ID(TADZADM,TADZUSR)

SETROPTS RACLIST(FACILITY) REFRESH
```

`HSISANS2` in JCLLIB has sample JCL to generate SSL certificates in RACF.

```
.hsisans2
```
The following JCL demonstrates a sample implementation:

1. Update all occurrences of "Userid-running-HSISANLO" to reflect your TADz HTTPS environment.

Do not change the RACF keyring 'TADZ_KEYRING' or label 'TADZCERT' unless you update the corresponding values in analyzer PARMLIB member HSISANP2 and restart the Analyzer STC/Job.

---

```plaintext
//RACFDEF EXEC PGM=IKJEFT01,DYNAMNBR=30
//SYSTSPRT DD SYSOUT=* 
//SYSTSIN DD *
PROF NOPREF

RACDCERT DELETE(LABEL('TADZCERT'))
RACDCERT ID(CMACN) DELRING(TADZ_KEYRING)

SETROPTS CLASSACT(DIGTCERT,DIGTNMAP)
SETROPTS RACLIST(DIGTCERT,DIGTNMAP)

RACDCERT ID(Userid-running-HSISANLO) ADDRING(TADZ_KEYRING)

RACDCERT ID(Userid-running-HSISANLO) CERTAUTH GENCERT -
SUBJECTDN( 0('Your Organization') -
CN('Your Domain') -
C('US')) TRUST -
WITHLABEL('LOCALCA') -
KEYUSAGE(CERTSIGN)

RACDCERT ID(Userid-running-HSISANLO) GENCERT -
SUBJECTDN( CN('TADZCERT') -
OU('Your Dept.') -
C('US')) -
WITHLABEL('TADZCERT') -
SIGNWITH(CERTAUTH -
LABEL('LOCALCA'))

RACDCERT ID(Userid-running-HSISANLO) -
CONNECT(ID(Userid-running-HSISANLO) -
LABEL('TADZCERT') -
RING(TADZ_KEYRING) -
DEFAULT -
USAGE(PERSONAL))

RACDCERT ID(Userid-running-HSISANLO) -
CONNECT(ID(Userid-running-HSISANLO) CERTAUTH -
LABEL('LOCALCA') -
RING(TADZ_KEYRING) -
USAGE(CERTAUTH))

SETROPTS RACLIST(DIGTCERT,DIGTNMAP) REFRESH

/*
//PERMIT EXEC PGM=IKJEFT01,DYNAMNBR=30
//SYSTSPRT DD SYSOUT=* 
//SYSTSIN DD *
PROF NOPREF

RDEL FACILITY IRR.DIGTCERT.LIST
RDEL FACILITY IRR.DIGTCERT.LISTRING
SETR RACLIST(FACILITY) REFRESH

RDEFINE FACILITY IRR.DIGTCERT.LIST UACC(NONE)
RDEFINE FACILITY IRR.DIGTCERT.LISTRING UACC(NONE)
SETR RACLIST(FACILITY) REFRESH

PERMIT IRR.DIGTCERT.LIST CLASS(FACILITY) -

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```
HSISANS3 in JCLLIB has sample JCL to connect to existing SSL certificates in RACF.

******************************************************************************
//**
//** To enable TADz Analyzer to use HTTP secure (HTTPS) using an existing CA certificate, 'Entrust Secure Server Root CA' in our example, the following steps should be implemented by your site's RACF Administrator:
//** 1. Delete KEYRING(TADZ_KEYRING) and certificate with the LABEL('TADZCERT').
//** 3. Define Keyring TADZ_KEYRING.
//** 4. Connect the existing CA certificate to the Keyring.
//** 5. Refresh RACF Classes required for digital certificates.
//** 6. Permit access to the Facility Class profiles.
//**
//** The following JCL demonstrates a sample implementation:
//** 1. Update all occurrences of "Userid-running-HSISANLO" to reflect your TADz HTTPS environment.
//** 2. Do not change the RACF keyring 'TADZ_KEYRING' or label 'TADZCERT' unless you update the corresponding values in analyzer PARMLIB member HSISANP2 and restart the Analyzer STC/Job.
******************************************************************************
/RACFDEF EXEC PGM=IKJEFT01,DYNAMNBR=30
/SYSTSIN DD *
/SYSTSIN DD *
/PROF NOPREF
RACDCERT DELETE(LABEL('TADZCERT'))
RACDCERT ID(CMACN) DELRING(TADZ_KEYRING)
SETROPTS CLASSACT(DIGTCERT,DIGTNMAP)
SETROPTS RACLIST(DIGTCERT,DIGTNMAP)
RACDCERT ID(Userid-running-HSISANLO) ADDRING(TADZ_KEYRING)
RACDCERT ID(Userid-running-HSISANLO) GENCERT -
SUBJECTSDN (CN('TADZCERT') -
Ou('Your Dept.') -
C('US')) -
WITHLABEL('TADZCERT')
RACDCERT ID(Userid-running-HSISANLO) -
CONNECT(ID(Userid-running-HSISANLO) -
LABEL('TADZCERT') -
RING(TADZ_KEYRING) -
DEFAULT -
USAGE(PERSONAL))
RACDCERT ID(Userid-running-HSISANLO) -
CONNECT(ID(Userid-running-HSISANLO) CERTAUTH -
LABEL('Entrust Secure Server Root CA') -
RING(TADZ_KEYRING) -
USAGE(CERTAUTH))
Running the Analyzer in Batch mode

If you want to automate report generation, you can run the Analyzer in batch mode.

HSISANLB in JCLLIB contains sample JCL:

```sql
SETROPTS RACLST(DIGTCERT,DIGTNMAP) REFRESH

PERMIT EXEC PGM=IKJEFT01,DYNAMNBR=30
SYSTSIN DD SYSOUT=* 
SYSTSIN DD *
PROF NOPREF

RDEL FACILITY IRR.DIGTCERT.LIST
RDEL FACILITY IRR.DIGTCERT.LISTRING
SETR RACLST(FACILITY) REFRESH

RDEFINE FACILITY IRR.DIGTCERT.LIST UACC(NONE)
RDEFINE FACILITY IRR.DIGTCERT.LISTRING UACC(NONE)
SETR RACLST(FACILITY) REFRESH

PERMIT IRR.DIGTCERT.LIST CLASS(FACILITY) -
ID(Userid-running-HSISANLO) AC(READ)
PERMIT IRR.DIGTCERT.LISTRING CLASS(FACILITY) -
ID(Userid-running-HSISANLO) AC(READ)
SETR RACLST(FACILITY) REFRESH

Running the Analyzer in Batch mode

If you want to automate report generation, you can run the Analyzer in batch mode.

HSISANLB in JCLLIB contains sample JCL:

```sql
/*
* SET OUTFMT=TXT
*/
* SET OUTFMT=XLS
* SET OUTFMT=CSV
* SET OUTFMT=HTM
/*
* SET OUTDSN=&SYSUID..TADZANLZ.&OUTFMT Output dsn
* /ALOC EXEC PGM=IEFBR14
*/
OUTDSN DD DISP=(MOD,CATLG),DSN=&OUTDSN,
//    DCB=(DSORG=PS,RECFM=VB,LRECL=1000,BKSIZE=0),
//    UNIT=SYSALLDA,SPACE=(CYL,(5,10))
/*
* ANALYZER EXEC PGM=HSICANLZ
*/
STEPLIB DD DISP=SHR,DSN=HSIDEV.V720.D111.SHSIMOD1
//    DD DISP=SHR,DSN=OB2V910.DE91.SDSNEXIT
//    DD DISP=SHR,DSN=OB2.V910.SDSNLOAD
SYSPRINT DD SYSOUT=*,HOLD=YES,LRECL=500
HSIANL1 DD DISP=SHR,DSN=HSIDEV.V720.D111.SHSIANL1
HSIANL2 DD DISP=SHR,DSN=HSIDEV.V720.D111.SHSIANL2
DSNAOINI DD DISP=SHR,DSN=MPSRES.V7500111.PARMLIB(HSISCLI)
HSICUST DD DISP=SHR,DSN=MPSRES.V7500111.PARMLIB(HSISANCO)
HSINL5 DD DISP=SHR,DSN=HSIDEV.V720.D111.SHSIANL1(HSINLSJP)
TPARAM DD DUMMY
OUTPUT1 DD DISP=OLD,DSN=&OUTDSN
SYSIN DD *
/vendor = IBM
/showfeature = on
/*

The report name and parameters are specified in the SYSIN DD and the output

goes to the OUTPUT1 DD.

Chapter 5. Reporting
The simplest way to know what report name and parameters to specify is to run the report first using Analyzer in online mode. At the bottom of every report, the report name and parameters are listed in the syntax needed for batch mode. You can cut and paste this syntax into the batch SYSIN DD.

Alternatively, you can directly type in the parameters. Wildcard filters have been enabled to assist in this case.

See “Analyzer report parameters” on page 221.

**Controlling the Analyzer address space**

The Analyzer supports the z/OS modify commands found in the table:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP</td>
<td>Stops the Analyzer address space. For example /F HSISANLO,STOP</td>
</tr>
<tr>
<td></td>
<td>You can also issue this via the z/OS Stop command /P HSISANLO</td>
</tr>
<tr>
<td>REFRESH</td>
<td>Refresh Analyzer report templates and NLS text. For example /F HSISANLO,REFRESH. This is typically used to load new Custom queries</td>
</tr>
<tr>
<td>TRACE</td>
<td>Toggles on/off tracing. For example/F HSISANLO,TRACE. This should only be used when requested by IBM Support.</td>
</tr>
</tbody>
</table>

**Analyzer custom queries**

You can define custom queries in the Analyzer. This involves SQL queries (often based on supplied Analyzer queries) and the output is in standard Analyzer format.

HSISANCO in PARMLIB has two sample custom queries:

```sql
</tadz_analyzer custom="Usage Data Summary" desc="Summary of usage data gathered per system">
  SELECT LP.FLPARNAME AS "System",
       MIN(UP.FFIRSTUSED) AS "First Date",
       MAX(UP.FLASTUSED) AS "Last Date",
       SUM(UP.FEVENTCNT1) AS "Events"
  FROM TLPAR AS LP
  JOIN TUSEPOV AS UP ON UP.FLPARID = LP.FLPARID
  WHERE LP.FLPARID >= 1
  GROUP BY LP.FLPARNAME
  ORDER BY LP.FLPARNAME
</tadz_analyzer>

</tadz_analyzer custom="User Appl Code Product Usage" desc="Product Usage Summary per Appl Code in 2-3 chars of userid">
  SELECT SUBSTR(PUD.USERNAME, 2, 2) AS "Appl Code",
       P.VENDOR_NAME AS "Vendor",
       P.PRODUCT_NAME AS "Product",
       'V'||CAST(P.VERSION AS CHAR(8)) AS "Version",
       P.PID AS "PID",
       COUNT(DISTINCT LP.FLPARID) AS "Systems",
       COUNT(DISTINCT PUD.USERNAME) AS "UserIds"
  FROM ...
</tadz_analyzer>
```
The simplest way to develop the SQL for a custom query is to:

- Run a standard Analyzer report that has similar data that you want to query.
- At the end of the query, you will see a line saying how many rows have been queried and a hyperlink on the DB2 Subsystem. Click the hyperlink and you will see the SQL used to generate the report. Select the SQL, right-click and select “copy”.
- Under Administration, run the SQL Select Query report. Right-click the SQL box and select “paste”. Click Submit to run the report.
- Modify the SQL as desired. Details about the table columns are documented in Appendix D of this manual.
- In TSO ISPF, edit HSISANCQ, and paste your custom SQL into a new report like the other two sample custom reports. You can remove the original samples if you want. Alternatively, create a new member and adjust the HSICUST DD accordingly.
- To see the new custom report you need to either restart Analyzer, or issue the Analyzer REFRESH modify command. For example /F HSISANLO,REFRESH.

If you define a HSINLS DD, it contains a Codepage setting. All text in the HSICUST DD is treated as being in the same Codepage as the HSINLS setting. This includes the actual SQL, so it is important that the Codepage is compatible with the Codepage your DB2 has been configured to use. This is particularly important for SQL statements that contain special characters such as concatenation bars (||), as these symbols are often sensitive to codepage differences.

(Optional) Installing Tivoli Common Reporting

Tivoli Common Reporting V2.1 is provided so that you can develop your own Cognos based custom reports. It is useful when combining external data sources with Tivoli Asset Discovery for z/OS data. Please note that there are no pre-configured reports in Tivoli Common Reporting V2.1. These reports are only provided in the Analyzer.

Tivoli Common Reporting is packaged with Tivoli Asset Discovery for z/OS, and requires a server running a Windows or Linux platform.

1. Install Tivoli Common Reporting V2.1.
For more information on how to install, see the relevant chapter in the *Tivoli Common Reporting User Guide*.

2. Install DB2 Connect™, Version 9. For more information about how to install, see *DB2 Connect Quick Beginnings for DB2 Connect Personal Edition*, (GC23-5839-03) Part 3, "Installing DB2 Connect Personal Edition". This product provides the ODBC drivers that are required for Tivoli Common Reporting connectivity to DB2 on the host.

3. Download the Tivoli Asset Discovery for z/OS Cognos based report package.

**Note:** The supplied Cognos based report package contains only a Cognos Stage 1 model template. It does not contain any pre-configured reports.

This section describes how to transfer the Tivoli Asset Discovery for z/OS Cognos based report package from the host system by using FTP. A Tivoli Asset Discovery for z/OS administrator should have the necessary authorities to perform this task. To connect to the host system and copy the Tivoli Asset Discovery for z/OS report package:

a. Connect to the host system by using command-line FTP

   ```
   C:\/> ftp hostname
   ```

b. When prompted, enter your user name and password.

c. Switch the FTP mode to binary mode.

   ```
   ftp > binary
   ```

d. Download the report package member

   ```
   ftp > get 'hsi.SHSITCR1(HSICOG)' <path> TADz_model.zip
   ftp > bye
   ```

4. Copy the report package to the Tivoli Common Reporting server. The report package downloaded in the previous step must be placed in the folder: `C:\IBM\tivoli\tipv2Components\TCRComponent\cognos\deployment`. For information about importing the report package, see *Appendix E, Reporting with Tivoli Common Reporting,* on page 241.

5. For Tivoli Common Reporting to access the host data, two jobs are provided in Tivoli Asset Discovery for z/OS, which populate data on the host. These jobs are generated from the HSISCUST post installation customization job and are found in the JCLLIB.

   a. **HSISCOGT.** Submit this job to create and populate shared tables. To use the Cognos reporting engine, a set of cross product reporting tables must be defined and populated on the same DB2 subsystem as the one where the Tivoli Asset Discovery for z/OS Repository database is located. These tables are defined on a separate database and table space.

      This job will also populate the TIME_DIMENSION table based on the following parameters:

      **SSID** =

      DB2 subsystem name. Value assigned, as defined in job HSISCUST.

      **START_DATE** =

      Defines the first day from which you would like to start populating data into the TIME_DIMENSION table. This field is populated at a daily level, meaning that if you have three records processed at different times on a day, all three records are condensed into a single record for that day.
**DAYS**

Defines how many days you want to populate in the TIME_DIMENSION.

b. **HSISCOGA.** Submit this job to create aliases for Tivoli Asset Discovery for z/OS tables. This job creates aliases for the 8 Asset tables that are referenced by the Cognos Stage 1 model template.
Chapter 6. Utilities

This section describes the different functional tasks that need to be performed during the product life cycle. They are:

- “ZCAT utility”
- “Product Tagging utility” on page 91
- “Usage Summary” on page 95
- “Usage Deletion” on page 96
- “High-level qualifier listing for Usage Monitor” on page 97.
- “TPARAM table update” on page 98.
- “SCRT import utility” on page 98.
- “SMF Scanner” on page 99.
- “XML export utility” on page 100.

ZCAT utility

The ZCAT utility is used to concatenate and condense Usage Monitor data sets. The resulting file is then processed by the Usage Import program. The condensation of data produced by the Usage Monitor results in improved Usage Import performance and saving of storage space. The Usage Monitor started task produces at least one usage data set per day. Work flow can be designed to run ZCAT on the data sets on a weekly, fortnightly, or monthly basis before processing by the Usage Import. A weekly run is recommended, but depends on the amount of data that is produced and processed at your site. The Usage Monitor collects a large amount of detail about which job, account ID, and user ID are using a particular module of a given library on a given date. This information is output into multiple files that are produced on a daily basis. The ZCAT utility condenses the files as follows:

- Usage data across multiple files is condensed to a monthly granularity, as are the records stored in the Repository database.
- Redundant records across files, and records that are not stored in the database, are not included.
- Optionally, condensation can occur across various user IDs, job names, or account ID details. For further details see the description of condensation options listed in “Optional condensation parameters” on page 90.
- The ZCAT output file is compressed and ready to be transmitted for Usage Import processing.

Running the ZCAT utility

ZCAT syntax

```
ZCAT syntax
```
**ZCAT parameters**

**Mandatory Parameters**

The UMDSN or the UMMASK parameter must be specified.

**UMDSN**(hlq)

*hlq* is the Usage Monitor data set high-level qualifier. When the UMDSN parameter is specified, ZCAT concatenates all data sets having names of hlq.Dyyyyddd.Thhmmsst where yyyyddd and hhmmsst are the timestamp patterns of data sets produced by the Usage Monitor. The *hlq* can contain wildcard characters of percent or asterisk. The percent character denotes a single character mask, and the asterisk character denotes all characters. For example UMDSN(TADZ.**) would search for all data set names of TADZ.**.D%%%%%%%.T%%%%%%%

**UMMASK**(dsnmask)

dsnmask is the full dsn mask search criteria. It can be used to search for a pattern of files that differ from the files produced by the Usage Monitor. This parameter is useful if the files produced by the Usage Monitor have been renamed, but still need processing. Specifying UMMASK(hlq.D%%%%%%%.T%%%%%%%) is equivalent to specifying UMDSN(hlq)

**Optional parameters**

One or more optional parameters can follow the mandatory parameters.

**DELETE**

Delete the input data sets after the output data set is successfully generated. The default is to retain the input data sets, which are renamed by default.

**NORENAME**

Do not rename input data sets from hlq.D*.T* to hlq.D*.S* after the output data set is successfully generated. The default is to rename these input data sets to stop them being reprocessed by the ZCAT utility. Use this option only to rename the data sets before further ZCAT processing. This option stops double counting of usage data.

The RENAME option is ignored, if **DELETE** is also specified.

**Optional condensation parameters**

Improvements in performance and data storage space are gained by using the ZCAT utility options to carry out further condensation of data, ignoring data differences that are not important at your site, and do not appear in your regular reporting. You can still point the Usage Monitor File Detail Report to the saved archive of the concatenated detail file (ZCATDETL), or to the Usage Monitor output files. ZCATDETL is produced by the ZCAT utility.

**JNM=N**

Condense data for different job names to one of the following generic names based on the job type: -STC-, -JOB-, -UID- or -SYS-. The default is to retain the job name, and to condense data that belongs to the same job name only.

**UID=N**

Condense data for different user IDs, which are converted to blank. The default is to retain the user ID, and to condense data that belongs to the same user ID only.
**JAC=N**

Condense data for different job account codes which are converted to blank. The default is to retain the job account code, and to condense data that belongs to the same job account code only.

**Note:** Due to the various consolidating options, records that are ignored in the ZCATOUT data set are still written to the ZCATDETL output data set, which can be retained for archiving.

**DD statements**

**ZCATOUT**

Specifies the name of the ZCAT output data set. This data set can then be used as the input to the Usage Import program, where usage details are imported into the database. If the ZCATOUT DD card is omitted, ZCAT by default writes to a data set having the name hlq.Dyyyydd.Uhhmmss (U instead of T implied by the high level qualifier (hlq) option for input data sets), where yyyydd and hhmmss refer to the date and time timestamp of the first processed input data set.

**ZCATDETL**

If the ZCATDETL DD is allocated, all records are written to this data set. This data set includes any non condensed and non diagnostic data that is not written to the ZCATOUT data set. It enables the Job name, user ID, and job account details (which are ignored due to ZCAT options and are not written to the ZCATOUT file) to be archived into the detail file.

The ZCATDETL and ZCATOUT data sets are compressed by the ZCAT utility.

```plaintext
//ZCAT EXEC PGM=HSICZCAT,PARM='UMDSN(TADZ.**),JNM=N'
//STEPLIB DD DISP=SHR,DSN=TADZ.V750.SHSIMOD1
//ZCATOUT DD DSN=&SYSUID..TADZ.ZCATOUT, DISP=(NEW,CATLG),UNIT=SYSDA,SPACE=(CYL,(50,50),RLSE), DCB=(DSORG=PS,RECFM=VB,LRECL=27994,BLKSIZE=27998)
//ZCATDETL DD DSN=&SYSUID..TADZ.ZCATDETL, DISP=(NEW,CATLG),UNIT=SYSDA,SPACE=(CYL,(50,50),RLSE), DCB=(DSORG=PS,RECFM=VB,LRECL=27994,BLKSIZE=27998)
//DEBUG DD SYSOUT=*,HOLD=YES,LRECL=200 //SYSPRINT DD SYSOUT=*,HOLD=YES //SYSERR DD SYSOUT=*,HOLD=YES
```

In this example, all data sets having names of TADZ.*.*)D%**%**%T **%**%**%**% are processed due to the **UMDSN** parameter. The condensed output is written to sysuid.TADZ.ZCATOUT where the SYSUID system symbol is the user ID of the person submitting the job. This file is then transmitted for Usage Import processing. The **JNM=N** parameter instructs the utility to condense job names and ignore the original job name distinction. All valid records are written to the ZCATDETL DD card sysuid.TADZ.CATDETL, which is then archived for reference purposes.

**Product Tagging utility**

The Product Tagging utility, also called the Tagger, provides a means of identifying software which has not been predefined in the Global Knowledge Base (GKB). It is also used to supersede GKB entries, without changing the GKB contents.

Product Tagging is a manual process which requires you to provide details of the product name, vendor, and location of the programs. The Tagger scans the programs, by using the same method as the Inquisitor, and records the results in dedicated program members.
The control statements that describe which licensed programs are to be tagged are found in the SYSIN file. This file contains details of the program name, vendor name, product identifier, and version. The program library which contains the software to be tagged is allocated to the SYSLIB file.

You can have only one set of identifying attributes for each program name. If conflicting attributes are found for one or more program names, the Tagger issues a message and stops.

Information about all discovered programs relating to the nominated product is compiled into a single object module. This module is written to the scanned library allocated to SYSLIB or to the program library allocated to the optional HSIREDIR file. Using the HSIREDIR file, you can nominate to keep all tag data separate from licensed program software. The HSIREDIR file data sets must be included in the normal Inquisitor scan processing, even if these data sets contain no other program.

The tag data members created by the Tagger are recognized by the Inquisitor (by their SSI value) during normal program library scanning. The Inquisitor extracts the tag data from the member contents and writes it to an output file. The Inquisitor Import process uses these program tags to maintain entries for the programs in the Local Knowledge Base. The Match Engine can then accurately identify the tagged product level, regardless of which library the product is deployed to and which system the data is collected from.

The Tagger scans a single library and tags a single software product, or optional feature of a product, in each run. For products with multiple program libraries, each library is processed in a separate Tagger job or step. To ensure effective software identification by the Match Engine as it processes each library, use the OPTION statement to differentiate the identification entities between the different libraries of a product. Distribution libraries should not be tagged.

You can override the default output member name of @HSIPTAG by specifying a TAGMEM statement. All Tagger output members are flagged with an SSI value of XD7E3C1C7, which is 'PTAG' in EBCDIC.

If there is no preexisting member of the same name, a new program member is created by the Tagger to contain the tag data. If a member exists, the new tag data is added to the preexisting data pertaining to other products or optional features. Any data pertaining to the same software identified by [VENDOR + PRODUCT + OPTION + VERSION] is replaced. The data relating to each software piece resides in its own control section. Tag data members contain no executable code, and are bound with the only loadable attribute. These data members are bound as reentrant, with a residence mode of ANY, to minimize the impact of being placed in a library which is loaded into the Link Pack Area.

To erase the effects of Tagger processing, delete the tag data members, which are identified by their SSI value. If you are using ISPF, employ the SORT SSI member list command.

The software processed in a Tagger run has a key of [VENDOR + PRODUCT + OPTION + VERSION]. If non-key data items, such as the values specified in the PPNUM or LICENSED statements are incorrect, you can correct them by fixing the input statement values and rerunning the Tagger. This action replaces all non-key tag data. However, if a key data item is incorrect, it will not be erased by running the Tagger with the correct data.
If you are processing libraries that are not dedicated to a single licensed program, use member name masking to prevent tagging programs not related to that product. Some installations place multiple software products in a combined common library. If the products are tagged before they are combined, different tag data member names must be used.

**Running the Tagger**

To run the Tagger, use the job HSISPTAG in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

**Tagger control statements**

Control statements can be input by using the SYSIN file. General syntax rules are:
- Fixed length, variable length, and undefined record formats are processed.
- Short records are extended to 72 bytes of data, with blanks if necessary.
- Only the first 72 bytes of data for each record are processed by the Tagger.
- Records beginning with an asterisk are treated as comments and do not alter continuation status.
- The first nonblanks of a statement must identify the statement type.
- One or more blanks must follow the statement type.
- A statement with no value or operand specified is invalid.
- For statement types other than SELECT, the specified value is deemed to start with the first nonblank after the statement type name.
- Statements can be placed in any order. All statements are processed before any tagging activity commences.
- SELECT is the only statement type which can be supplied more than once in an input file.
- SELECT is the only statement type which can be continued over more than one record.

Details of all Tagger statement types are found in the following table:

*Table 25. Tagger statement types*

<table>
<thead>
<tr>
<th>Statement Type</th>
<th>Value</th>
<th>Default Value</th>
<th>Required</th>
<th>Maximum length</th>
</tr>
</thead>
<tbody>
<tr>
<td>VENDOR</td>
<td>Vendor name</td>
<td>-</td>
<td>Yes</td>
<td>30 bytes</td>
</tr>
<tr>
<td>PRODUCT</td>
<td>Product name</td>
<td>-</td>
<td>Yes</td>
<td>50 bytes</td>
</tr>
<tr>
<td>PPNUM</td>
<td>Licensed program number</td>
<td>blanks</td>
<td>No</td>
<td>16 bytes</td>
</tr>
<tr>
<td>OPTION</td>
<td>Optional feature name</td>
<td>BASE</td>
<td>No</td>
<td>30 bytes</td>
</tr>
<tr>
<td>VERSION</td>
<td>Software level</td>
<td>-</td>
<td>Yes</td>
<td>8 bytes</td>
</tr>
<tr>
<td>LICENSED</td>
<td>Separately licensed feature?</td>
<td>NO</td>
<td>No</td>
<td>3 bytes</td>
</tr>
<tr>
<td></td>
<td>(YES or NO)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAGMEM</td>
<td>Output member name</td>
<td>@HSISPTAG</td>
<td>No</td>
<td>8 bytes</td>
</tr>
<tr>
<td>SELECT</td>
<td>Program name filter</td>
<td>PGM(*)</td>
<td>No</td>
<td>8 bytes per mask</td>
</tr>
</tbody>
</table>
SELECT is not a value-oriented statement type. It has operands which have values specified in parentheses. The PROGRAM or PGM inclusion operand can be abbreviated to P. The XPROGRAM or XPGM exclusion operand can be abbreviated to XP.

The Tagger stops parsing a SELECT record and the current statement continues on to the next record whenever a continuation character is encountered. Valid continuation characters are plus and hyphen. A continuation cannot occur within an operand name, or a value mask.

**SELECT syntax**

```
PROGRAM
PGM=(member-mask-list)
```

```
XPROGRAM
XPGM=(member-mask-list)
```

**member-mask**

A string up to 8 bytes in length, representing one or more possible member names of a PDS or PDSE. Use a percent sign to indicate that any single character is to be considered a match in the exact location of the compared character string. Use an asterisk to indicate that any zero or more characters are a match.

**Example 1**

A company called ISV has created a build of several programs (build 97) it is developing under the Swisho4U brand. The data sets created by this build have their own disk volume called BLD097. The tag data is to be redirected to a data set dedicated for this purpose.

```
//STEP1 EXEC PGM=HSITAGP
//SYSPRINT DD SYSOUT=* 
//SYSLIB DD DSN=S4U.LOADLIB,DISP=SHR,UNIT=3390,VOL=SER=BLD097
//HSIREDIR DD DSN=S4U.TAGLIB,DISP=SHR
//SYSIN DD *
VENDOR ISV
PRODUCT Swisho4U
VERSION BUILD097
/*
```

**Example 2**

The BigBiz Inc. data center is about to deploy the contractor data processing component for Version 4 Release 2 of its internally developed human resources application called HU-MAN. The software is tagged in its own library, but the default tag member name is not used in case it is later loaded into a program library common to several applications. All programs in HU-MAN have names beginning with HU, but the contractor component is the only component which has program names beginning with HUC. The relevant program library can be accessed by using the catalog.

```
//TAGRUN EXEC PGM=HSITAGP
//SYSPRINT DD SYSOUT=*
//SYSLIB DD DSN=HUMAN.V4R2M0.LOAD,DISP=SHR
//SYSIN DD *
VENDOR BIGBIZ INCORPORATED
PRODUCT HU-MAN Human Resources Management
OPTION Contractor Handling
/*
```
Example 3

Version 1.5 of the product MVSBLOAT from MiscWare has been deployed on a system which has a dedicated tag data library called SYS2.TAGLIB. Link list programs for the product have been placed in SYS2.LINKLIB and ISPF application modules have been placed in SYS2.ISPPLL. The product does not have optional features, but only the base component installed. All the installed programs have names beginning with MVSB. The OPTION statement is used to ensure that the contents of each library can be identified by the Match Engine.

```
//STEP1 EXEC PGM=HSITAGP
//SYSPRINT DD SYSOUT=*
//SYSLIB DD DSN=SYS2.LINKLIB,DISP=SHR
//HSIREDIR DD DSN=SYS2.TAGLIB,DISP=SHR
//SYSIN DD *
VENDOR MiscWare
PRODUCT MVSBLOAT
OPTION BASE (Batch)
VERSION 01.05.00
TAGMEM $$OEMTAG
SELECT PGM(MVSB*)
/*
//STEP2 EXEC PGM=HSITAGP
//SYSPRINT DD SYSOUT=*
//SYSLIB DD DSN=SYS2.ISPPLL,DISP=SHR
//HSIREDIR DD DSN=SYS2.TAGLIB,DISP=SHR
//SYSIN DD *
VENDOR MiscWare
PRODUCT MVSBLOAT
OPTION BASE (Dialogs)
VERSION 01.05.00
TAGMEM $$OEMTAG
SELECT PGM(MVSB*)
/*
```

Usage Summary

Usage Summary is the process of summarizing usage data in the Repository. This process deletes detailed usage records and creates monthly summary records, by reducing the number of DB2 rows used to represent your old data. After each Usage Summary, the usage data is aggregated to update the Asset tables.

To minimize space utilization and improve SQL query performance, it is recommended that you keep detailed module usage data for the last three months and summarize all detailed module usage data older than three months. It is also recommended to delete summarized module usage data older than 18 months. Please see job HSISUDEL (Usage Deletion) for more details.

If you have not run the Usage Summary job for some time, then select a period of a few months at a time, in order to keep the run times down to a reasonable time.

Running Usage Summary

To run the Usage Summary, use the job HSISUSUM, in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.
**TPARAM parameters**

**COMMIT=**
Default is 1000. Number of records stored before issuing of COMMIT.

**DSN=** DB2 location. Value assigned, as defined in job HSISCUST.

**SUMBY=**
Use this parameter to condense the usage data.

- **SUMBY=1**
  Data is summarized at the Product, LPAR, Period, Module ID, and Job Type level.
  User ID and job ID distinctions are ignored. Instead of Job IDs, events are attributed to Job Types (BATCH, TSO, DB2...).

- **SUMBY=2**
  Data is summarized at Product, LPAR, Period, Job ID, User ID level.
  Load module and program names are ignored.

- **SUMBY=3**
  The rules for SUMBY=1 and SUMBY=2 apply.
  Data is summarized by Product, LPAR, Period, Job Type.

**KEEPDETAIL=**
Default is 2. Number of months prior to the current month for which usage records are not summarized. Prior usage records are summarized. If KEEPDETAIL=0 is specified, all usage records, excluding those records for the current month, are summarized.

**FIRSTDATE=**
Start of the first date range. This is in the form YYYYMM. Only complete months are chosen.

**LASTDATE=**
End of the last date range. This is in the form YYYYMM.

**Note:** The date range of summarization is inclusive of the month specified in the FIRSTDATE and LASTDATE parameters.

**MINUSAGETHRESHOLD**
Default is 1000. Sets a value for Usage Summary to ignore summarization of usage records. If this parameter is set to 1000, then any product with a usage count of 1000 or less for any given month, does not have its usage records summarized. This allows you to view the usage records for low usage products.

**REPSHEMA=**
Repository qualifier. Name of qualifier is &DB.

---

**Usage Deletion**

Usage Deletion is the process of deleting usage data in the Repository. This process deletes detailed, summarized and aggregated usage data for the period specified for all systems in the Repository. After each Usage Deletion, usage data is aggregated to update the Asset tables.

To minimize space utilization and improve SQL query performance, it is recommended that you keep no more than 3 months of detailed module usage.
data and 13 months of aggregated product usage data. If you want to keep more
than 3 months of detailed module usage data, then run job HSISUSUM (Usage
Summary) to summarize the detailed module usage data older than three months.
See job HSISUSUM for more details.

If you have not run the Usage Deletion job for some time, then select a period of a
few months, in order to keep the run times down to a reasonable time.

Running Usage Deletion

To run the Usage Deletion, use the job HSISUDEL, in the JCLLIB. This job is
generated from the HSISCUST post-installation customization job.

TPARAM parameters

COMMIT=
Default is 1000. Number of records stored before issuing of COMMIT.

DSN= DB2 location. Value assigned, as defined in job HSISCUST.

KEEPDETAIL=
Default is 2. Number of months prior to the current month for which
detailed and summarized module usage data are kept. KEEPDETAIL=0
means all detailed and summarized module usage data excluding those
from the current month are deleted.

KEEPAGGR=
Default is 12. Number of months prior to the current month for which
aggregated product usage data are kept. KEEPAGGR=0 means all
aggregated product usage data, excluding those from the current month
are deleted.

FIRSTDATE=
Start of the first date range. This is in the form YYYYMM. Only complete
months are chosen.

LASTDATE=
End of the last date range. This is in the form YYYYMM.

Note: The date range of deletion is inclusive of the month specified in the
FIRSTDATE and LASTDATE parameters.

REPSHEMA=
Repository qualifier. Name of qualifier is &DB.

SID= System Identifier of system or LPAR for which usage should be deleted.

Note: If KEEPDETAIL is set to a value, then FIRSTDATE / LASTDATE will be
ignored. If detailed usage data are to be deleted within a certain date range, then
comment out KEEPDETAIL and define dates for FIRSTDATE / LASTDATE. For
further details, please see comments described in job HSISUDEL.

High-level qualifier listing for Usage Monitor

This job creates a high-level qualifier listing for Usage Monitor.

Because large amounts of usage data are collected, it is best practice to monitor
libraries that are identified in the high-level qualifier listing.
This utility scans the Repository to create a list of high-level qualifiers for products that are to be identified. Listed here are some examples that exclude all usage, but include some usage for the specified high-level qualifiers:

- `XDS(*)`
- `IDS(DB2.*)`
- `IDS(IMS.*)`
- `IDS(CICS.*)`
- `IDS(SYS1.*)`

This process is automated in the Inquisitor Import job. The high-level qualifier listing is written to a data set, and this data set is concatenated to the Usage Monitor control file, HSIZIN.

**Running high-level qualifier for Usage Monitor**

To run the High Level Qualifier for the Usage Monitor utility, use the job HSISLLST in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

**TPARAM parameters**

- `DSN=` DB2 location. Value assigned, as defined in HSISCUST.
- `REPSHEMA=` Repository qualifier. Name of qualifier is `&DB`.
- `COMMIT=` Default is 1000. Number of records stored before issuing a COMMIT.

**TPARAM table update**

In certain situations, the TPARAM table in the Repository might have been set to an inconsistent state, due to failures in jobs that update the Repository tables. To rectify this inconsistent state, a parameter in the TPARAM table has to be reset.

**Running TPARAM table update**

To run the TPARAM table update, use the job HSISTPRM, in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

**SYSIN parameter**

```
UPDATE &DB.TPARAM SET FVALUE = '0' WHERE FKEY = 'PROCRUN';
```

**SCRT import utility**

The Tivoli Asset Discovery for z/OS SCRT import utility reads data created by the IBM Subcapacity Reporting Tool. This comes in the form of CSV formatted output files, and is used to populate several DB2 tables in the Repository. This information can then be queried by Tivoli Common Reporting to provide trending of SCRT data, as well as comparing this with the corresponding usage data.

**Running SCRT import utility**

To run the SCRT import utility, use the job HSISSCRT, in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.
**INPUT**

DDNAME CSVIN, which contains the CSV output from the IBM SCRT tool. This may be from a data set with DSORG of PS or PO. Binary uploaded CSV files are supported.

DDNAME SIDMAP is used to map duplicate SMFIDs to a unique SID. The SCRT Import Utility is used to handle data where the same SMFID is used on multiple machines concurrently.

Map SMFID on specific machines to your desired SID. As described in this example, when processing data for CPU serial 11111, SMFID IP01, use SID QIP1, and so on.

```//SIDMAP DD *
11111-1P01=QIP1
11111-1P02=QIP2
11111-1P03=QIP3
/*
```

CPU serial
5 alphanumeric characters

SMFID
1 to 4 alphanumeric characters

Unique SID
1 to 4 alphanumeric characters. This must be the same as the SID value being used by the Usage Monitor for that z/OS system.

**OUTPUT**

Several DB2 tables are populated from the data contained in CSVIN, including NODE, NODE_CAPACITY, and PRODUCT_NODE_CAPACITY. Ensure that the CSVIN DD points to the .CSV output file created by the IBM SCRT tool. This may be a DSORG=PO or PS data set.

**TPARAM parameters**

SSID=
DB2 subsystem name. Value assigned, as defined in job HSISCUST

REPSHEMA=
Repository qualifier. Name of qualifier is &DB.

GKB=
Global Knowledge Base qualifier. Name of qualifier is &DBGK_BGKB7

---

**SMF Scanner**

The SMF Scanner utility provides you with the ability to get historical usage information from already existing SMF data. Using this SMF data means you can view trending results from before Tivoli Asset Discovery for z/OS is installed.

To start the process you need to run two jobs to capture scanned data (Inquisitor) and historical usage data (SMF Scanner). The output from the SMF Scanner (usage data) can then be processed to produce historical trending.

A sample job HSISIBM can take a file from either the Inquisitor or the Usage Monitor and filter out non-IBM programs. You might use this function when sending data to IBM Support for diagnosis.
The output of the SMF Scanner may also be used as input to HSISIBM.

**Note:** The SMF Scanner only tracks usage of the Job Step EXEC PGM modules and does not include modules that have been invoked from within the task.

### Running SMF scanner utility

To run the SMF scanner utility, use the job HSISSMF in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

### XML export utility

This utility extracts information in XML format for customers to import into the Tivoli Asset Management for IT product. The extracted information can be either:
- Catalog of products installed in your system.
- Catalog of products defined in Global Knowledge Base.

### Running XML export utility

To run the XML export utility, use the job HSISKBT, in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

The output XML file generated from this utility needs to be transferred by FTP to a distributed environment and then loaded into Tivoli Asset Management for IT (TAMIT). Also the XML file needs to be translated from EBCDIC to ASCII. Following is an example on how to perform this transfer.

1. C:\temp ftp host name (Using command line FTP connect to the host system)
2. When prompted enter your user name and password.
3. ftp > quote type a (set to ASCII)
4. ftp > get 'hsiinst.SWKBT.XML' C:\XML.FILE
   (ftp file from host to local workstation)
5. ftp > exit

If you need to ftp non ASCII characters, then issue "ENCODING" statement as this extra command before the GET command:

```
quote site ENCODING=MBCS MBDATACONN=(IBM-939,UTF-8)
```

(this example is for a Japanese codepage)

### TPARAM parameters

**SSID=**

DB2 subsystem name. Value assigned, as defined in job HSISCUST.

**SCHEMA=**

Repository qualifier or Global Knowledge Base qualifier.

a) Using the Repository qualifier value means that a catalog of products installed on your site is selected

b) You can also use the Global Knowledge Base qualifier value. This would mean that a catalog of all products defined in the Global Knowledge Base is selected.
Chapter 7. Globalization

Customizing tasks for Japanese messages

MVS™ Message Service (MMS) message information is provided for the Japanese language.

MMS message information for each language is contained in the following PDS:

- hsi.SHSIMJPN (Japanese)

The MMS message file must be compiled using the MMS message compiler. See the MVS Assembler Services Guide for more information on loading MMS messages.

To compile MMS files, use the job HSISMCMMP in the JCLLIB. This job is generated from the HSISCUST post-installation customization job.

You must install the latest system runtime message file.

Here is an example of how to create a new Japanese system runtime message file and install it:

1. Compile MMS files into system runtime message file hsi.MMSJPN99
2. Create a new entry in PARMLIB called MMSLSTJ9
   
   DEFAUlTS LANGCODE(JPN)
   LANGUAGE LANGCODE(JPN) DSN(SYS2.MMSJPN99) CONFIG(CNLJPN00)

3. Install the latest system runtime message file using this MVS system command
   
   SET MMS=J9

Note:

The components of the product listed here do not use the MVS message service MMS:

- Inquisitor Import
- Usage Import
- Usage Summary
- Usage Deletion

Japanese customers can enable Japanese messages to the MSGFILE for these components if the Language Environment NATLANG(JPN) option is in effect. For more information on the Language Environment MSGFILE and NATLANG options, refer to the Language Environment Programming Reference (SA22–7562). For more information about specifying Language Environment runtime options, refer to the Language Environment Programming Guide (SA22–7561). For more information about setting NATLANG(JPN) as an installation default, refer to the Language Environment Customization (SA22–7564). When the NATLANG(JPN) option is not in effect, the components listed here always output messages in mixed case English.

Enabling Analyzer for Japanese

To enable the Analyzer for Japanese, update the DD statements in the Analyzer started task HSIJANLO as follows:
If you wish to customize your own reports, copy hsi.SHSIPARM(HSISANCJ) to hsiinst.PARMLIB(HSISANCJ) and make changes directly in hsiinst.PARMLIB(HSISANCJ)

Update the Analyzer started task HSIJANLO as follows:

//HSICUST hsiinst.PARMLIB(HSISANCJ)
Appendix A. System messages

This section lists the various messages output by Tivoli Asset Discovery for z/OS.

HSIA - Automation Server messages

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Message Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error. No requests processed. SYSIN or HSIPZIP or INQSOUT File cannot be used, or unsupported Operating System.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Minimum Cond Code to Raises</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16, 20</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

HSIA001E  EXPECTED CLOSE PARENTHESIS WAS NOT FOUND IN INPUT RECORD

Explanation: Parsing did not detect the expected right parenthesis.
System action: Terminates the processing of the HSIAPARM member contents.
Operator response: Correct the HSIAPARM member contents.
System programmer response: None.
Module: HSIAUTO HSIADSN

HSIA002E  THE parm PARAMETER IS NOT RECOGNIZED

Explanation: A parameter was detected which is not valid for the type of statement being processed.
In the message text:
parm
name of parameter being processed.
System action: Terminates the processing of the HSIAPARM member contents.
Operator response: Correct the HSIAPARM member contents.
System programmer response: None.
Module: HSIAUTO

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HSIA004E  THE VALUE SPECIFIED FOR parm IS INVALID

Explanation:  The named parameter had a value which did not conform to syntax requirements.

In the message text:

parm  
name of parameter being processed.

System action:  Terminates the processing of the HSIAPARM member contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO

HSIA005E  NO "FTP" OR "JOB" STATEMENT BEFORE "DSN" STATEMENT

Explanation:  There is no preceding action to relate the dsname mask to.

System action:  Terminates the processing of the HSIAPARM member contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN

HSIA006E  parm IS AN UNRECOGNIZED STATEMENT TYPE

Explanation:  A statement type other than FTP, JOB, or DSN was specified.

In the message text:

parm  
name of parameter.

System action:  Terminates the processing of the HSIAPARM member contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN

HSIA007E  TERMINATING - AUTOMATION SERVER IS ALREADY ACTIVE

Explanation:  The Automation Server is already running. Only one concurrent copy can run in an operating system image.


Operator response:  None.

Module:  HSIAUTO HSIADSN

HSIA008E  TERMINATING - COULD NOT INITIALISE WITH BAD PARAMETERS

Explanation:  The HSIAPARM contents contained an error so the Automation Server could not initialize.

System action:  The program terminates with condition code 16.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN

HSIA009E  REFRESH IGNORED - COULD NOT PROCESS BAD PARAMETERS

Explanation:  The HSIAPARM contents contained an error so the Automation Server could not update its operational parameters.

System action:  Terminates the processing of HSIAPARM contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN

HSIA010E  NO FUNCTIONS WERE REQUESTED

Explanation:  No actions were specified. The Automation Server has no work to do.

System action:  Terminates the processing of HSIAPARM contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN

HSIA011E  NO DATA SET NAME MASKS WERE SPECIFIED

Explanation:  No work was requested. The Automation Server has no work to do.

System action:  Terminates the processing of HSIAPARM contents.

Operator response:  Correct the HSIAPARM member contents.

System programmer response:  None.

Module:  HSIAUTO HSIADSN
**HSIA012E**  
NUMBER OF ACTIONS EXCEEDS MAXIMUM OF 1000

**Explanation:** Too many actions were requested.

**System action:** Terminates the processing of HSIAPARM contents.

**Operator response:** Reduce the number of actions specified.

**System programmer response:** None.

**Module:** HSIAUTO HSIADSN

---

**HSIA013E**  
NUMBER OF DATA SET NAME MASKS EXCEEDS THE MAXIMUM OF 2000

**Explanation:** Too many dataset name masks were specified.

**System action:** Terminates the processing of HSIAPARM contents.

**Operator response:** Reduce the number of dataset name masks.

**System programmer response:** None.

**Module:** HSIAUTO HSIADSN

---

**HSIA014E**  
MEMBER mbr WAS NOT FOUND IN THE HSIACNTL FILE

**Explanation:** Member HSIAPARM was found to be missing from the HSIACNTL file.

In the message text:

```
mbr
```

name of missing member.

**System action:** Terminates the processing of the member. If the member is HSIAPARM the Automation Server terminates. For template members the Automation Server continues processing.

**Operator response:** Create the required member in the HSIACNTL library.

**System programmer response:** None.

**Module:** HSIAUTO HSIADSN

---

**HSIA015E**  
INPUT LOGICAL RECORD LENGTH WAS NOT 80

**Explanation:** A record was read from the HSIACNTL library which was not 80 bytes long.

**System action:** The program terminates and takes no actions.

**Operator response:** Ensure the HSIACNTL library only contains fixed length 80 byte records.

**System programmer response:** None.

**Module:** HSIAUTO

---

**HSIA016E**  
EXPECTED OPEN PARENTHESIS WAS NOT FOUND IN INPUT RECORD

**Explanation:** Parsing did not detect the expected left parenthesis.

**System action:** Terminates the processing of the HSIAPARM member contents.

**Operator response:** Correct the HSIAPARM member contents.

**System programmer response:** None.

**Module:** HSIAUTO

---

**HSIA017E**  
VALUE SPECIFIED FOR parm IS TOO LONG

**Explanation:** A parameter value was specified which has a length greater than the maximum allowed for the named parameter.

In the message text:

```
parm
```

name of parameter.

**System action:** Terminates the processing of the HSIAPARM member contents.

**Operator response:** Correct the HSIAPARM member contents.

**System programmer response:** None.

**Module:** HSIAUTO HSIADSN

---

**HSIA018E**  
THE "NOTA" VALUE IS LESS THAN THE "NOTB" VALUE

**Explanation:** The action can never be performed because all days of the month have been excluded by the combination of the NOTA (not after) and NOTB (not before) specifications.

**System action:** Terminates the processing of the HSIAPARM member contents.

**Operator response:** Correct the HSIAPARM member contents.

**System programmer response:** None.

**Module:** HSIAUTO

---

**HSIA999U**  
HSIMSG/HSIAMSG FAILURE - MSGID=msgid RC=rc RS=rs

**Explanation:** HSIMSG was called to produce a message text, but the call failed.

In the message text:

```
msgid
```

identifier of the failing message.
HSIF000U • HSIF002S

rc  HSIMSG return code.
rs  HSIMSG reason code.

System action: Terminates with a condition code of 20.

Operator response: Inform the system programmer.

System programmer response: Ensure Joblib/Steplib contains the library where the HSIMSG message module resides. If you cannot resolve this issue then contact IBM support.

Module: HSIAUTO :emsgl.

HSIF - Conversion messages

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>4</td>
<td>I/O error in one or more program libraries.</td>
</tr>
<tr>
<td>8</td>
<td>Error - Incomplete data. Processing continues. OPEN or other system service error.</td>
</tr>
<tr>
<td>12</td>
<td>Syntax error.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error.</td>
</tr>
<tr>
<td>20</td>
<td>Disastrous error. No requests processed. SYSPRINT file cannot be used.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Minimum Condition Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

HSIF000U  PROCESSING TERMINATED - NO USABLE SYSPRINT FILE

Explanation: The OPEN of the SYSPRINT file failed.
Note: This message is issued by WTO with ROUTCDE=(2,11).

System action: Terminates with a condition code of 20.

Operator response: Ensure a usable SYSPRINT file is allocated.

System programmer response: None.

Module: HSIIM2D HSIIS2D

HSIF001S  PROCESSING TERMINATED - STORAGE OBTAIN ENCOUNTERED AN ERROR, RC=rc

Explanation: Unable to acquire required amount of storage.

In the message text:
rc return code from STORAGE macro.

System action: Terminates with a condition code of 16.

Operator response: None.

System programmer response: Try increasing the region size specified in the region parameter on the JOB or EXEC statement in the JCL for the job. For additional information, examine the return code shown in the message and use for problem determination/resolution.

Module: HSIIM2D

HSIF002S  PROCESSING TERMINATED - DD FOR SYSPRINT MISSING

Explanation: DD statement missing for SYSPRINT.
Note: This message is issued by WTO with ROUTCDE=(2,11).
**HSIF004S**  •  **HSIF011S**

**System action:** Terminates with a condition code of 20.

**Operator response:** Ensure DD statement in the JCL is correct.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF004S  PROCESSING TERMINATED - CANNOT OPEN FILE "file"

**Explanation:** The OPEN of the file failed.

In the message text:

```
file
```

name of file that failed the OPEN request.

**System action:** Terminates with a condition code of 16.

**Operator response:** Ensure a usable file is allocated.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF005S  PROCESSING TERMINATED - DD FOR FILENAME "file" MISSING

**Explanation:** DD statement missing for the file.

In the message text:

```
file
```

name of file with missing DD statement.

**System action:** Terminates with a condition code of 16.

**Operator response:** Ensure DD statement in the JCL is correct.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF007S  PROCESSING TERMINATED - INVALID SYSIN PARAMETER

**Explanation:** Parsing detected an invalid parameter.

**System action:** Terminates with a condition code of 12.

**Operator response:** The final parameter displayed in the SYSPRINT report is in error. Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF008S  PROCESSING TERMINATED - INVALID SYSIN PLX= PARAMETER. MUST BE Y OR N

**Explanation:** The SYSIN PLX= parameter must be set to Y or N.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF009S  PROCESSING TERMINATED - INVALID SYSIN SYSPLEX= PARAMETER. THE SYSPLEX NAME MUST BE ENTERED

**Explanation:** The SYSIN SYSPLEX NAME must be entered.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIIM2D

---

HSIF010S  PROCESSING TERMINATED - INVALID SYSIN SSID= PARAMETER. THE SMF SYSTEM IDENTIFIER MUST BE ENTERED

**Explanation:** The SYSIN SSID= parameter must be entered.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIIM2D HSIIS2D

---

HSIF011S  PROCESSING TERMINATED - INVALID SYSIN SSMF= PARAMETER. THE SMF SYSTEM IDENTIFIER MUST BE ENTERED

**Explanation:** The SYSIN SSMF= parameter must be entered.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.
Module: HSIIM2D

HSIF012S PROCESSING TERMINATED - INVALID SYSIN LPARNAME= PARAMETER. THE LPAR NAME MUST BE ENTERED

Explanation: The SYSIN LPAR NAME must be entered.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF013S PROCESSING TERMINATED - INVALID SYSIN SERIAL= PARAMETER. THE SERIAL NUMBER MUST BE ENTERED

Explanation: The SYSIN SERIAL NUMBER parameter must be entered.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF014S PROCESSING TERMINATED - INVALID SYSIN HWTYPE= PARAMETER. THE HARDWARE TYPE MUST BE ENTERED

Explanation: The SYSIN HARDWARE TYPE parameter must be entered.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF015S PROCESSING TERMINATED - INVALID SYSIN HWMODEL= PARAMETER. THE HARDWARE MODEL MUST BE ENTERED

Explanation: The SYSIN HARDWARE MODEL must be entered.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF016S PROCESSING TERMINATED - INVALID SYSIN UNM= PARAMETER. MUST BE Y OR N

Explanation: The SYSIN UNM= parameter must be set to Y or N.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF017S PROCESSING TERMINATED - INVALID SYSIN JAC= PARAMETER. MUST BE Y OR N

Explanation: The SYSIN JAC= parameter must be set to Y or N.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF018S PROCESSING TERMINATED - INVALID SYSIN PLANT= PARAMETER. THE PLANT MUST BE ENTERED

Explanation: The SYSIN PLANT must be entered.

System action: Terminates with a condition code of 12.

Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.

Module: HSIIM2D

HSIF019S PROCESSING TERMINATED - OUTPUT HEADER NOT CREATED. NO STATISTICS OR CAPACITY RECORD IN INPUT FILE

Explanation: The input file contains no Statistics or Capacity record.

System action: Terminates with a condition code of 16.
Operator response: Ensure a usable input file exists and rerun the program.

System programmer response: None.

Module: HSIIM2D

---

HSIF020S  PROCESSING TERMINATED - HSIIMONZP func FAILURE, RC=rc

Explanation: HSIIMONZP file processing failure.

In the message text:

<table>
<thead>
<tr>
<th>func</th>
<th>file processing in error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code from HSIIMONZP</td>
</tr>
</tbody>
</table>

System action: Terminates with a condition code of 16.

Operator response: Ensure the correct DD statements exist for the file and rerun the program. For additional information, examine the return code shown in the message and use for problem determination/resolution.

System programmer response: None.

Module: HSIIM2D

---

HSIF021S  PROCESSING TERMINATED - NO DD STATEMENT DETECTED FOR HSIINQOT OR HSIINQZP

Explanation: At least one of the DD statements must be included.

System action: Terminates with a condition code of 16.

Operator response: Correct the JCL and rerun the program.

System programmer response: None.

Module: HSIIS2D

---

HSIF022S  PROCESSING TERMINATED - func FAILURE, RC=rc

Explanation: Processing failure.

In the message text:

<table>
<thead>
<tr>
<th>func</th>
<th>processing in error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code.</td>
</tr>
</tbody>
</table>

System action: Terminates with a condition code of 16.

Operator response: None.

System programmer response: Contact IBM support.

Module: HSIIS2D

---

HSIF023S  PROCESSING TERMINATED - HSIINQZP func FAILURE, RC=rc

Explanation: HSIINQZP file processing failure.

In the message text:

<table>
<thead>
<tr>
<th>func</th>
<th>file processing in error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code.</td>
</tr>
</tbody>
</table>

System action: Terminates with a condition code of 16.

Operator response: None.

System programmer response: Examine the return code shown in the message and use for problem determination/resolution.

Module: HSIIS2D

---

HSIF024S  PROCESSING TERMINATED - HSIINQOT func FAILURE, RC=rc

Explanation: HSIINQOT file processing failure.

In the message text:

<table>
<thead>
<tr>
<th>func</th>
<th>file processing in error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code.</td>
</tr>
</tbody>
</table>

System action: Terminates with a condition code of 16.

Operator response: None.

System programmer response: Examine the return code shown in the message and use for problem determination/resolution.

Module: HSIIS2D

---

HSIF025S  PROCESSING TERMINATED - TABLE #LPRTBL# func FAILURE, RC=rc

Explanation: Table processing failure.

In the message text:

<table>
<thead>
<tr>
<th>func</th>
<th>table operation in error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code.</td>
</tr>
</tbody>
</table>

System action: Terminates with a condition code of 16.

Operator response: None.

System programmer response: Examine the return code shown in the message and use for problem determination/resolution.

Module: HSIIS2D

---
HSIF999U • HSI002I

HSIF999U HSIMSG/HSIFMSG FAILURE -
  MSGID=msgid RC=rc RS=rs

Explanation: HSIMSG was called to produce a message text, but the call failed.
In the message text:
  msgid  identifier of the failing message.
  rc   HSIMSG return code.
  rs   HSIMSG reason code.

HSII - Utility messages

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>4</td>
<td>I/O error in one or more program libraries.</td>
</tr>
<tr>
<td>8</td>
<td>Error - Incomplete data. Processing continues. OPEN or other system service error.</td>
</tr>
<tr>
<td>12</td>
<td>Syntax error.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error.</td>
</tr>
<tr>
<td>20</td>
<td>Disastrous error. No requests processed. SYSPRINT file cannot be used.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Raises Minimum Condition Code to</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

HSII001I READ FAILED FOR SYSIN, RC=rc

Explanation: The HSICUST program could not read commands from the SYSIN DDname.
In the message text:
  rc  return code from EXECIO

System action: The program terminates and takes no actions.
Operator response: Correct the JCL and provide a SYSIN DD with valid control statements.
System programmer response: None.
Module: HSICUST

HSII002I REQUIRED PARAMETER prm IS MISSING FROM SYSIN

Explanation: The HSICUST program did not find the required parm in the SYSIN supplied by the user.
In the message text:
  prm  name of the parm that is missing.

System action: The program terminates and takes no actions.
Operator response: Correct the SYSIN and supply the required parm.
System programmer response: None.
Module:  HSICUST

**HSII003I**  THE DEFAULT VALUE "prm=def" IS BEING USED.

Explanation:  The submitted HSISCUST Job SYSIN did not contain this parameter and the default value will now be used.

In the message text:

`prm`  name of the parameter.

`dft`  supplied default.

System action:  The program continues and uses the default as documented in the message.

Operator response:  If the default value is to be overridden supply the parameter value in the HSISCUST Job SYSIN stream then resubmit.

System programmer response:  None.

Module:  HSICUST

**HSII004I**  ALLOCATION OF DATASET dsn TO dd FAILED, RC=rc

Explanation:  The HSICUST program could not allocate the dataset to the ddname.

In the message text:

`dsn`  name of the dataset that failed allocation.

`dd`  DD name to be allocated.

`rc`  return code from the allocate command.

System action:  The program terminates and takes no actions.

Operator response:  Check the return code from the allocate command in the TSO commands manual.
Correct the options and try running the program again.

The probable option in error is HSIINST.

System programmer response:  None.

Module:  HSICUST

**HSII005I**  func FAILED FOR rsc, RC=rc

Explanation:  The HSICUST program could not perform a required ISPF function because an error occurred during the ISPF function execution.

In the message text:

`func`  name of ISPF function that failed.

`rsc`  resource that caused the failure.

`rc`  return code from the ISPF function.

System action:  The program terminates and takes no actions. The program may have written out JCL and parameter members. These members should be treated as suspect as they might contain errors in them due to the nature of this error.

Operator response:  Check that the options specified do not exceed the field length requirements of the various options. If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.

System programmer response:  None.

Module:  HSICUST

**HSII006I**  MODEL DATASET SHSISAMP HAS NOT BEEN FOUND.

Explanation:  The HSICUST program could not find the SHSISAMP dataset created during installation.

System action:  The program terminates and takes no actions.

Operator response:  Check that the HSI option is correctly specified and that the installation target libraries are available to the customization program.

System programmer response:  None.

Module:  HSICUST

**HSII007I**  CUSTOMIZATION TERMINATES ...

Explanation:  The HSICUST program encountered an error during execution.

System action:  The program terminates and takes no further action.

Operator response:  Check the previous message which will identify the component causing the problem.

System programmer response:  None.

Module:  HSICUST

**HSII008I**  prm PARAMETER VALUE pval IS > plen CHARACTERS.

Explanation:  The HSICUST program found a parameter value with a length greater than the allowed value for that parm.

In the message text:

`prm`  name of HSISCUST parameter that failed.

`pval`  contents of the PARM.

`plen`  length of Parameter value.
**HSII009I • HSII013I**

*System action:* The program terminates and takes no actions.

*Operator response:* Check the parameter in question and re-submit the HSISCUST JCL after correcting the length error.

*System programmer response:* None.

*Module:* HSIIICUST

---

**HSII009I**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prm</code></td>
<td>name of HSISCUST parameter that failed.</td>
</tr>
<tr>
<td><code>dsn</code></td>
<td>dataset name associated with the PARM.</td>
</tr>
<tr>
<td><code>systm</code></td>
<td>Operating System name.</td>
</tr>
</tbody>
</table>

*Explanation:* The HSISCUST program found a parameter value, which requires a Dataset name. This Dataset name could not be found on the system.

In the message text:

- `prm` name of HSISCUST parameter that failed.
- `dsn` dataset name associated with the PARM.
- `systm` Operating System name.

*System action:* The program terminates and takes no actions.

*Operator response:* Check the parameter in question and re-submit the HSISCUST JCL after correcting the length error.

*System programmer response:* None.

*Module:* HSIIICUST

---

**HSII011I**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>word</code></td>
<td>word that is not valid for the statement syntax for a verb.</td>
</tr>
<tr>
<td><code>verb</code></td>
<td>the verb of the statement that encountered the error.</td>
</tr>
</tbody>
</table>

*Explanation:* During syntax parsing for a statement, a word was found that does not match the syntax of the statement for the verb that is being processed.

In the message text:

- `word` word that is not valid for the statement syntax for a verb.
- `verb` the verb of the statement that encountered the error.

*System action:* The program terminates and takes no actions.

*Operator response:* Update the statements to the program to correct the statement in error.

*System programmer response:* None.

*Module:* HSIIREGN

---

**HSII012I**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prm</code></td>
<td>parameter that is invalid.</td>
</tr>
</tbody>
</table>

*Explanation:* An invalid HSISCUST SYSIN parameter has been found.

In the message text:

- `prm` parameter that is invalid.

*System action:* The program terminates.

*Operator response:* Remove the invalid parameter from the HSISCUST Job SYSIN then resubmit.

*System programmer response:* None.

*Module:* HSIIICUST

---

**HSII013I**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prm</code></td>
<td>name of the parameter that is null.</td>
</tr>
</tbody>
</table>

*Explanation:* The submitted HSISCUST Job SYSIN has encountered a parameter with a NULL value.

In the message text:

- `prm` name of the parameter that is null.

*System action:* The program terminates.

*Operator response:* Ensure that the HSISCUST parameter has a valid parameter value in the HSISCUST Job SYSIN then resubmit.

*System programmer response:* None.

*Module:* HSIIICUST
HSII014I  PARAMETER VALUE FOR *prm* HAS UNBALANCED QUOTES, PARAMETER VALUE IS *pval*

**Explanation:** An HSISCUST parameter contains unbalanced quotes.

In the message text:

*prm*  
name of the parameter with unbalanced quotes.

*pval*  
parameter value.

**System action:** The program terminates

**Operator response:** Ensure that the Parameter value is enclosed within single quotation marks then resubmit the HSISCUST Job.

**System programmer response:** None.

**Module:** HSICUST

---

HSII015I  DATASET *dsn* *stat*

**Explanation:** The HSISCUST program identifies the status of the output datasets that it is going to use.

In the message text:

*dsn*  
name of output dataset.

*stat*  
status of the output dataset.

**System action:** The HSICUST program continues processing.

**Operator response:** Informational message, no action required.

**System programmer response:** None.

**Module:** HSICUST

---

HSII016I  UNMATCHED COMMENT DELIMITER IN HSISCUST STATEMENT: *stmt*

**Explanation:** The HSISCUST program found an error in the comment delimiters passed from the HSISCUST SYSIN stream.

In the message text:

*stmt*  
statement where the error occurred.

**System action:** The program terminates and takes no actions.

**Operator response:** Correct the HSISCUST SYSIN statements and provide valid comment delimiters, /* */.

**System programmer response:** None.

**Module:** HSICUST

---

HSII017I  PARAMETER *prm* MUST HAVE THE 1ST CHARACTER AS A VALUE BETWEEN A AND Z

**Explanation:** The HSISCUST Job has encountered a parameter in the SYSIN DD stream where the 1st character is not alphabetic. This parameter value must start with a value between A and Z.

In the message text:

*prm*  
name of the parameter that has a non alphabetic 1st character.

**System action:** The program terminates.

**Operator response:** Ensure that the HSISCUST parameter has a value between A and Z then resubmit the Job.

**System programmer response:** None.

**Module:** HSICUST

---

HSII018I  *prm* VALUE *pval* MUST BE WITHIN THE VALID RANGE OF *val1* TO *val2*

**Explanation:** The HSISCUST program encountered a parameter that was outside the valid range of values allowed.

In the message text:

*prm*  
name of the parameter in error.

*pval*  
value of parameter in error.

*val1*  
lower limit value of valid range.

*val2*  
upper limit value of valid range.

**System action:** The program terminates and takes no actions.

**Operator response:** Correct the parameter in error and rerun the HSISCUST Job.

**System programmer response:** None.

**Module:** HSICUST

---

HSII019I  PARAMETER *prm* MUST BE EITHER "Y" OR "N", PARAMETER VALUE IS *pval*

**Explanation:** The HSISCUST parameter contains a value other than "Y" or "N".

In the message text:

*prm*  
name of the parameter.

*pval*  
parameter value.
**HSII020I**  
**TAILORING PARAMETERS:**

*Explanation:* HSIICUST progress message.

*System action:* The program continues.

*Operator response:* This is an informational progress message and no further action is required.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII021I**  
**CREATING POST-INSTALLATION DATASETS:**

*Explanation:* HSIICUST progress message.

*System action:* The program continues.

*Operator response:* This is an informational progress message and no further action is required.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII022I**  
**APPLYING TAILORING INFORMATION TO POST-INSTALLATION MEMBERS:**

*Explanation:* HSIICUST progress message.

*System action:* The program continues.

*Operator response:* This is an informational progress message and no further action is required.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII023I**  
**POST-INSTALLATION CUSTOMIZATION COMPLETE.**

*Explanation:* HSIICUST completion message.

*System action:* The program ends successfully.

*Operator response:* This is an informational progress message and no further action is required.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII024I**  
**PARAMETER *prm* CONTAINS AN EXTRANEOUS VALUE: *xval***

*Explanation:* An HSIISCUST parameter contains an extraneous value.

In the message text:

- **prm**  
  name of the parameter with an extraneous value.

- **xval**  
  the extraneous value(s).

*System action:* The program terminates.

*Operator response:* Ensure that the Parameter value is equal to “Y” or “N” as required then re-submit the HSIISCUST Job.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII025I**  
**PARAMETER VALUE FOR *prm* MUST BE IN QUOTES, PARAMETER VALUE IS *pval***

*Explanation:* An HSIISCUST parameter value contains no quotes.

In the message text:

- **prm**  
  name of the parameter.

- **pval**  
  parameter value.

*System action:* The program terminates.

*Operator response:* Ensure that the Parameter value is enclosed within single quotation marks then resubmit the HSIISCUST Job.

*System programmer response:* None.

*Module:* HSIICUST

---

**HSII026I**  
**PARAMETER *prm* MUST BE A VALUE BETWEEN A-Z OR 0-9***

*Explanation:* The HSIISCUST Job has encountered a parameter in the SYSIN DD stream where the 1st character is not alphanumeric. This parameter value must be a value between A-Z or 0-9.

In the message text:

- **prm**  
  name of the parameter that has a non-alphanumeric first character.

*System action:* The program terminates.

*Operator response:* Ensure that the HSIISCUST parameter has a value between A-Z or 0-9 then resubmit the Job.

*System programmer response:* None.
HSII100I  prm MISSING FROM CONFIGURATION.

Explanation: The Region Assignment utility requires the parameter in the TPARAM dataset.
In the message text:

prm parameter that is missing.

System action: The program terminates and takes no actions.
Operator response: Update the parameters in the TPARAM DD to add the missing parameter.
System programmer response: None.

Module: HSIICUST

HSII101I  ATTEMPT TO DEFINE REGION regid FAILED, REGION ALREADY EXISTS.

Explanation: The DEFINE REGION statement contains a region name that already exists.
In the message text:

regid region to be defined.

System action: The program does not process this statement. Statements following the statement in error are not processed.
Operator response: Change the DEFINE REGION statement to refer to a region name that does not already exist.
System programmer response: None.

Module: HSIIREGN

HSII102I  REGION regid HAS NOT BEEN DEFINED.

Explanation: The ASSIGN REGION statement contains a region name that does not exist.
In the message text:

regid region to be assigned.

System action: The program does not process this statement. Statements following the statement in error are not processed.
Operator response: Change the ASSIGN REGION statement to refer to a region name that exists.
System programmer response: None.

Module: HSIIREGN

HSII103I  INVENTORY inv HAS NOT BEEN DEFINED.

Explanation: The ASSIGN INVENTORY statement contains an inventory that does not exist.
In the message text:

inv inventory to be assigned.

System action: The program does not process this statement. Statements following the statement in error are not processed.
Operator response: Change the ASSIGN INVENTORY statement to refer to an inventory name that exists.
System programmer response: None.

Module: HSIIREGN

HSII104I  REGION regid IS ALREADY ASSIGNED TO prg

Explanation: The ASSIGN REGION statement contains a region name that is to be assigned to another region, but the region being assigned is already assigned to a region.
In the message text:

regid region to be assigned.
prg parent region name.

System action: The program does not process this statement. Statements following the statement in error are not processed.
Operator response: Do not attempt to assign regions that are already assigned.
System programmer response: None.

Module: HSIIREGN

HSII105I  REGION regid DEFINED.

Explanation: The DEFINE REGION statement has executed correctly.
In the message text:

regid region to be defined.

System action: The program continues with processing.
Operator response: None.
System programmer response: None.

Module: HSIIREGN
HSII106I INVENTORY inv ASSIGNED TO regid

Explanation: The ASSIGN INVENTORY statement has executed correctly.

In the message text:

inv  inventory to be assigned.

regid  region name.

System action: The program continues with processing.

Operator response: None.

System programmer response: None.

Module: HSIIREGN

HSII107I svc FROM rsc FAILED, RC=rc

Explanation: An error has occurred executing the service for the resource specified. The service issued the return code mentioned.

In the message text:

svc  service that failed.

rsc  resource that failed.

rc  return code from service.

System action: The program stops processing statements. The current statement changes to DB2 tables are backed out.

Operator response: Report this error to the System Programmer.

System programmer response: For "EXECIO READ" service, this probably means that the resource specified (ddname) is missing or empty. If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.

Module: HSIIREGN

HSII108I SQL verb FAILED, SQLCODE=sqlcode

Explanation: An error has occurred executing the SQL verb for the table specified.

In the message text:

verb  SQL verb and table name.

sqlcode  SQLCODE from failing statement.

System action: The program stops processing statements. The current statement changes to DB2 tables are backed out.

Operator response: Report this error to the System Programmer.

System programmer response: None.

Module: HSIIREGN

HSII109I INVENTORY inv IS ALREADY ASSIGNED TO regid

Explanation: An error has occurred executing the SQL verb for the table specified.

In the message text:

inv  inventory name.

regid  region name.

System action: The program continues with processing.

Operator response: None.

System programmer response: None.

Module: HSIIREGN

HSII110I INVENTORY inv REMOVED FROM regid

Explanation: The inventory specified has been successfully removed from the region specified.

In the message text:

inv  inventory name.

regid  region name.

System action: The program continues processing.

Operator response: None.

System programmer response: None.

Module: HSIIREGN

HSII111I INVENTORY inv FAILED REMOVAL FROM regid, SQLCODE=sqlcd

Explanation: The inventory specified has not been removed from the region specified.

In the message text:

inv  Inventory name.
HSII112I  CANNOT DELETE REGION regid - regnm

Explanation: The region specified cannot be deleted from the database.
In the message text:
regid
Region name.
regnm
Region name.

System action: The program stops processing statements. The current statement changes to DB2 tables are backed out.
Operator response: Do not delete the region specified.
System programmer response: None.
Module: HSIIREGN

HSII114I  REGION regnm DELETED.

Explanation: The region specified has been deleted.
In the message text:
regnm
Region name.

System action: The program continues processing.
Operator response: None.
System programmer response: None.
Module: HSIIREGN

HSII116I  REGION regnm NOT DELETED, SQLCODE=sqlcode

Explanation: The region specified was not deleted due to an SQL error. SQLCODE details the error that occurred.
In the message text:
regnm
Region name.
sqlcode
SQL Return Code.

System action: The program stops processing statements. The current statement changes to DB2 tables are backed out.
Operator response: Report this error to the System Programmer.
System programmer response: If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.
Module: HSIIREGN
HSII117I  REGION  regnm ASSIGNED TO  prg
Explanation:  The region specified was assigned to a parent region.
In the message text:

regnm  region name.

prg  parent region name.
System action:  The program continues processing.
Operator response:  None.
System programmer response:  None.
Module:  HSIIREGN

HSII118I  REGION  regnm  CONTAINS  DBCS CHARACTERS.
Explanation:  The region name specified must not contain DBCS characters.
In the message text:

regnm  region name.
System action:  The program stops processing statements. The current statement changes to DB2 tables are backed out.
Operator response:  Do not put DBCS characters in the region name.
System programmer response:  None.
Module:  HSIIREGN

HSII200I  ddn  DDNAME CSVIN IS MISSING.
Explanation:  The SCRT Import utility requires the DDname CSVIN
In the message text:

ddn  DDname that is missing.
System action:  The program terminates and takes no actions.
Operator response:  Add the CSVIN DDname to the JCL and include the required input dataset containing data from the IBM SCRT tool.
System programmer response:  None.
Module:  HSIISCRT

HSII201I  dsn  CSVIN DATASET IS NOT PO OR PS.
Explanation:  SCRT Import Utility requires the CSVIN dsn to have a DSORG of PO or PS
In the message text:

dsn  CSVIN dataset not PO or PS.
System action:  The program terminates and takes no actions.
Operator response:  Ensure that the CSVIN dsn has a DSORG of PO or PS before submitting the Job.
System programmer response:  None.
Module:  HSIISCRT

HSII300I  ERROR WRITING TO  ddn.
Explanation:  The XML Export utility has a problem writing the XML file.
In the message text:

ddn  DDNAME of the file
System action:  The program terminates.
Operator response:  Check the Return Code and any preceding messages.
System programmer response:  None.
Module:  HSIIKBT

HSII301I  NUMBER OF LINES WRITTEN TO SWKBTXML DD IS  ocnt.
Explanation:  No. of Lines written to SWKBTXML DD by the XML Export utility.
In the message text:

ocnt  lines written to SWKBTXML DD.
System action:  The program continues and takes no actions.
Operator response:  Informational message, no action required.
HSII302I SQL WARNING FOR warn.

Explanation: SQL warning was issued from a command.

In the message text:

`warn` SQL warning.

System action: The program continues.

Operator response: None.

System programmer response: None.

Module: HSIKBT

HSII303I SQL ERROR FOR err.

Explanation: The XML Export Utility has encountered an error.

In the message text:

`err` SQL Error.

System action: The program terminates and takes no actions.

Operator response: Examine the SQL return code to determine the cause of the error. Inform the system programmer.

System programmer response: If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM Support.

Module: HSIKBT

HSII304I err.

Explanation: The XML Export Utility has encountered a DSNREXX error.

In the message text:

`err` DSNREXX error.

System action: The program terminates and takes no actions.

Operator response: Examine the preceding error messages to determine the error. Inform the system programmer.

System programmer response: If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM Support.

Module: HSIKBT

HSII999U MODULE HSIIMSG FAILED - MSGID=msgid RC=rc RS=rs

Explanation: HSIIMSG was called to produce a message text, but the call failed.

In the message text:

`msgid` identifier of the failing message.

`rc` HSIIMSG return code.

`rs` HSIIMSG reason code.

System action: Terminates with a condition code of 20.

Operator response: Inform the system programmer.

System programmer response: Contact IBM Support.

Module: HSIINQ :emsgl.
HSIP - Inquisitor for z/OS messages and codes

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>4</td>
<td>I/O error in one or more program libraries.</td>
</tr>
<tr>
<td>8</td>
<td>Error - Data collection is incomplete. Processing continues. The error is in a system service such as OPEN or DYNALLOC. Data that is collected can be processed normally.</td>
</tr>
<tr>
<td>12</td>
<td>Syntax error.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error. No requests processed. SYSIN or HSIPZIP or HSIPOUT File cannot be used, or unsupported Operating System.</td>
</tr>
<tr>
<td>20</td>
<td>Disastrous error. No requests processed. SYSPRINT file cannot be used.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Raises Minimum Condition Code to</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

**HSIP000U**  NO USABLE SYSPRINT FILE

**Explanation:** The OPEN of the SYSPRINT file failed. Note: This message is issued by WTO with ROUTCDE=(2,11). All other messages are written to the SYSPRINT file.

**System action:** Terminates with a condition code of 20.

**Operator response:** Ensure a usable SYSPRINT file is allocated. The program overrides any unacceptable DCB values.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP001U**  CANNOT OPEN SYSIN FILE

**Explanation:** The OPEN of the SYSIN file failed.

**System action:** Terminates with a condition code of 16.

**Operator response:** Ensure a usable SYSIN file is allocated.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP004S**  UNKNOWN VERB "verb"

**Explanation:** Parsing detected unrecognised data when looking for a verb.

In the message text:

`verb` name of the encountered verb.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP005S**  UNKNOWN OPERAND "op"

**Explanation:** Parsing detected unrecognised data when looking for an operand.

In the message text:

`op` name of the encountered operand.

**System action:** Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.

System programmer response: None.
Module: HSIPINQ

HSIP006S  UNEXPECTED LEFT PARENTHESIS ENCOUNTERED
Explanation: Parsing detected a left parenthesis at an unexpected location.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP007S  UNEXPECTED RIGHT PARENTHESIS ENCOUNTERED
Explanation: Parsing detected a right parenthesis at an unexpected location.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP008S  EXPECTED LEFT PARENTHESIS MISSING
Explanation: Parsing did not detect the expected left parenthesis.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP009S  EXPECTED RIGHT PARENTHESIS MISSING
Explanation: Parsing did not detect the expected right parenthesis.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP010U  OPERATING SYSTEM NOT SUPPORTED - CODE "code"
Explanation: The value of the byte at CVTDCB was not X'9B'.
In the message text:

code

hexadecimal value of first byte of CVTDCB.
System action: Terminates with a condition code of 16.
Operator response: This version of the Inquisitor cannot be run on this Operating System. If necessary, gather appropriate diagnostic materials and contact IBM support.
System programmer response: None.
Module: HSIPINQ

HSIP011I  MISSING RIGHT PARENTHESIS ASSUMED
Explanation: End-of-file was detected for SYSIN instead of an expected right parenthesis was detected.
System action: The request is accepted and processing continues.
Operator response: Correct the SYSIN file contents to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP012S  MISSING OPERAND SUBPARAMETER FOR spm
Explanation: A required subparameter of an operand was not specified.
In the message text:

spm

name of the operand being processed.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP013S  E-O-F INSTEAD OF EXPECTED CONTINUATION
Explanation: End-of-file was detected for SYSIN instead of an expected record required to continue the current statement being parsed.
**HSIP014I • HSIP018E**

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP014I** COMPLETED REQUEST NUMBER rno - PROCESSING STATISTICS ARE:

**Explanation:** Processing of a request has been completed. A HSIP015I message follows containing the statistics for the request.

In the message text:

- **rno** sequence number of the request.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP015I** VOLUMES=vol DATASETS=ds BAD-D/S=dsbad PROGRAMS=pgms

**Explanation:** Processing of a request has been completed. Statistics related to the request are shown.

In the message text:

- **vol** count of volumes scanned for this request.
- **ds** count of data sets successfully processed.
- **dsbad** count of data sets which could not be processed.
- **pgms** count of programs processed for this request.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP016I** ACCEPTED REQUEST NUMBER rno

**Explanation:** Parsing of a request has been completed successfully. The request is stored for subsequent processing.

In the message text:

- **rno** sequence number of the request.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP018E** VTOC DYNALLOC FAILURE: RC=rc ERROR=err INFO=inf VOLUME=vol

**Explanation:** A VTOC could not be dynamically allocated.

In the message text:

- **rc** return code of the DYNALLOC macro.
- **err** dynamic allocation return code (DARC).
- **inf** dynamic allocation information code.
- **vol** volume serial number of the data set.

**System action:** Processing of this volume is terminated.

**Operator response:** If necessary, rerun when the VTOC is available for use to process this volume. Note: The meanings of many DARC values are usually available in Appendix A of the ISPF Tutorial.

**System programmer response:** None.

**Module:** HSIPINQ

**HSIP017E** DYNALLOC FAILURE: RC=rc ERROR=err INFO=inf VOLUME=vol

**Explanation:** A data set could not be dynamically allocated. See message HSIP080I for the name of the dataset that incurred the problem.

In the message text:

- **rc** return code of the DYNALLOC macro.
- **err** dynamic allocation return code (DARC).
- **inf** dynamic allocation information code.
- **vol** volume serial number of the data set.
**HSIP020I**  
*ocnt INQUISITOR OUTPUT RECORDS WRITTEN*

**Explanation:** Processing has concluded and all data files have been closed.

In the message text:

`ocnt`  
number of records written.

**System action:** Termination continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP021S**  
*INVALID OPERAND SUBPARAMETER FOR spm*

**Explanation:** The specified subparameter of an operand was not valid.

In the message text:

`spm`  
name of the operand being processed.

**System action:** Terminates with a condition code of 12.

**Operator response:** Correct the SYSIN file contents and rerun the program.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP022W**  
*I/O ERR MEMBER mbr IN dsn*

**Explanation:** An I/O error was encountered while reading the contents of a load module.

In the message text:

`mbr`  
name of the program being processed.

`dsn`  
name of the data set being processed.

**System action:** Processing of this member continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP023E**  
*ABEND abend IN OPEN FOR dsn*

**Explanation:** An abnormal end occurred while opening a data set.

In the message text:

`abend`  
hexadecimal system abend and reason

`dsn`  
name of the data set being processed.

**System action:** Processing of this data set is terminated.

**Operator response:** None required, but you may wish to exclude the data set from processing, or correct the cause of the abend.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP024S**  
*BAD UCBSCAN RETURN CODE OF HEX rc*

**Explanation:** An unexpected return code was received from UCBSCAN.

In the message text:

`rc`  
hexadecimal return code from UCBSCAN

**System action:** Processing of volume scanning for this request is terminated.

**Operator response:** Rerun the program when no dynamic reconfiguration changes are being implemented.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP025U**  
*CANNOT OPEN HSIPOUT FILE*

**Explanation:** The OPEN of the HSIPOUT file failed.

**System action:** Terminates with a condition code of 16.

**Operator response:** Ensure that the allocated HSIPOUT file is usable, or omit the HSIPOUT file in favour of using the HSIPZIP file.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP026E**  
*I/O ERROR ENCOUNTERED READING VTOC OF VOLUME vol ON DEVICE dev*

**Explanation:** An I/O error was encountered while reading a VTOC.

In the message text:

`vol`  
volume serial number being processed.

`dev`  
device number of the volume.

**System action:** Processing of this track of the VTOC is terminated.

**Operator response:** None required, but you may wish
to exclude the volume from processing, or correct the cause of the I/O error.

System programmer response: None.
Module: HSIPINQ

HSIP028U  CANNOT OPEN HSIPDMP FILE

Explanation: The OPEN of the HSIPDMP file failed after DUMPTEXT was specified.
System action: Terminates with a condition code of 16.
Operator response: Ensure a usable HSIPDMP file is allocated, or remove all DUMPTEXT operand's from the contents of the SYSIN file. The DUMPTEXT operand should only be specified at the request of IBM support.
System programmer response: None.
Module: HSIPINQ

HSIP029I  TEXT-DUMPS=cnt

Explanation: Processing of a request with DUMPTEXT specified has completed. This message follows HSIP015I.
In the message text:

cnt  count of load module text blocks written.

System action: Processing continues.
Operator response: None required. The DUMPTEXT operand should only be specified at the request of IBM support.
System programmer response: None.
Module: HSIPINQ

HSIP030I  "DUMPTEXT" OPERAND IGNORED FOR "SCANDIR" VERB

Explanation: A DUMPTEXT operand was encountered for a SCANDIR request. That is, the possible dumping of load module text blocks was specified in a request which does not have access to text blocks.
System action: The DUMPTEXT operand is ignored and processing continues.
Operator response: Remove the DUMPTEXT operand to avoid this message. The DUMPTEXT operand should only be specified at the request of IBM support.
System programmer response: None.
Module: HSIPINQ

HSIP031I  BAD SELECTION CRITERIA FOR dsn

Explanation: Processing of a data set was specified but attributes did not match other selection criteria also specified in the request. This message is followed by HSIP038I which details the cause.
In the message text:

dsn  name of the data set being processed.

System action: Processing of this data set is terminated.
Operator response: If this data set is a program library which should be processed by the Inquisitor then modify or remove the conflicting selection criteria.
System programmer response: None.
Module: HSIPINQ

HSIP032I  OBTAIN FAILED RC=rc VOLUME vol

Explanation: The system could not read the VTOC entry for the data set named in the HSIP033I message which follows this message. This message is only issued when a program parameter of "DSNMSG" or "ALLMSG" is specified.
In the message text:

rc  hexadecimal return code of the OBTAIN macro.
vol  volume serial number being processed.

System action: Processing of this data set is terminated.
Operator response: Ensure the relevant catalog entry is correct. Ensure the relevant volume is online and available to the system. Ensure there is no I/O error in the relevant volume's VTOC. If necessary, gather appropriate diagnostic materials and contact IBM support.
System programmer response: None.
Module: HSIPINQ

HSIP033I  OBTAIN FAILED FOR DATA SET dsn

Explanation: The system could not read the VTOC entry for the data set on the volume named in the previous HSIP032I message. This message is only issued when a program parameter of "DSNMSG" or "ALLMSG" is specified.
In the message text:

dsn  name of the data set being processed.

System action: Processing of this data set is terminated.
Operator response: Ensure the relevant catalog entry
is correct. Ensure the relevant volume is online and available to the system. Ensure there is no I/O error in the relevant volumes VTOC. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.
Module: HSIPINQ

HSIP034I REFER DATE WAS date FOR dsn
Explanation: A load library was opened. The reference date of the data set before the OPEN is reported in this message. This message is only issued when a program parameter of "DSNMSG" or "ALLMSG" is specified.
In the message text:

- date the Julian reference date from the VTOC entry.
- dsn name of the data set being processed.

System action: Processing of this data set continues.
Operator response: None required.
System programmer response: None.
Module: HSIPINQ

HSIP036E OPEN ERROR ENCOUNTERED READING VTOC OF VOLUME vol ON DEVICE dev
Explanation: The VTOC of the volume shown could not be opened.
In the message text:

- vol volume serial number being processed.
- dev device number of the volume.

System action: Processing of this track of the VTOC is terminated.
Operator response: None required, but you may wish to exclude the volume from processing, or correct the cause of the I/O error.
System programmer response: None.
Module: HSIPINQ

HSIP037E SECURITY ACCESS DENIED FOR dsn
Explanation: A RACROUTE macro determined the program had insufficient security access to read the data set.
In the message text:

- dsn name of the data set being processed.

System action: Processing of this data set is terminated.
Operator response: Contact Security Administration to obtain sufficient security access to read the data set or exclude the data set from processing.
System programmer response: None.
Module: HSIPINQ

HSIP038I BAD SELECTION CRITERIA WAS dsn
Explanation: Processing of a data set was specified but attributes did not match other selection criteria also specified in the request. This message follows HSIP031I which shows the data set name.
In the message text:

- dsn cause of the data set processing failure.

System action: Processing of this data set is terminated.
Operator response: If this data set is a program library which should be processed by the Inquisitor then modify or remove the conflicting selection criteria.
System programmer response: None.
Module: HSIPINQ

HSIP039S ALL POSSIBLE DATA SETS ARE EXCLUDED
Explanation: An exclusion mask has been specified which excludes all possible data sets included by a selection mask. Both masks are shown after this message.

System action: Terminates with a condition code of 12.
Operator response: Modify or remove the conflicting selection criteria.
System programmer response: None.
Module: HSIPINQ

HSIP040S ALL POSSIBLE DASD VOLUMES ARE EXCLUDED
Explanation: An exclusion mask has been specified which excludes all possible DASD volumes included by a selection mask. Both masks are shown after this message.

System action: Terminates with a condition code of 12.
Operator response: Modify or remove the conflicting selection criteria.
System programmer response: None.
Module: HSIPINQ
HSIP041S  ALL POSSIBLE PROGRAMS ARE EXCLUDED
Explanation: An exclusion mask has been specified which excludes all possible programs included by a selection mask. Both masks are shown after this message.
System action: Terminates with a condition code of 12.
Operator response: Modify or remove the conflicting selection criteria.
System programmer response: None.
Module: HSIPINQ

HSIP042S  ALL POSSIBLE MODULES ARE EXCLUDED
Explanation: An exclusion mask has been specified which excludes all possible modules included by a selection mask.
System action: Terminates with a condition code of 12.
Operator response: Modify or remove the conflicting selection criteria. If no CSECT-level records are required then omit both MODULE and XMODULE operands.
System programmer response: None.
Module: HSIPINQ

HSIP043I  "MODULE"/"CSECT" OPERAND IGNORED FOR "SCANDIR" VERB
Explanation: A MODULE operand was encountered for a SCANDIR request. That is, the output of program structure data was requested in a request which does not have access to this data.
System action: The MODULE operand is ignored and processing continues.
Operator response: Remove the MODULE operand to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP044I  "XMODULE"/"XCSECT" OPERAND IGNORED FOR "SCANDIR" VERB
Explanation: An XMODULE operand was encountered for a SCANDIR request. That is, the output of program structure data was implied in a request which does not have access to this data.
System action: The XMODULE operand is ignored and processing continues.
Operator response: Remove the XMODULE operand to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP045I  THE "XDSNAME" MASK IS NOT A SUBSET OF ANY "DSNAME" MASK
Explanation: The mask specified in the XDSNAME operand excludes possible values not included in the DSNAME operand. This message is issued to highlight possible inconsistencies in a request.
System action: Processing continues.
Operator response: Specify the XDSNAME operand as a further qualification of the DSNAME operand to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP046I  THE "XVOLUME" MASK IS NOT A SUBSET OF ANY "VOLUME" MASK
Explanation: The mask specified in the XVOLUME operand excludes possible values not included in the VOLUME operand. This message is issued to highlight possible inconsistencies in a request.
System action: Processing continues.
Operator response: Specify the XVOLUME operand as a further qualification of the VOLUME operand to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP047I  THE "XPROGRAM" MASK IS NOT A SUBSET OF ANY "PROGRAM" MASK
Explanation: The mask specified in the XPROGRAM operand excludes possible values not included in the PROGRAM operand. This message is issued to highlight possible inconsistencies in a request.
System action: Processing continues.
Operator response: Specify the XPROGRAM operand as a further qualification of the PROGRAM operand to avoid this message.
System programmer response: None.
Module: HSIPINQ

HSIP048I  THE "XMODULE" MASK IS NOT A SUBSET OF ANY "MODULE" MASK
Explanation: The mask specified in the XMODULE operand excludes possible values not included in the MODULE operand. This message is issued to highlight possible inconsistencies in a request.
System action: Processing continues.
Operator response: Specify the XMODULE operand as a further qualification of the MODULE operand to avoid this message.
System programmer response: None.
Operator response: Specify the XMODULE operand as a further qualification of the MODULE operand to avoid this message.

System programmer response: None.

Module: HSIPIQ

HSIPO49I THE "XSTOGROUP" MASK IS NOT A SUBSET OF ANY "STOGROUP" MASK

Explanation: The mask specified in the XSTOGROUP operand excludes possible values not included in the STOGROUP operand. This message is issued to highlight possible inconsistencies in a request.

System action: Processing continues.

Operator response: Specify the XSTOGROUP operand as a further qualification of the STOGROUP operand to avoid this message.

System programmer response: None.

Module: HSIPIQ

HSIPO50I MODULES=cnt

Explanation: Processing of a request with MODULE specified has completed. This message follows HSIPO15I.

In the message text:

cnt  count of CSECTs processed in this request.

System action: Processing continues.

Operator response: Remove the FULLDIR operand to avoid this message.

System programmer response: None.

Module: HSIPIQ

HSIPO51I ******** PARSE ONLY REQUEST PROCESSED - NO ACTION TAKEN ********

Explanation: Processing of a SCANCMD request has completed. This message provides feedback on the progress of long-running Inquisitor requests.

In the message text:

date  date of message.

time  time of message.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIPIQ

HSIPO52U MISSING HSIPOUT AND HSIPZIP FILES

Explanation: Neither an HSIPOUT nor an HSIPZIP file is allocated. At least one output file is required.

System action: Terminates with a condition code of 16.

Operator response: None required.

System programmer response: None.

Module: HSIPIQ

HSIPO53U COMPRESSION SUBROUTINE ERROR

Explanation: While processing the HSIPZIP file the compression subroutine encountered an error. The error message from the compression subroutine immediately follows this message.

System action: Terminates with a condition code of 16.

Operator response: Correct the error described in the message from the compression subroutine. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.

Module: HSIPIQ

HSIPO54I "FULLDIR" OPERAND IGNORED FOR "SCANDIR" VERB

Explanation: A FULLDIR operand was encountered for a SCANDIR request. That is, the processing of load module member data was specified in a request which does not have access to this data.

System action: The FULLDIR operand is ignored and processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIPIQ

HSIPO56I date time COMMENCING SCAN OF VOLUME vol ON UNIT unit

Explanation: A request without the CATALOG keyword began processing a DASD volume. This message provides feedback on the progress of long-running Inquisitor requests.

In the message text:

date  date of message.

time  time of message.

vol  serial number of volume.

unit  device number of volume.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIPIQ
HSIP057E  HSIP062S

System programmer response: None.
Module: HSIPINQ

HSIP057E  ABEND abend IN OPEN FOR VTOC OF VOLUME vol ON UNIT unit
Explanation: A request without the CATALOG keyword attempted to open a DASD volume VTOC and the OPEN abended. The volume is not usable.
In the message text:
  abend
    hexadecimal system abend and reason codes.
  vol
    serial number of volume.
  unit
    device number of volume being processed.
System action: Processing of this volume is terminated.
Operator response: Vary the volume offline, and/or reformat the volume. Institute any appropriate volume recovery procedures.
System programmer response: None.
Module: HSIPINQ

HSIP058S  DUPLICATE OPERAND ENCOUNTERED: op
Explanation: An input request was found to have the indicated operand specified more than once.
In the message text:
  op
    name of the duplicate operand
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program.
System programmer response: None.
Module: HSIPINQ

HSIP059E  BINDER FAILURE FOR MEMBER mbr
  RC=rc RS=rs
Explanation: The Binder could not successfully process a member of a PDSE.
In the message text:
  mbr
    name of the member being processed.
  rc
    hexadecimal Binder FDA API return code.
  rs
    hexadecimal Binder FDA API reason code.
System action: Terminates data collection for this member, writes out data already collected and continues processing the next member.
Operator response: None required.
System programmer response: The Binder Fast Data Access API return and reason codes provide more detailed indication of the cause.
Module: HSIPINQ

HSIP060S  SYMBOL SUBSTITUTION FAILURE - ASASYMBP RC=rc
Explanation: The system symbol substitution routine could not successfully perform symbol substitution. Data before and after substitution is shown in the SYSPRINT file.
In the message text:
  rc
    hexadecimal return code.
System action: Terminates with a condition code of 12.
Operator response: Correct or remove the symbols in control statement input.
System programmer response: None.
Module: HSIPINQ

HSIP061I  pgm NON-REEDITABLE IN dsn
Explanation: A program object in a PDSE was encountered which cannot be processed by the Program Binder. This message is only issued when a program parameter of "PGMMSG" or "ALLMSG" is specified.
In the message text:
  pgm
    name of program which cannot be processed.
  dsn
    name of the data set being processed.
System action: Further data collection for this member is terminated.
Operator response: None required.
System programmer response: None.
Module: HSIPINQ

HSIP062S  THE CATALOG REQUEST NEEDS EXACTLY ONE DSNAME MASK
Explanation: A request with the CATALOG operand either omitted the DSNAME operand or specified more than one DSNAME mask.
System action: Terminates with a condition code of 12.
Operator response: Correct the SYSIN file contents and rerun the program. To process multiple data set name masks via the CATALOG specify a separate
Inquisitor request for each mask. There is no programmed limit to the number of requests which can be processed in a single Inquisitor run.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP063S**  
ALL POSSIBLE STORAGE GROUPS ARE EXCLUDED  

**Explanation:** An exclusion mask has been specified which excludes all possible storage groups included by the selection mask. Both masks are shown after this message.

**System action:** Terminates with a condition code of 12.

**Operator response:** Modify or remove the conflicting selection criteria.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP066E**  
MCDS OPEN ERROR - RC=rc RS=rs

**Explanation:** The OPEN of the MCDS data definition (DD) was not successful.

In the message text:

- **rc** VSAM OPEN hexadecimal return code.
- **rs** VSAM OPEN hexadecimal reason code.

**System action:** Issues message HSIP065S and terminates with a condition code of 12.

**Operator response:** Either ensure that the Inquisitor has read access to DFHSM's MCDS, or modify the Inquisitor request(s) so that the MCDS is not required. MCDS access is required if either or both of the REMIGRATE and NOML2 keywords are specified.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP067E**  
MCDS READ RC=rc RS=rs FOR dsn

**Explanation:** The MCDS record of a data set cataloged on volume MIGRAT could not be read. Either the record is missing or there was an I/O error.

In the message text:

- **rc** VSAM GET hexadecimal return code.
- **rs** VSAM GET hexadecimal reason code.
- **dsn** name of data set cataloged on volume MIGRAT.

**System action:** Processing of this data set is terminated.

**Operator response:** If the data set is not really migrated then correct the catalog entry. If the MCDS is corrupt then begin recovery procedures.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP068E**  
CATALOG RC=rc RS=rs,modid cat

**Explanation:** The Catalog Search Interface returned an entry which is flagged as being in error by Catalog Management.

In the message text:

- **rc** Catalog Management decimal return code.
Catalog Management decimal reason code.

Catalog Management module identifier.

cat

name of catalog entry in error.

System action: Processing of this data set is terminated.

Operator response: Correct the catalog entry. Refer to the System Messages manual for message IDC3009I to find out the meaning of the Catalog Management error codes.

System programmer response: None.

Module: HSIPINQ

HSIP069U PROGRAM IS NOT APF AUTHORIZED

Explanation: The Inquisitor has determined that it is not running in an APF authorized environment, and PARM=NOAPF was not specified.

System action: Terminates with a condition code of 20.

Operator response: Ensure that the HSIPINQ program is run in an APF authorized environment, or specify PARM=NOAPF in the JCL.

System programmer response: None.

Module: HSIPINQ

HSIP070E BAD BLKSIZE AFTER OPEN FOR dsn

Explanation: A BPAM DCB was opened for the named PDS, but despite the VTOC entry indicating a suitable blocksize, the blocksize in the DCB after the OPEN was not positive.

In the message text:

dsn

name of the data set being processed.

System action: Processing of member contents for this data set is terminated to avoid an S002-30 abend.

Operator response: The PDS is probably corrupt and should be deleted. Recreate it from a backup if appropriate.

System programmer response: None.

Module: HSIPINQ

HSIP071I NO DATA WAS EXTRACTED FROM dsn

Explanation: The data set contained no members eligible for selection. This message is only issued when a program parameter of "DSNMSG" or "ALLMSG" is specified.

In the message text:

dsn

name of the processed data set.

System action: The data set was opened, but no data from it is collected.

Operator response: None required.

System programmer response: None.

Module: HSIPINQ

HSIP071W IGNORING INVALID DSNABLE IN dsn

Explanation: The Catalog Search Interface (CSI) returned a data set name with invalid characters. Although VTOC entries can contain keys that are not valid data set names, such entries cannot be cataloged.

Therefore the entry returned from the CSI does not represent an actual data set.

In the message text:

dsn

name of the catalog being processed.

System action: The returned catalog entry is discarded.

Operator response: Ensure that the named catalog is not corrupt and contains no invalid entries.

System programmer response: None.

Module: HSIPINQ
HSIP074S  ABRIN OR ABRPRINT FILES NOT ALLOCATED

Explanation: A request had ABRMIG and/or ABRARC specified but at least one of the required ABRIN and ABRPRINT files was not defined in the JCL.

System action: Terminates with a condition code of 12.

Operator response: Ensure the required files are pre-allocated for the Inquisitor.

System programmer response: None.

Module: HSIPINQ

HSIP075W  FDRABR ABEND abend CHECKING dsn

Explanation: An abend occurred during ABR processing while checking a data set which may have been archived.

In the message text:

abend  hexadecimal system abend code.

dsn  name of the data set being processed.

System action: Processing of this data set is terminated.

Operator response: Consult the applicable DFSMS Macro Instructions for Data Sets manual to determine the meaning of the ISITMGD return and reason codes. Ensure that the named data set is a valid and accessible partitioned data set. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.

Module: HSIPINQ

HSIP076E  BAD LOAD abend-rs: mbr dsn

Explanation: The Inquisitor attempted to load a product tag data module from the named data set, but LOAD issued the displayed abend code.

In the message text:

abend  abend code returned by LOAD.

rs  abend reason code returned by LOAD.

mbr  name of the member containing the tag data.

dsn  name of the data set containing the tag data module.

System action: Processing continues with the next data set.

Operator response: Consult the applicable DFSMS Macro Instructions for Data Sets manual to determine the meaning of the DESERV return and reason codes. Ensure that the named data set is a valid and accessible partitioned data set. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.

Module: HSIPINQ

HSIP078E  DESERV RC=rc RS=rs FOR dsn

Explanation: The Inquisitor executed a DESERV FUNC=GET_ALL macro for the named data set, but DESERV issued a non-zero return code.

In the message text:

rc  decimal return code issued by DESERV.

rs  hexadecimal reason code issued by DESERV.

dsn  name of the data set being processed.

System action: Processing continues with the next data set.

Operator response: Consult the applicable DFSMS Macro Instructions for Data Sets manual to determine the meaning of the DESERV return and reason codes. Ensure that the named data set is a valid and accessible partitioned data set. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.

Module: HSIPINQ

HSIP080I  DYNALLOC FAILURE: DSN=dsn

Explanation: A data set could not be dynamically allocated.

In the message text:

dsn  name of the data set being processed.

System action: None.

System programmer response: None.

Module: HSIPINQ
HSIP081S • HSIP099E

**System action:** Depends upon other messages associated with this message.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP081S** ALL POSSIBLE DEVICE NUMBERS ARE EXCLUDED

**Explanation:** An exclusion mask has been specified which excludes all possible device numbers included by a selection mask. Both masks are shown after this message.

**System action:** Terminates with a condition code of 12.

**Operator response:** Modify or remove the conflicting selection criteria.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP097E** CATALOG SEARCH INTERFACE ERROR RC=csirc

**Explanation:** A request with the CATALOG keyword was specified, and the Catalog Search Interface encountered an error.

In the message text:

- csirc: return code from the Catalog Search Interface.

**System action:** Processing catalog entries for the request is terminated.

**Operator response:** Correct any related catalog errors.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP098E** CATALOG SEARCH INTERFACE ERROR RC=csirc CATALOG RC=rc CATALOG RS=rs

**Explanation:** A request with the CATALOG keyword was specified, and the Catalog Search Interface encountered an error.

In the message text:

- csirc: return code from the Catalog Search Interface.
- rc: return code from Catalog Management.
- rs: reason code from Catalog Management.

**System action:** Processing catalog entries for the request is terminated.

**Operator response:** Correct any related catalog errors.

**System programmer response:** None.

**Module:** HSIPINQ

---

**HSIP099E** CATALOG SEARCH INTERFACE ERROR RC=csirc CATALOG RC=rc CATALOG RS=rs MODULE=modid

**Explanation:** A request with the CATALOG keyword was specified, and the Catalog Search Interface encountered an error.

In the message text:

- csirc: return code from the Catalog Search Interface.
- rc: return code from Catalog Management.
- rs: reason code from Catalog Management.

---

Examine associated messages to determine the reason for the rename failure.

**System programmer response:** None.

**Module:** HSIPINQ
modid
module identifier.

System action: Processing catalog entries for the request is terminated.
Operator response: Correct any related catalog errors.
System programmer response: None.
Module: HSIPINQ

Explanation: HSIPMSG was called to produce a message text, but the call failed.

HSIP999U • HSIT002S

HSIT - Product Tagging messages

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>4</td>
<td>Warning issued. Processing continues. I/O error in one or more program libraries.</td>
</tr>
<tr>
<td>8</td>
<td>Error - Incomplete data. Processing continues. OPEN or system service error.</td>
</tr>
<tr>
<td>12</td>
<td>Severe error. Processing terminates. Utility failure or syntax error.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error. No requests processed. SYSIN file cannot be used.</td>
</tr>
<tr>
<td>20</td>
<td>Disastrous error. No requests processed. SYSPRINT file cannot be used.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Raises Minimum Condition Code to</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

HSIT001U • HSITAGP COULD NOT OPEN THE INPUT FILE file

Explanation: A required file could not be opened successfully.

In the message text:

file
name of file.

System action: Processing terminates with condition code 16.

Operator response: Correct the file definition and rerun the job.
System programmer response: None.
Module: HSITAGP

HSIT002S • UNRECOGNIZED STATEMENT TYPE: stattyp

Explanation: Input text was encountered which does not match any known statement type.

In the message text:
**HSIT003S · DUPLICATE VALUE SUPPLIED FOR stattyp**

**Explanation:** More than one occurrence of the named statement type was encountered, but only one value can be accepted.

In the message text:

```
stattyp name of the statement verb.
```

**System action:** Processing terminates with condition code 12.

**Operator response:** Remove the redundant statement and rerun the job.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT004S · VALUE MISSING IN stattyp STATEMENT**

**Explanation:** An input statement of the type indicated was encountered, but no non-blanks followed the statement type name.

In the message text:

```
stattyp name of the statement verb.
```

**System action:** Processing terminates with condition code 12.

**Operator response:** Supply an appropriate value after the statement type name.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT005S · VALUE SPECIFIED FOR LICENSED WAS NEITHER "YES" NOR "NO"**

**Explanation:** A LICENSED statement was processed which had a value specified other than one of the valid values.

**System action:** Processing terminates with condition code 12.

**Operator response:** Correct the value and rerun the job.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT006S · THE parm PARAMETER HAD NO SUBPARAMETER VALUE SPECIFIED**

**Explanation:** A statement parameter or operand was specified, but the required subparameter, or value of the parameter, was not specified. One cause for this condition is the omission of a parenthesis.

In the message text:

```
parm name of the parameter or operand being processed when the error is detected.
```

**System action:** Processing terminates with condition code 12.

**Operator response:** Correct the input and rerun the job.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT007I · A CLOSING PARENTHESIS ASSUMED FOR parm**

**Explanation:** End-of-file was raised when processing input statements before an expected close parenthesis was encountered.

In the message text:

```
parm name of the parameter or operand being processed when the error is detected.
```

**System action:** Processing continues as if the expected close parenthesis had been specified.

**Operator response:** Check that the resulting processing is as expected. Correct the input file for future use, and rerun the job if the desired processing was not performed.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT008S · UNEXPECTED OPEN PARENTHESIS ENCOUNTERED AFTER parm**

**Explanation:** An open parenthesis was encountered when one was not expected. If this occurred while a parameter or operand was being processed, then it is named in the message.

In the message text:

```
parm name of the parameter or operand being processed when the error is detected.
```

**System action:** Processing continues as if the expected close parenthesis had been specified.

**Operator response:** Check that the resulting processing is as expected. Correct the input file for future use, and rerun the job if the desired processing was not performed.

**System programmer response:** None.

**Module:** HSITAGP
HSIT009S • HSIT013S

Appendix A. System messages 135
Explanation: End-of-file was raised on the input (SYSIN) file, but the TAGLIBS statement currently being processed was expected to continue on the next record.

System action: Processing terminates with condition code 12.

Operator response: Either supply the missing input data, or remove the continuation character from the last input record. Rerun the job.

System programmer response: None.

Module: HSITAGP

REQUIRED DATA SET NAME SPECIFICATION IS MISSING

Explanation: The processing of a TAGLIBS statement completed without encountering a data set name selection mask specification.

System action: Processing terminates with condition code 12.

Operator response: Ensure that all TAGLIBS statements specify at least one value in a DATASET, DSNAME parameter, or operand.

System programmer response: None.

Module: HSITAGP

SYMBOL SUBSTITUTION FAILURE - ASASYMBM RC=rc

Explanation: Symbol substitution was attempted for a TAGLIBS statement record which had at least one ampersand in it, and the system symbol substitution routine ASASYMBM terminated with a non-zero return code.

In the message text:

rc  the completion code returned by ASASYMBM.

System action: Processing terminates with condition code 12.

Operator response: Check all uses of symbols in the input (SYSIN) file. If necessary, gather appropriate diagnostic materials and contact IBM support.

System programmer response: None.

Module: HSITAGP

NO VALUE FOR stattyp WAS SPECIFIED

Explanation: A value for a statement of the type named in the message is required, but was not found in the input file.

System action: Processing terminates with condition code 12.

Operator response: Supply a statement of the named type which specifies a value.

System programmer response: None.

Module: HSITAGP

CATALOG SEARCH TERMINATED BY RC=rc WHILE SEARCHING FOR mask

Explanation: The Catalog Search Interface (CSI) was called to search for catalog entries matching the displayed data set name mask, but the CSI call ended with a non-zero return code. This may indicate a corrupted catalog or trouble accessing a potentially relevant catalog. It means that one or more data sets which you intended to process were not processed.

In the message text:

rc  the return code issued by the Catalog Search Interface.

mask the data set name mask passed to the Catalog Search Interface.

System action: Processing continues with any data set catalog entries that can be accessed.

Operator response: Check the data set name mask for suitability to your system environment. Use IDCAMS to examine any relevant catalog entries. Ensure that all catalogs which would be referenced by such a search are on accessible volumes. Use the same data set name mask with other software which also calls the CSI, such as the Inquisitor, or ISPF option 3.4, to see if further diagnostic information can be acquired. The error will usually be associated with the local catalog configuration and catalog contents.

System programmer response: None.

Module: HSITAGP

DESERV FAILED - RC=rc RS=rs FOR DATA SET dsn

Explanation: A DESERV FUNC=GET_ALL macro was issued to acquire the member list for a data set, but DESERV issued a non-zero return code.

In the message text:

rc  the decimal return code issued by DESERV.

rs  the hexadecimal reason code issued by DESERV.
**HSIT020S • HSIT024E**

**HSIT020S  DYNAMIC ALLOCATION FAILURE - BPXWDYN RC=rc**

**Explanation:** BPXWDYN was called to dynamically allocate a required work file, but BPXWDYN issued a non-zero return code. As a result, processing cannot proceed.

In the message text:

- **rc** the hexadecimal return code issued by BPXWDYN.
- **dsn** the name of the data set which could not be allocated.

**System action:** Processing terminates with condition code 12.

**Operator response:** Consult the applicable Using REXX and z/OS UNIX System Services manual to determine the meaning of the return code. Examine the job log and messages to see any associated dynamic allocation error message.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT021E DYNALLOC FAILED - RC=rc**

**Explanation:** A DYNALLOC macro was issued to dynamically allocate a program library for processing, but DYNALLOC issued a non-zero return code.

In the message text:

- **rc** the decimal return code issued by DYNALLOC.
- **dsn** the name of the data set which could not be allocated.
- **s99err** the contents of S99ERROR in hexadecimal.
- **s99inf** the contents of S99INFO in hexadecimal.

**System action:** Processing continues with the next data set.

**Operator response:** Consult the applicable MVS Authorized Assembler Services Guide to determine the meaning of the dynamic allocation return code, error, and information codes. Check that the named data set is accessible and available for allocation.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT024E  ISITMGD FAILED - RC=rc RS=rs FOR FILE file AND DATA SET dsn**

**Explanation:** An ISITMGD macro was issued against a program library, but ISITMGD issued a non-zero return code.

In the message text:

- **rc** the decimal return code issued by ISITMGD.
- **dsn** the name of the data set which could not be allocated.
- **file** the name of the program that was started.

**System action:** The named data set is not processed, and processing continues with the next relevant data set.

**Operator response:** Consult the applicable DFSMS Macro Instructions for Data Sets manual to determine the meaning of the DESERV return and reason codes. Ensure that the named data set is a valid and accessible program library. If necessary, gather appropriate diagnostic materials and contact IBM support.

**System programmer response:** None.
**HSIT025I • HSIT029S**

- **rs** the decimal reason code issued by ISITMGD.
- **file** the name of the file being processed by ISITMGD.
- **dsn** the name of the data set being processed by ISITMGD.

**System action:** The named data set is not processed, and processing continues with the next relevant data set.

**Operator response:** Consult the applicable DFSMS Macro Instructions for Data Sets manual to determine the meaning of the ISITMGD return and reason codes. Ensure that the named data set is a valid and accessible partitioned data set. If necessary, gather the appropriate diagnostic materials and contact IBM support.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT025I**

**Explanation:** Input processing of the named data set has completed, resulting in data from the reported number of programs being accumulated for subsequent output.

In the message text:

- **pgmcnt** the number of programs processed.
- **dsn** the data set name containing the processed programs.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT026I**

**Explanation:** The Product Tagging Utility program HSITAGP has completed processing. This message reports the return code issued by HSITAGP, and the number of programs from which data has been collected during this run.

In the message text:

- **rc** the return code issued by the HSITAGP upon termination.
- **pgmcnt** the number of programs processed in this run of HSITAGP.

**System action:** Processing is completed with the displayed return code.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT027E**

**Explanation:** A DYNALLOC macro was issued to dynamically allocate a volume for processing, but DYNALLOC issued a non-zero return code.

In the message text:

- **rc** the decimal return code issued by DYNALLOC.
- **s99err** the contents of S99ERROR in hexadecimal.
- **s99inf** the contents of S99INFO in hexadecimal.
- **vol** the volume serial number of the volume which could not be allocated.

**System action:** Processing continues with the next volume.

**Operator response:** Consult the applicable MVS Authorized Assembler Services Guide to determine the meaning of the dynamic allocation return code, error, and information codes. Check that the named volume is accessible and available for allocation.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT028W**

**Explanation:** After having processed all of the relevant programs, HSITAGP was unable to acquire any date stamp for use as a maintenance level indicator.

**System action:** Blanks are placed in the maintenance level field and processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSITAGP

---

**HSIT029S**

**Explanation:** The value specified for the named statement type was found to be longer than the maximum allowed. The maximum byte count allowed
for a value of this statement type is shown in the message.

In the message text:

\textit{stattyp}  
  the type of input statement being processed.

\textit{max}  
  number of bytes.

\textbf{System action:}  Processing terminates.

\textbf{Operator response:}  Correct the input and rerun the job.

\textbf{System programmer response:}  None.

\textbf{Module:}  HSITAGP

---

\textbf{HSIT030S  INVALID TEXT CHARACTER X"char" FOUND IN \textit{stattyp} STATEMENT}

\textbf{Explanation:}  The displayed data byte was encountered when processing the value specified for the statement type indicated. The value specified on the statement is expected to be a string. Valid byte values for text data are in the range from X'40' to X'FE' inclusive. The control code encountered is either not valid input, or not valid input in this location. The only control codes that can be used in the input value are SO (X'0E') and SI(X'0F'), when they are used to encapsulate DBCS data.

In the message text:

\textit{char}  
  the hexadecimal value of the invalid text code point.

\textit{stattyp}  
  the type of input statement being processed.

\textbf{System action:}  Processing terminates.

\textbf{Operator response:}  Remove the undisplayable characters from the input value. If using DBCS, ensure that SO precedes DBCS text and SI terminates DBCS text, and that the DBCS text is an even number of valid text bytes.

\textbf{System programmer response:}  None.

\textbf{Module:}  HSITAGP

---

\textbf{HSIT031S  SCANNING FOUND MULTIPLE VERSIONS OF PROGRAM \textit{pgm}}

\textbf{Explanation:}  A duplicate named program with different characteristics was detected in the tag scan. Consequently, no tag data members were output to prevent subsequent IQ Import errors.

In the message text:

\textit{pgm}  
  name of program.

\textbf{System action:}  Processing terminates with condition code 8.

\textbf{Operator response:}  Delete unneeded copies of the program. If necessary, exclude the named program from the tag scan.

\textbf{System programmer response:}  None.

\textbf{Module:}  HSITAGP

---

\textbf{HSIT999U  HSIMSG/HSITMSG FAILURE - MSGID=\textit{msgid} RC=\textit{rc} RS=\textit{rs}}

\textbf{Explanation:}  HSIMSG was called to produce a message text, but the call failed.

In the message text:

\textit{msgid}  
  identifier of the failing message.

\textit{rc}  
  HSIMSG return code.

\textit{rs}  
  HSIMSG reason code.

\textbf{System action:}  Terminates with a condition code of 20.

\textbf{Operator response:}  Inform the system programmer.

\textbf{System programmer response:}  Ensure Joblib/Steplib contains the library where the HSITMSG message module resides. If you cannot resolve this issue then contact IBM support.

\textbf{Module:}  HSITAGP :emsgl.

---

\textbf{HSIX - Inquisitor for z/OS UNIX messages and codes}

\textbf{Return codes}

\begin{tabular}{|c|l|}
\hline
0 & No errors encountered. All requests processed successfully. \\
4 & I/O error in one or more program libraries. \\
8 & Error - Incomplete data. Processing continues. OPEN or other system service error. \\
12 & Syntax error. \\
16 & Unrecoverable error. No requests processed. SYSIN or HSIPZIP or HSIPOUT File cannot be used, or unsupported Operating System. \\
\hline
\end{tabular}
Disastrous error. No requests processed. SYSPRINT file cannot be used.

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Raises Minimum Condition Code to</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

**HSIX002I**  THE SPECIFIED DIRECTORY NAME DOES NOT START WITH A SLASH

Explanation: A record from file HSIXROOT was read and was found to start with a non-blank that is not a slash. It is flagged in case processing errors result from the non-standard directory name.

System action: Processing continues.

Operator response: Correct the input if it is incorrect.

System programmer response: None.

Module: HSIXINQ

**HSIX003I**  PROGRAM PARAMETER "parm" DISCARDED

Explanation: The program parameter contained some unrecognized data.

In the message text:

parm  parameter in error.

System action: The displayed part of the program parameter is ignored.

Operator response: Correct the program parameter.

System programmer response: None.

Module: HSIXINQ

**HSIX004I**  FUNCTION func FAILED, HEX RC=rc, HEX REASON=rs

Explanation: The named z/OS UNIX system service issued a negative return code.

In the message text:

func  function name.

rc  return Code.

rs  reason Code.

System action: Processing continues.

Operator response: Determine the meaning of the return and reason code values, and correct the problem if appropriate. Information relating to the failing UNIX function can be found in the UNIX System Services Assembler Callable Services manual. Information relating to the Return Code and Reason Code of the failing UNIX function can be found in the UNIX System Services Messages and Codes manual.

System programmer response: None.

Module: HSIXINQ

**HSIX005E**  RENAME FAILED FOR DATA SET dsn

Explanation: The rename operation to add one or more extra low-level qualifiers to a data set name as specified by the LLQ program parameter setting did
not succeed. The named data set is allocated to either the HSIXZIP or HSIXOUT file. If this message is not followed by an associated explanatory message then an IDCAMS report detailing the results of the rename attempt will have been written to SYSPRINT.

In the message text:

dsn
name of the HSIXZIP or HSIXOUT data set.

System action: The output data set is left with its original name.

Operator response: Ensure that the specified LLQ string length does not exceed 44 bytes, that any symbols used are valid for this system, and that resultant data set names are not longer than 44 bytes. Examine associated messages to determine the reason for the rename failure.

System programmer response: None.

Module: HSIXINQ

HSIZ - Usage Monitor messages

Return codes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal termination.</td>
</tr>
<tr>
<td>16</td>
<td>Initialization failed.</td>
</tr>
</tbody>
</table>

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Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

---

HSIZ001I USAGE MONITOR INITIALIZING

Explanation: The Usage Monitor has been started.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

---

HSIZ002I csid DETECTED UNSUPPORTED OPERATING SYSTEM

Explanation: The Usage Monitor may not run on an unsupported operating system.

In the message text:

csid
 current system identifier.

System action: Processing terminates.
HSIZ003I  \( csid \) USAGE MONITOR NOT APF AUTHORIZED

**Explanation:** The Usage Monitor needs to be executed in an APF authorized environment.

In the message text:

\( csid \)

current system identifier.

**System action:** Processing terminates.

**Operator response:** None required.

**System programmer response:** None.

Module: HSIZMON

---

HSIZ005I  \( csid \) USAGE MONITOR ALREADY ACTIVE

**Explanation:** The Usage Monitor is already running. Only one concurrent copy can run in an operating system image.

In the message text:

\( csid \)

current system identifier.

**System action:** Processing terminates. The established Usage Monitor task continues.

**Operator response:** None required.

**System programmer response:** None.

Module: HSIZMON

---

HSIZ006I  \( csid \) USAGE MONITOR QEDIT BUFFER SET FAILED

**Explanation:** A QEDIT issued to set up MODIFY command processing has failed.

In the message text:

\( csid \)

current system identifier.

**System action:** Processing terminates.

**Operator response:** None required.

**System programmer response:** None.

Module: HSIZMON

---

HSIZ007I  \( csid \) USAGE MONITOR MODULE \( mod \) FAILED - RC=rc

**Explanation:** A Usage Monitor subroutine has failed.

In the message text:

\( csid \)

current system identifier.

\( mod \)

failing module name.

\( rc \)

decimal return code.

**System action:** Processing terminates.

**Operator response:** Notify the system programmer.

**System programmer response:** If the return code is 312, then you must increase your MAXCAD parameter. This requires an IPL. For any other return codes, gather appropriate diagnostic materials and contact IBM support.

Module: HSIZMON

---

HSIZ008I  \( csid \) USAGE MONITOR ASID \( asid \) SET IN AVT \( avt \)

**Explanation:** An Anchor Vector Table (AVT) has been acquired or reacquired, and has been updated for the current server address space.

In the message text:

\( csid \)

current system identifier.

\( asid \)

ASID number.

\( avt \)

AVT Address.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

Module: HSIZMON

---

HSIZ009I  DATA WRITTEN TO DSN=dsn

**Explanation:** Usage Monitor data has been written to the named data set.

In the message text:

\( dsn \)

data set name of the created output.

**System action:** Processing continues.

**Operator response:** Transfer the named data set to the system where the database resides so it can be processed.

**System programmer response:** None.
Module: HSIZMON

**HSIZ010E**  
*csid* USAGE MONITOR - WRITER  
TASK ENDED - RC=rc

**Explanation:** A writer task has ended with a non-zero return code.

In the message text:
- *csid* current system identifier.
- *rc* return code of writer task.

**System action:** Processing continues.

**Operator response:** Notify the system programmer.

**System programmer response:** Gather appropriate diagnostic materials and contact IBM support.

Module: HSIZMON

**HSIZ011E**  
*csid* USAGE MONITOR - WRITER  
TASK ABENDED - SBEND

**Explanation:** A writer task has ended abnormally.

In the message text:
- *csid* current system identifier.
- *sbend* abend code from writer task.

**System action:** Processing continues.

**Operator response:** Notify the system programmer.

**System programmer response:** Local reasons for system abends should be investigated. If necessary, gather appropriate diagnostic materials and contact IBM support.

Module: HSIZMON

**HSIZ012I**  
**DATA LOSS** UNUSABLE DSN=dsn

**Explanation:** It is likely that Usage Monitor data has been lost because of unexpected behaviour by a writer task. Any compressed output data that has been written will probably be unusable.

In the message text:
- *dsn* data set name of the created output file.

**System action:** Processing continues.

**Operator response:** Examine any preceding messages to determine the likely cause of the writer task error. If the output data set is complete it can be used, otherwise if the data is compressed it is unusable. If the data set is empty then this fact can be noted and the data set can be deleted. Unless retaining an unusable data set for diagnosis reasons it can be deleted.

**System programmer response:** Investigate any writer task abends.

Module: HSIZMON

**HSIZ013I**  
*csid* USAGE MONITOR - UNRECOGNISED PROGRAM  
PARAMETER IGNORED

**Explanation:** An unrecognised program parameter was specified.

In the message text:
- *csid* current system identifier.

**System action:** Processing continues.

**Operator response:** Remove or correct the program parameter.

**System programmer response:** None.

Module: HSIZMON

**HSIZ014I**  
*csid* USAGE MONITOR - COULD NOT OPEN FILE HSIZIN

**Explanation:** The HSIZIN file could not be opened by the Usage Monitor.

In the message text:
- *csid* current system identifier.

**System action:** Processing terminates.

**Operator response:** Supply or correct the HSIZIN DD statement in the JCL.

**System programmer response:** None.

Module: HSIZMON

**HSIZ015I**  
*csid* USAGE MONITOR - COULD NOT OPEN FILE HSIZMSG

**Explanation:** The HSIZMSG file could not be opened by the Usage Monitor.

In the message text:
- *csid* current system identifier.

**System action:** Processing terminates.

**Operator response:** Supply or correct the HSIZMSG DD statement in the JCL.

**System programmer response:** None.

Module: HSIZMON
HSIZ016I  csid USAGE MONITOR TERMINATING - INVALID OR MISSING HSIZIN DATA

Explanation: At least one HSIZIN input statement was invalid, or input required to be present in the HSIZIN file was missing.

In the message text:

\( \text{csid} \)

current system identifier.

System action: Processing terminates.

Operator response: Examine the HSIZMSG output report. Correct any invalid statements. Ensure a valid data set name prefix was specified.

System programmer response: None.

Module: HSIZMON

HSIZ017I  csid USAGE MONITOR TERMINATING - NOW WRITING CAPTURED DATA

Explanation: A STOP command has been encountered. The current repository contents are written before the Usage Monitor terminates.

In the message text:

\( \text{csid} \)

current system identifier.

System action: The Usage Monitor starts a writer task and waits for its completion before terminating.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

HSIZ018I  csid USAGE MONITOR HAS NOW TERMINATED

Explanation: The Usage Monitor has now freed resources and is about to terminate.

In the message text:

\( \text{csid} \)

current system identifier.

System action: Processing terminates.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

HSIZ019I  csid USAGE MONITOR REPOSITORY FULL - NOW SWITCHING

Explanation: The current Usage Monitor data collection repository is full.

In the message text:

\( \text{csid} \)

current system identifier.

System action: A new repository is created and used for subsequent data collection. A writer task is initiated for the full repository.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

HSIZ020I  csid THE SPECIFIED NUMBER WAS TOO SMALL

Explanation: The numeric value of a command subparameter was too small to be valid in the command context.

In the message text:

\( \text{csid} \)

current system identifier.

System action: The command is discarded.

Operator response: Correct the numeric value and reissue the command.

System programmer response: None.

Module: HSIZMON

HSIZ021I  csid THE SPECIFIED NUMBER WAS TOO LARGE

Explanation: The numeric value of a command subparameter was too large to be valid in the command context.

In the message text:

\( \text{csid} \)

current system identifier.

System action: The command is discarded.

Operator response: Correct the numeric value and reissue the command.

System programmer response: None.

Module: HSIZMON

HSIZ022I  csid PASSIVE MODE SET FROM PROGRAM PARAMETER

Explanation: PASSIVE was specified in the program parameter.
In the message text:

`csid`

- current system identifier.

**System action:** The Usage Monitor starts in passive mode unless overridden by input from the HSIZIN file.

**Operator response:** Set the Usage Monitor into collection mode to start data collection.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ023I**  
`csid` PROGRAM NAME MASK `mask`  
NOT ADDED - ALREADY IN TABLE

**Explanation:** A command to add a program name mask to a program mask table was issued, but the mask was already present in the table.

In the message text:

`csid`

- current system identifier.

`mask`

- program mask specified in command.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ024I**  
`csid` PROGRAM NAME MASK `mask`  
ADDED TO TABLE

**Explanation:** A command to add a program name mask to a program mask table was issued, and the mask was added successfully.

In the message text:

`csid`

- current system identifier.

`mask`

- program mask specified in command.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ025I**  
`csid` PROGRAM NAME MASK `mask`  
NOT DELETED - NOT FOUND IN TABLE

**Explanation:** A command to delete a program name mask from a program mask table was issued, but the mask was not present in the table.

In the message text:

`csid`

- current system identifier.

`mask`

- program mask specified in command.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ026I**  
`csid` PROGRAM NAME MASK `mask`  
DELETED FROM TABLE

**Explanation:** A command to delete a program name mask from a program mask table was issued, and the mask was deleted successfully.

In the message text:

`csid`

- current system identifier.

`mask`

- program mask specified in command.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ027I**  
ECSA APPEARS TO BE EXHAUSTED - INCREASE SIZE FOR NEXT IPL

**Explanation:** The Usage Monitor has attempted to acquire storage from ECSA, but was given CSA storage by the system. This indicates that there is insufficient ECSA for the current workloads, and that it should be increased for the next IPL.

**System action:** Processing continues.

**Operator response:** Notify the system programmer.

**System programmer response:** Add around 50 to 100 megabytes to the ECSA size in the system IPL parameters. Check the capacity of the COMMON page data set.

**Module:** HSIZMON

---

**HSIZ028I**  
ECSA AND CSA APPEAR TO BE EXHAUSTED - INCREASE ECSA NEXT IPL

**Explanation:** The Usage Monitor has attempted to acquire some common storage, but the requested amount was unavailable. This indicates that there is insufficient ECSA for the current workloads, and that it should be increased for the next IPL.

**System action:** Processing continues.
**Module: HSIZMON**

**HSIZ029I**  
*csid* THERE IS CURRENTLY NO EXCLUDE TABLE

**Explanation:** A request was made to change or display the program name mask exclude table, but there is currently no exclude table.

In the message text:

*csid*  
Current system identifier.

**System action:** Processing continues.

**Operator response:** None required. The EXC command may be used to create a table.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ030I**  
*csid* USAGE MONITOR - NO DATA COLLECTED SO SKIPPING WRITE

**Explanation:** Before a writer task was initiated to output the contents of a Usage Monitor repository, it was found that the repository contained no data, and that therefore data output processing could be omitted.

In the message text:

*csid*  
Current system identifier.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ031I**  
*csid* INITIATING REPOSITORY SWITCH

**Explanation:** A switch (SWI) command was issued and the requested action is being initiated.

In the message text:

*csid*  
Current system identifier.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ032I**  
*csid cmd* COMMAND UNKNOWN

**Explanation:** A command was issued but was not recognised.

In the message text:

*csid*  
Current system identifier.

*cmd*  
Name of the issued command.

**System action:** The command is ignored. Processing continues.

**Operator response:** If necessary, correct and reissue the command.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ033I**  
*csid cmd* COMMAND PROCESSED

**Explanation:** A command was issued and has been processed successfully.

In the message text:

*csid*  
Current system identifier.

*cmd*  
Name of the issued command.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ034I**  
*csid cmd* COMMAND HAS INVALID OPERAND

**Explanation:** A command was issued but an invalid operand was encountered.

In the message text:

*csid*  
Current system identifier.

*cmd*  
Name of the issued command.

**System action:** The command is ignored. Processing continues.

**Operator response:** If necessary, correct and reissue the command.

**System programmer response:** None.

**Module:** HSIZMON
HSIZ035I  csid cmd COMMAND FAILED
Explanation: A command was issued but insufficient resources were available to execute it successfully.
In the message text:
  csid  current system identifier.
  cmd  name of the issued command.
System action: The command is ignored. Processing continues.
Operator response: Try again after more resources become available.
System programmer response: None.
Module: HSIZMON

HSIZ036I  csid cmd COMMAND CAUSED NO CHANGE
Explanation: A command was issued but the state to be set by the command was found to already exist.
In the message text:
  csid  current system identifier.
  cmd  name of the issued command.
System action: Processing continues.
Operator response: None required.
System programmer response: None.
Module: HSIZMON

HSIZ037I  csid cmd COMMAND REJECTED
Explanation: A recognised command was issued at a time when the Usage Monitor is unable to process the command.
In the message text:
  csid  current system identifier.
  cmd  name of the issued command.
System action: The command is ignored. Processing continues.
Operator response: Try again after the Usage Monitor has freed the resources.
System programmer response: None.
Module: HSIZMON

HSIZ038I  csid CURRENT USAGE MONITOR PROGRAM EXCLUDE LIST:
Explanation: A D-X command was issued to display the program name exclude table contents. The active entries are shown after this message.
In the message text:
  csid  current system identifier.
System action: None.
Operator response: None required.
System programmer response: None.
Module: HSIZMON

HSIZ039I  csid REPOSITORY SWITCH HAS BEEN QUEUED
Explanation: A repository switch was triggered by a SWI or STOP command, or by the current repository becoming full, but a writer task is already active. This message is followed by message HSIZ040I which shows the creation timestamp of the active writer task.
In the message text:
  csid  current system identifier.
System action: Data collection is suspended. Wait for the current writer task to complete whereupon a new writer task is created, and a new repository is created, and data collection is resumed.
Operator response: Check that there are sufficient resources to dispatch the Usage Monitor address space. Check that there are no serialization problems with system components such as device allocation which could be inhibiting writer task processing.
System programmer response: None.
Module: HSIZMON

HSIZ040I  csid WAITING FOR WRITER TASK ATTACHED ts
Explanation: A repository switch was triggered by a SWI or STOP command, or by the current repository becoming full, but a writer task is already active. This message follows message HSIZ039I and shows the creation timestamp of the active writer task.
In the message text:
  csid  current system identifier.
  ts  Time stamp of write task.
System action: Data collection is suspended. Wait for the current writer task to complete whereupon a new
writer task is created, and a new repository is created, and data collection is resumed.

Operator response: Check that there are sufficient resources to dispatch the Usage Monitor address space. Check that there are no serialization problems with system components such as device allocation which could be inhibiting writer task processing.

System programmer response: None.

Module: HSIZMON

---

HSIZ041I  csid  CURRENT USAGE MONITOR OUTPUT DYNALLOC PARMS:

Explanation: A D-A command was issued to display the current output dynamic allocation parameters, which are shown after this message.

In the message text:

- **csid**: current system identifier.

System action: The data is displayed and processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

---

HSIZ042I  CURRENT USAGE MONITOR OUTPUT SYSTEM ID IS "csid"

Explanation: A D-I command was issued to display the current system identifier which is to be contained in output header records.

In the message text:

- **csid**: current system identifier.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

---

HSIZ043I  csid  DATA DISCARDED DUE TO (E)CSA STORAGE LIMIT

Explanation: The Usage Monitor has detected for the first time in the life of the repository or since a CSA limit change that program usage event data has been discarded due to the CSA/ECSA storage usage limit being reached. This limit was set with the CSA command.

In the message text:

- **csid**: current system identifier.

System action: Processing continues.

Operator response: Adjust the Usage Monitor CSA limit as appropriate for the particular system. Ensure that the ECSA size has been generously defined for the system, and that the common page data set size is adequate. Ensure that the Usage Monitor address space is running at a higher priority than all CPU-bound workloads. Generally, monitors need to run at a higher priority than the workloads being monitored.

System programmer response: None.

Module: HSIZMON

---

HSIZ044I  csid  SWITCH-AND-WRITE TIME-OF-DAY IS SET TO hh:mm

Explanation: A D-T command was issued to display the switch-and-write time-of-day setting for this system.

In the message text:

- **csid**: current system identifier.
- **hh**: Hour of the day.
- **mm**: minute of the hour.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

---

HSIZ045I  csid  CREATED REPOSITORY token-alet

Explanation: A repository was created to hold collected program usage data.

In the message text:

- **csid**: current system identifier.
- **token**: space token of the repository data space.
- **alet**: ALET of the repository data space.

System action: Processing continues.

Operator response: None required.

System programmer response: None.

Module: HSIZMON

---

HSIZ046I  csid  DELETED REPOSITORY token-alet

Explanation: A repository which was no longer needed was deleted.

In the message text:

- **csid**: current system identifier.
- **token**: space token of the repository data space.
- **alet**: ALET of the repository data space.
**HSIZ047I  •  HSIZ051I**

---

**HSIZ047I  csid USAGE MONITOR - ATTACHING WRITER SEQ-NO-seqnbr**

**Explanation:** A writer task is being attached to write out repository contents. The writer task sequence number is also reported. The first writer task to run after the Usage Monitor starts has a sequence number of 1.

In the message text:

- **csid**: current system identifier.
- **seqnbr**: sequence number of writer task this run.

**System action:** Processing continues.
**Operator response:** None required.
**System programmer response:** None.
**Module:** HSIZMON

---

**HSIZ049I  csid DATA SET NAME MASK NOT DEACTIVATED, NOT FOUND IN LIST**

**Explanation:** A command to delete a data set name mask from a data set name mask list was issued, but the mask was not present in the list.

In the message text:

- **csid**: current system identifier.

**System action:** Processing continues.
**Operator response:** None required.
**System programmer response:** None.
**Module:** HSIZMON

---

**HSIZ050I  csid DATA SET NAME MASK mask LIST list**

**Explanation:** A D-D command was issued to display the data set name mask include and exclude lists. These header and trailer lines mark the start and end of the lists.

In the message text:

- **csid**: current system identifier.
- **mask**: INCLUDE or EXCLUDE.
- **list**: START or END.

**System action:** Processing continues.
**Operator response:** None required.
**System programmer response:** None.
**Module:** HSIZMON

---

**HSIZ051I  csid (E)CSA QUEUING STORAGE LIMIT: limit**

**Explanation:** Either a CSA command was issued to change the limit setting, or a D-S command was issued. The CSA queuing storage limit can be used to limit the quantity of CSA to be used to hold program usage data elements queued for storing into the data space repository. When this limit is reached further data is discarded. A count of discarded elements is maintained and reported at termination. A limit of zero means the usage monitor never tries to limit CSA storage usage.

In the message text:

- **csid**: current system identifier.
- **limit**: no limit or kilobyte limit.

**System action:** Processing continues.
HSIZ052I  csid THE CACHE TRIGGER EVENT COUNT IS cnt

Explanation: Either a TRG command was issued to change the cache trigger event count or a D-S command was issued. When a job uses the same program a number of times, the repository entry may be cached if the number has reached the cache trigger event count. The updating of cached entries is a synchronous process which does not use common storage. A limited number of cache entries are available. The cache is cleared when the repository is switched.

In the message text:

- csid  current system identifier.
- cnt  event count required to cause a program usage entry to be cached.

System action: Processing continues.

Operator response: None required.
System programmer response: None.

Module: HSIZMON

HSIZ053I  csid MONITORING UNIX PROGRAMS? ans

Explanation: Either a USS command was issued to change the UNIX program monitoring status or a D-S command was issued. When the answer is YES the usage of programs fetched from UNIX files is monitored. When the answer is NO only the usage of programs from PDS and PDSE libraries is monitored.

In the message text:

- csid  current system identifier.
- ans  YES or NO.

System action: Processing continues.

Operator response: None required.
System programmer response: None.

Module: HSIZMON

HSIZ054I  csid MONITORING LINK PACK AREA PROGRAMS? ans

Explanation: Either an LPA command was issued to change the LPA program monitoring status or a D-S command was issued. When the answer is YES the usage of programs residing in the Link Pack Area is monitored. When answer is NO only the usage of programs loaded into address space regions (and sometimes into CSA) is monitored.

In the message text:

- csid  current system identifier.
- ans  YES or NO.

System action: Processing continues.

Operator response: None required.
System programmer response: None.

Module: HSIZMON

HSIZ056I  csid PREFER VOLUME SYMBOL OVER SERIAL? ans

Explanation: Either a SYM command was issued to change the volume symbol status or a D-S command was issued. When the answer is YES a matching system static symbol which evaluates to the volume serial is collected instead of the volume serial if such a symbol exists, otherwise the actual volume serial is collected. When the answer is NO the captured volume serial number is always output. A YES setting may be useful to improve data matching when system software platform volume switches take place.

In the message text:

- csid  current system identifier.
- ans  YES or NO.

System action: Processing continues.

Operator response: None required.
System programmer response: None.

Module: HSIZMON

HSIZ058I  csid FILE HSIZIN IS NOT ALLOCATED - CANNOT PERFORM REFRESH

Explanation: A REF command was issued to refresh settings from commands in the HSIZIN file, but the HSIZIN file had been freed, and was no longer allocated to the Usage Monitor.

In the message text:
**CSID**
current system identifier.

**System action:** The refresh operation is suppressed and processing continues.

**Operator response:** Ensure FREE=CLOSE is not specified in the HSIZIN JCL DD statement. Recycle the Usage Monitor to refresh the settings if necessary.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ059I**
csid REFRESH PERFORMED WITH NO ERRORS

**Explanation:** A REF command was issued to refresh settings from commands in the HSIZIN file. All commands in the HSIZIN file were completed successfully.

In the message text:

csid
current system identifier.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ063I**
csid COLLECTING "UNKNOWN" EVENTS? ans

**Explanation:** Either a UNK command was issued or a D-S command was issued. When the answer is YES this message indicates that the Usage Monitor logs events with incomplete data which would not normally be collected. Data base content is not affected.

In the message text:

csid
current system identifier.

ans
YES or NO.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ064I**
csid WILL WRITER TASK COMPRESS THE DATA? ans

**Explanation:** Either a ZIP command was issued to change the output compression setting or a D-S command was issued. When the answer is YES the writer task writes compressed data to reduce I/O volumes.

In the message text:

csid
current system identifier.

ans
YES or NO.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ062I**
csid MAXCAD=val IS PROBABLY TOO SMALL

**Explanation:** A DSPSERV CREATE macro issued a return code of 12. This is usually caused by the maximum number of SCOPE=COMMON data spaces already existing, so that no more can be created. To increase this maximum specify a larger value for MAXCAD in the system parameter library for the next IPL.

In the message text:

csid
current system identifier.

val
current value of MAXCAD.

**System action:** Processing terminates.

**Operator response:** Restart the Usage Monitor after a SCOPE=COMMON data space has been deleted.

**System programmer response:** Allow a greater number of concurrent SCOPE=COMMON data spaces by increasing MAXCAD in PARMLIB.

**Module:** HSIZMON
**HSIZ065I**  
`csid` WILL WRITER TASK CORRECT LINKLIST DSN? `ans`

**Explanation:** Either an LLC command was issued or a D-S command was issued. When the answer is YES the writer task will perform a BLDL for programs known to have been fetched from the link list, and each output record for such programs will be altered to reflect the link list data set name that the writer task found the program in.

In the message text:

- `csid`: current system identifier.
- `ans`: YES or NO.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ066I**  
`csid nbr` IDLE ELEMENT(S) "LOST" DUE TO ZERO POINTER

**Explanation:** The Usage Monitor was terminating normally when a storage accounting discrepancy was discovered. The storage for the idle element chain was being freed when it was found to be terminated by a zero pointer before the expected number of elements had been processed. The most probable cause is a storage overlay. This may or may not represent a Usage Monitor logic error. The size of common storage which may be unusable until the next IPL can be calculated by multiplying the element count by the size of an element.

In the message text:

- `csid`: current system identifier.
- `nbr`: the number of elements being reported.

**System action:** Termination continues.

**Operator response:** Determine if the size of the potential loss of common storage is likely to impact upon system stability, and take the appropriate action. Ensure that all appropriate maintenance has been applied.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ067I**  
`csid` SAVE ELEMENTS ON THE IDLE CHAIN? `ans`

**Explanation:** Either an IDL command was issued or a D-S command was issued. When the answer is YES the Usage Monitor will place processed work elements on a chain for idle elements instead of freeing the storage. When an address space needs an element to record a program usage event, one from the idle chain will be used in preference to acquiring more storage. Use of the idle chain can reduce GETMAIN/FREEMAIN processing and therefore improve overall efficiency.

In the message text:

- `csid`: current system identifier.
- `ans`: YES or NO.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ068I**  
`csid` COLLECTING JOB ACCOUNTS NOW? `ans`

**Explanation:** A D-S command was issued. When the answer is YES job account data is currently being collected as program usage events are recorded. When the answer is NO job account data is not being collected currently.

In the message text:

- `csid`: current system identifier.
- `ans`: YES or NO.

**System action:** Processing continues.

**Operator response:** None required.

**System programmer response:** None.

**Module:** HSIZMON

---

**HSIZ069I**  
`csid` COLLECTING JOB ACCOUNTS LATER? `ans`

**Explanation:** Either a JAC command was issued or a D-S command was issued. When the answer is YES job account data will be collected after the next Usage Monitor collection repository switch. If the answer is NO job account data will not be collected from that time onwards.

In the message text:

- `csid`: current system identifier.
**HSIZ070I**  
`csid` COLLECTING REGISTERED PRODUCT DATA NOW? **ans**

**Explanation:** A D-S command was issued. When the answer is YES registered software product data from SMF is currently being collected by the Usage Monitor. When the answer is NO then this SMF data is not being currently collected.

In the message text:

- `csid` current system identifier.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ071I**  
`csid` COLLECTING REGISTERED PRODUCT DATA LATER? **ans**

**Explanation:** Either a PRS command was issued or a D-S command was issued. When the answer is YES registered software product data from SMF will be collected after the next Usage Monitor collection repository switch. When the answer is NO this SMF data will not be collected after the next switch.

In the message text:

- `csid` current system identifier.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ072I**  
`csid` COLLECTING DYNAMIC CAPACITY DATA NOW? **ans**

**Explanation:** A D-S command was issued. When the answer is YES hardware capacity information is currently being collected by the Usage Monitor. When the answer is NO hardware capacity information is not being currently collected.

In the message text:

- `csid` current system identifier.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ073I**  
`csid` COLLECTING DYNAMIC CAPACITY DATA LATER? **ans**

**Explanation:** Either a CAP command was issued or a D-S command was issued. When the answer is YES the Usage Monitor will collect hardware capacity information after the next Usage Monitor collection repository switch. When the answer is NO the hardware capacity information will not be collected after the next switch.

In the message text:

- `csid` current system identifier.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZMON

**HSIZ074I**  
`csid` OUTPUT NAMES OF COLLECTED USERS? **ans**

**Explanation:** Either a UNM command was issued or a D-S command was issued. When the answer is YES collected user names will be included in the data output by the Usage Monitor writer task. When the answer is NO user names will not be written to the output data set. Even if the answer is YES, no user names will be output if no user information was collected.

In the message text:

- `csid` current system identifier.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZMON
HSIZ075I  COLLECTING USER INFORMATION NOW? ans

Explanation: A D-S command was issued. When the answer is YES the identifier and name of each program user is currently being collected by the Usage Monitor. When the answer is NO these user details are not being currently collected.

In the message text:

<table>
<thead>
<tr>
<th>csid</th>
<th>current system identifier.</th>
</tr>
</thead>
</table>

ans

YES or NO.

System action: Processing continues.

Operator response: None.

System programmer response: None.

Module: HSIZMON

HSIZ076I  COLLECTING USER INFORMATION LATER? ans

Explanation: Either a UID command was issued or a D-S command was issued. When the answer is YES the identifier and name of each program user will be collected after the next Usage Monitor collection repository switch. When the answer is NO these userid details will not be collected after the next switch.

In the message text:

<table>
<thead>
<tr>
<th>csid</th>
<th>current system identifier.</th>
</tr>
</thead>
</table>

ans

YES or NO.

System action: Processing continues.

Operator response: None.

System programmer response: None.

Module: HSIZMON

HSIZ077I  COLLECTING JOB NAMES NOW? ans

Explanation: A D-S command was issued. When the answer is YES the names of jobs using programs are currently being collected by the Usage Monitor. When the answer is NO only generic address space type data such as JOB, STC and TSU will be collected instead of individual job names.

In the message text:

<table>
<thead>
<tr>
<th>csid</th>
<th>current system identifier.</th>
</tr>
</thead>
</table>

ans

YES or NO.

System action: Processing continues.

Operator response: None.

System programmer response: None.

Module: HSIZMON

HSIZ078I  COLLECTING JOB NAMES LATER? ans

Explanation: Either a JNM command was issued or a D-S command was issued. When the answer is YES the names of jobs using programs will be collected after the next Usage Monitor collection repository switch. When the answer is NO only generic address space type data such as JOB, STC and TSU will be collected after the next switch instead of individual job names.

In the message text:

<table>
<thead>
<tr>
<th>csid</th>
<th>current system identifier.</th>
</tr>
</thead>
</table>

ans

YES or NO.

System action: Processing continues.

Operator response: None.

System programmer response: None.

Module: HSIZMON

HSIZ080I  DYNALLOC FAILURE RC=rc ERROR=s99error INFO=s99info DSN=dsn

Explanation: The writer task could not dynamically allocate a new output data set.

In the message text:

| csid | dsn | current system identifier. data set name. |

rc  DYNALLOC return code.
**s99error**

dynamic allocation reason code (DARC).

**s99info**

dynamic allocation information code.

**dsn**

name of the data set being allocated.

**System action:** Processing of the repository is terminated, and the data lost.

**Operator response:** Correct the cause of the allocation failure. If necessary, use the DSN, PRI, SEC and UNT commands to customize the allocation request for your installation. Note: The meanings of most DARC values are usually available in Appendix A of the ISPF Tutorial.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ202I**  USAGE MONITOR - COMPRESSION SUBROUTINE ERROR

**Explanation:** While processing repository data the compression subroutine encountered an error. The error message from the compression subroutine immediately follows this message.

**System action:** Processing of the repository is terminated, and the data lost.

**Operator response:** Correct the error described in the message from the compression subroutine. If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ203I**  USAGE MONITOR - SORT FAILED - RC=rc

**Explanation:** While sorting repository data the SORT task ended with a non-zero condition code which is taken to mean that the sort was not successful. This message is followed by message HSIZ205I.

In the message text:

**rc**

decimal return code of the sort subtask.

**System action:** The output data set is closed, and the writing of unsorted data to the same data set is attempted.

**Operator response:** Investigate why such an abend could occur. The contents of the SORT report file (DDNAME=SYSOUT) may be helpful.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ204I**  USAGE MONITOR - SORT ABENDED - ABEND CODE=abend

**Explanation:** While sorting repository data the SORT task ended abnormally. This message is followed by message HSIZ205I.

In the message text:

**abend**

the abend code of the sort subtask.

**System action:** The output data set is closed, and the writing of unsorted data to the same data set is attempted.

**Operator response:** Investigate why the sort failed.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ205I**  USAGE MONITOR - UNSORTED DATA WILL BE WRITTEN

**Explanation:** The sorting of output data has failed so the data is now written unsorted.

**System action:** The message is preceded by either HSIZ203I or HSIZ204I. After the SORT task ended the output data set has been closed and reopened. Repository data is about to be written to the output data set.

**Operator response:** Investigate why the sort failed.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ206I**  errmsg

**Explanation:** The HSISHRNK compression routine issued an error message which is displayed.

In the message text:

**errmsg**

error message from HSISHRNK.

**System action:** The message is preceded by message HSIZ202I.

**Operator response:** Examine the message for further information.

**System programmer response:** None.

**Module:** HSIZ0203

---

**HSIZ301I**  DESERV FUNC=EXIT RC=rc REASON=rs

**Explanation:** DESERV FUNC=EXIT issued a non-zero return code.

In the message text:
**HSIZ302I • HSIZ311I**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rc</td>
<td>return code from DESERV.</td>
</tr>
<tr>
<td>rs</td>
<td>reason code from DESERV.</td>
</tr>
<tr>
<td>System action:</td>
<td>The DESERV exit is not installed.</td>
</tr>
<tr>
<td>Operator response:</td>
<td>Notify the system programmer.</td>
</tr>
<tr>
<td>System programmer response:</td>
<td>Research the DESERV feedback to determine why the exit could not be installed.</td>
</tr>
<tr>
<td>Module:</td>
<td>HSIZ0303</td>
</tr>
</tbody>
</table>

**HSIZ302I** CSVDYNEX ADD (excd) RC=rc REASON=rs

**Explanation:** CSVDYNEX ADD issued a non-zero return code. Exit differentiation code of '1' means that exit SYS.IEFU84 could not be installed, Exit differentiation code of '2' means that exit SYSSTC.IEFU84 could not be installed.

In the message text:

- **excd** exit differentiation code
- **rc** return code from CSVDYNEX.
- **rs** reason code from CSVDYNEX.

**System action:** The SMF exit is not installed.

**Operator response:** Notify the system programmer.

**System programmer response:** Research the CSVDYNEX feedback to determine why the exit could not be installed. If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.

**Module:** HSIZ0306

**HSIZ302I** CSVDYNEX ADD (excd) RC=rc REASON=rs

**Explanation:** CSVDYNEX ADD issued a non-zero return code. Exit differentiation code of '1' means that exit SYS.IEFU84 could not be installed, Exit differentiation code of '2' means that exit SYSSTC.IEFU84 could not be installed.

In the message text:

- **excd** exit differentiation code
- **rc** return code from CSVDYNEX.
- **rs** reason code from CSVDYNEX.

**System action:** The SMF exit is not installed.

**Operator response:** Notify the system programmer.

**System programmer response:** Research the CSVDYNEX feedback to determine why the exit could not be installed. If you cannot resolve this issue then gather appropriate diagnostic materials and contact IBM support.

**Module:** HSIZ0303

**HSIZ303I** ATTRIBUTE MISMATCH - mod NOT INSTALLED

**Explanation:** The examined SVC table entry did not have the expected attributes.

In the message text:

- **mod** module name.

**System action:** The SVC intercept is not installed.

**Operator response:** Notify the system programmer.

**System programmer response:** Gather appropriate diagnostic materials and contact IBM support.

**Module:** HSIZ0303

**HSIZ310I** MODULE mod INSTALLED AT ADDRESS loadpt SIZE size

**Explanation:** The Usage Monitor has dynamically loaded a module into common storage and will now register it in DLPA.

In the message text:

- **mod** module name.
- **loadpt** module load point.
- **size** module size.

**System action:** Processing continues.

**Operator response:** None.

**System programmer response:** None.

**Module:** HSIZ0303

**HSIZ311I** CSVDYLPA RC=rc RS=rs FOR mod

**Explanation:** The Usage Monitor attempted to register a newly installed module in DLPA, but CSVDYLPA issued a non-zero return code.

In the message text:

- **rc** decimal return code issued by CSVDYLPA.
- **rs** hexadecimal reason code issued by CSVDYLPA.
- **mod** name of the module being registered.

**System action:** Attempted to dump some data to HSIZSNAP if the file is allocated, and will then try to free the work element without processing its contents.

**Operator response:** Notify the system programmer.

**System programmer response:** The problem is indicative of a storage overlay. Gather appropriate diagnostic materials and contact IBM support.

**Module:** HSIZ0306
HSIC - Operation messages

Return codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No errors encountered. All requests processed successfully.</td>
</tr>
<tr>
<td>16</td>
<td>Unrecoverable error. No requests processed. SYSIN or HSIPZIP or INQSOUT File cannot be used, or unsupported operating system.</td>
</tr>
</tbody>
</table>

Message suffix codes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Minimum Cond Code to Raise</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Information Message</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Warning Message</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>Error Message</td>
<td>8</td>
</tr>
<tr>
<td>S</td>
<td>Severe Error Message</td>
<td>12</td>
</tr>
<tr>
<td>U</td>
<td>Unrecoverable Error Message</td>
<td>16</td>
</tr>
</tbody>
</table>

Message texts and explanations

All numeric completion codes of system services reported in these messages are in hexadecimal unless otherwise stated.

HSIC002E  A message is missing from the internal repository

Explanation: A message is missing from the internal message repository. When the default language is not English, it could simply mean that no translation of the given message exists. If the default language is English, that would indicate an error in the given application.

System action: The application would normally continue ignoring the given message number, but the specific action depends on the code attempting to issue the message which could also terminate the application.

User response: Contact IBM support.

HSIC003U  The internal message repository is corrupted

Explanation: When attempting to issue a message, the internal message repository layout did not follow the expected format.

System action: The application terminates.

User response: Contact IBM support.

HSIC020E  application-name encountered errors. Error code = errorcode

Explanation: The Application has encountered errors during processing. This is a general message on
HSIC021S  HSIC023E

completion indicating that an error has occurred.

**System action:** Completes with given error code.

**User response:** Refer to additional message, or to the section “Return codes” on page 162, and to the log for more details on the specific error. Contact IBM support.

**HSIC021S**  application-name encountered fatal errors.

**Error code = error-code**

**Explanation:** The Application has encountered fatal errors during processing.

**System action:** Terminates with given error code.

**User response:** Refer to additional message, or to the section “Return codes” on page 162, and to the log for more details on the specific error. Contact IBM support.

**HSIC023E**  Inquisitor Import error occurred in opening: filename

**Explanation:** The Inquisitor import could not open the given file.

**System action:** Terminates without processing any records.

**User response:** Check that the file exists, and if it does, check for any additional log message identifying the error. Contact IBM support.

**HSIC024E**  Inquisitor Import input file is in error. It looks like a usage data file

**Explanation:** The inquisitor import has encountered an invalid input file.

**System action:** Terminates without processing any records.

**User response:** Check that the input file is a valid file. Contact IBM support.

**HSIC025E**  Inquisitor Import input file is in error. It looks like a hardware data file

**Explanation:** The Inquisitor Import has encountered an invalid input file.

**System action:** Terminates without processing any records.

**User response:** Check that the input file is a valid file. Contact IBM support.

**HSIC026E**  Inquisitor Import detected that table tablename is missing or invalid

**Explanation:** The expected table is missing from the database or has invalid format. This suggests a mismatch between the database and this version of the product.

**System action:** The application terminates without processing any records.

**User response:** Check for a version mismatch between the database and the version of the product. Contact IBM support.

**HSIC027S**  Inquisitor Import table tablename is missing a column

**Explanation:** The given table is missing an expected column. This suggests a mismatch between the database and this version of the product.

**System action:** The application terminates without processing any records.

**User response:** Check for a version mismatch between the database and the version of the product. Contact IBM support.

**HSIC028S**  Inquisitor Import table tablename appears to be an old version

**Explanation:** The given table in the database does not have the expected format.

**System action:** The application terminates without processing any records.

**User response:** Check for a version mismatch between the database and the version of the product. Contact IBM support.

**HSIC029S**  Inquisitor Import error when writing to table tablename

**Explanation:** An SQL error occurred when attempting to write to the given table.

**System action:** The application terminates.

**User response:** Check the log for additional details about the given error. Contact IBM support.

**HSIC030S**  The Inquisitor Import did not find a valid system header record in the input file

**Explanation:** The input file does not follow the expected format.

**System action:** The application terminates.

**User response:** Check that the correct input file is supplied, and that there is no version mismatch. Contact IBM support.

**HSIC034S**  Error reading Repository TPARAM table

**Explanation:** An error occurred while reading the TPARAM Repository table.

**System action:** The application terminates.

**User response:** Check the log for any additional
messages indicating the cause of the error. Contact IBM support.

**HSIC035E**  The Repository is in use by the application-name

**Explanation:** The application cannot run because the Repository is already in use by another application. Wait until application-name completes before running the current application. If the Repository is not in use by application-name, then the cause could be that it was previously run, but did not run to completion. To correct the problem, either rerun the application-name identified in this message, or alternatively, run the HSISTPRM supplied job to reset FVALUE to 0 where FKEY = PROCRUN in the TPARAM table.

**System action:** The application terminates.

**User response:** Check the application is not already in use, before running this application.

**HSIC036E**  Syntax error scanning TPARAMS file on line linenumber

**Explanation:** The TPARAM file does not conform to the required syntax on the given line.

**System action:** The specified option or value is ignored, and its default value is used where applicable.

**User response:** Check that valid options/values are supplied as specified in the documentation of the application that you are running.

**HSIC037E**  Schema schemavalue is too long in param param

**Explanation:** A schema id that is too long has been specified.

**System action:** The application terminates.

**User response:** Check that the schema id does not exceed 8 characters in length.

**HSIC038E**  Unbalanced quote for value: value in param param

**Explanation:** A starting quote was found for the given parameter that has no matching end quote.

**System action:** The application terminates.

**User response:** Check that the given parameter has matching quotes

**HSIC039E**  Illegal character in value: value of param param

**Explanation:** An invalid character was found in the given value.

**System action:** The application terminates.

**User response:** Ensure that the specified parameter length is not exceeded.

**HSIC040E**  Reserved word: reservedword in param: param

**Explanation:** A reserved word or system value schema ID was chosen as a parameter value.

**System action:** The application terminates.

**User response:** Specify a different parameter value

**HSIC041W**  value: value in param: param is not a recommended schema ID

**Explanation:** The value is not recommended because of possible conflicts with existing values.

**System action:** The application continues.

**User response:** Please choose a different value to avoid any conflicts

**HSIC042E**  TPARAM file: param: param has an invalid proposed value: value

**Explanation:** The parameter cannot be set to the given value, because the value is not valid.

**System action:** The value is ignored, and the application continues.

**User response:** Please choose a valid value as per the documentation of the given application

**HSIC043E**  The application has failed to open the TPARAM file. Error: errordescription

**Explanation:** The application could not open the TPARAM file. The error description contains more details regarding the reason for the error.

**System action:** The application terminates.

**User response:** Check that the TPARAM file exists and is valid.

**HSIC045E**  String string cannot exceed numberchars in length

**Explanation:** A parameter length limit has been exceeded.

**System action:** The application terminates.

**User response:** Ensure that the specified parameter length is not exceeded.

**HSIC050E**  The program-name program has detected an invalid date parameter

**Explanation:** A date parameter was found to be invalid.

**System action:** The application terminates.
User response: Ensure that the date format is valid, and start dates do not overlap end dates.

HSIC051S Error adding record
Explanation: An SQL error occurred when adding a record to a table.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC052S Error updating record
Explanation: An SQL error occurred when updating a record in a table.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC053S Error deleting record
Explanation: An SQL error occurred when deleting a record from a table.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC054E Usage Summary detected an invalid SUMBY value
Explanation: The Usage Summary detected an invalid SUMBY value.
System action: The specified value is ignored. The application continues using the default SUMBY value.
User response: Refer to the documentation of the Usage Summary parameter for valid SUMBY values.

HSIC055S Table initialization failure during Repository Merge
Explanation: At least one table initialization failed when merging repositories.
System action: The application terminates.
User response: Check the log for any additional details about this error. Contact IBM support.

HSIC056S Some table destination fields are smaller than source
Explanation: Some fields in the target repository are not large enough to fit the contents of fields in the source repository.
System action: The application terminates, and the repositories are not merged.

User response: Check that the destination repository is not an older version than the source repository. You can recreate the destination repository using the latest version of the product. If the problem persists, contact IBM support.

HSIC057E A value for parameter: parameter-name must be specified
Explanation: A mandatory parameter for this application has not been specified.
System action: The application terminates during the syntax checking of input parameters.
User response: Ensure that a value for the given parameter is specified. Refer to the documentation of the failing application for an explanation of the given parameter and/or valid parameter values.

HSIC058E Could not open filename
Explanation: File could not be opened.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC059E Could not read filename
Explanation: File could not be read.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC060E IQDATA DD does not contain unzipped IQ data
Explanation: The input IQDATA dataset does not contain unzipped IQ data.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC061E Internal error hcreate(number) phase1a failed
Explanation: An internal error has occurred.
System action: The application terminates.
User response: Check the log for additional information about the error. Contact IBM support.

HSIC062E No SMF 30-2 or 30-4 data matched IQ data
Explanation: No match was found for the SMF data and IQ data.
System action: The application terminates.
**User response:** Check that the correct data sets have been used. Contact IBM support.

**HSIC063E Internal error hsearch(key) table add failed**

**Explanation:** An error occurred when inserting data into a table.

**System action:** The application terminates.

**User response:** Check the log for additional information about the error. Contact IBM support.

**HSIC064E Could not write type to FMOUT**

**Explanation:** Could not write to file FMOUT.

**System action:** The application terminates.

**User response:** Check the log for additional information about the error. Contact IBM support.

**HSIC065E SYSUT1 data Is not IQ text or UM text**

**Explanation:** The SYSUT1 dataset does not contain the expected data.

**System action:** The application terminates.

**User response:** Check that the SYSUT1 dataset is correct. Contact IBM support.

**HSIC066E Internal error hsearch(key) table failed**

**Explanation:** An error occurred when retrieving data from a table.

**System action:** The application terminates.

**User response:** Check the log for additional information about the error. Contact IBM support.

**HSIC067E Unable to acquire storage**

**Explanation:** An error has occurred when attempting to acquire storage.

**System action:** The application terminates.

**User response:** Try increasing the region size specified in the region parameter on the JOB or EXEC statement in the JCL for the job. Contact IBM support.

**HSIC068E IBMMOD Internal error**

**Explanation:** An internal error has occurred.

**System action:** The application terminates.

**User response:** Check the log for additional information about the error. Contact IBM support.

**HSIC069E IBMMOD_INIT internal error**

**Explanation:** An error occurred when retrieving data from a table.

**System action:** The application terminates.

**User response:** Check the log for additional information about the error. Contact IBM support.

**HSIC070I A full rematch will be performed**

**Explanation:** A full import and rematch will be performed, which will not try to exclude modules of unchanged libraries. The default behaviour is to exclude such libraries from matching, which would normally lead to faster processing.

The program performs a full rematch, if any of the following is true:

- If requested by the FULLREMATCH option.
- When the specified inventory is not found, for example on the first run when the inventory has not yet been created, and no previous match was done.
- If it is safer to perform a full rematch, as when a GKB change is detected or the REPLACEFULL option is in effect.

More specific details on why a full rematch is being performed, can be found in the log.

**System action:** A full rematch of the data is performed. All libraries are processed.

**User response:** Ensure that a FULLREMATCH and the REPLACEFULL options are not in effect for better performance, unless a full rematch is desired.

If this is the first run of the Inquisitor Import, or there has been recent a change to the GKB, then no action is necessary; the program will try on subsequent runs (subsequent to loading the current data into the repository) to exclude unchanged libraries.

**HSIC071I &number_modules modules in &number_libraries unchanged libraries were ignored**

**Explanation:** This is a report of the number of the modules and libraries that are ignored when the FULLREMATCH option is not in effect. Details of these ignored libraries are in the log.

**System action:** None.

**User response:** None.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6016</td>
<td>Input text file open error</td>
</tr>
<tr>
<td>6060</td>
<td>Input Parameter error</td>
</tr>
<tr>
<td>6061</td>
<td>Database open error</td>
</tr>
<tr>
<td>6062</td>
<td>Database commit error</td>
</tr>
<tr>
<td>6063</td>
<td>Error reading repository TPARAM table</td>
</tr>
<tr>
<td>6065</td>
<td>Repository is in use</td>
</tr>
<tr>
<td>6066</td>
<td>Unknown SID parameter value</td>
</tr>
<tr>
<td>6203</td>
<td>Inquisitor Import table open fail</td>
</tr>
<tr>
<td>6204</td>
<td>MVS system header record not found in input file</td>
</tr>
<tr>
<td>6205</td>
<td>Unix System Services header record not found in input file</td>
</tr>
<tr>
<td>6206</td>
<td>No system header record found in input file</td>
</tr>
<tr>
<td>6208</td>
<td>Error writing to TPARAM table</td>
</tr>
<tr>
<td>6209</td>
<td>Error opening input file</td>
</tr>
<tr>
<td>6211</td>
<td>Fatal error writing system record</td>
</tr>
<tr>
<td>6212</td>
<td>Fatal error writing library record</td>
</tr>
<tr>
<td>6213</td>
<td>Fatal error writing module record</td>
</tr>
<tr>
<td>6218</td>
<td>Input file looks like a usage data file</td>
</tr>
<tr>
<td>6219</td>
<td>Input file looks like a hardware data file</td>
</tr>
<tr>
<td>6220</td>
<td>Index missing error</td>
</tr>
<tr>
<td>6222</td>
<td>Tagged module key table processing error</td>
</tr>
<tr>
<td>6223</td>
<td>Error encountered when retrieving the inventory ID</td>
</tr>
<tr>
<td>6224</td>
<td>Error encountered when retrieving the current GKB version</td>
</tr>
<tr>
<td>6225</td>
<td>Error encountered when retrieving the inventory GKB version</td>
</tr>
<tr>
<td>6237</td>
<td>Inquisitor Import table does not exist or is a missing a column</td>
</tr>
<tr>
<td>6238</td>
<td>Inquisitor Import table does not exist</td>
</tr>
<tr>
<td>6239</td>
<td>Inquisitor Import table appears to be an old version</td>
</tr>
<tr>
<td>6240</td>
<td>Error updating fGPassLibID record</td>
</tr>
<tr>
<td>6241</td>
<td>Error deleting empty libraries</td>
</tr>
<tr>
<td>6244</td>
<td>Error assigning package information to TMODULE records</td>
</tr>
<tr>
<td>6260</td>
<td>Nothing to import, as no module records were found in IQ file</td>
</tr>
<tr>
<td>6400</td>
<td>Knowledge Base type is incorrect</td>
</tr>
<tr>
<td>6402</td>
<td>Failure in initializing IQ tables</td>
</tr>
<tr>
<td>6403</td>
<td>IQ TMODULE open error</td>
</tr>
<tr>
<td>6404</td>
<td>IQ TMODULE index error</td>
</tr>
<tr>
<td>6405</td>
<td>IQ database is empty</td>
</tr>
<tr>
<td>6409</td>
<td>TDECISION table open error</td>
</tr>
<tr>
<td>6413</td>
<td>Error creating scorecard tables for Match Engine</td>
</tr>
<tr>
<td>6428</td>
<td>Local KB TRULES table open error</td>
</tr>
<tr>
<td>Code</td>
<td>Message Description</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
<tr>
<td>6434</td>
<td>Failure to open archive file</td>
</tr>
<tr>
<td>6435</td>
<td>Error creating index</td>
</tr>
<tr>
<td>6436</td>
<td>Error setting current index</td>
</tr>
<tr>
<td>6437</td>
<td>Search KB phase error</td>
</tr>
<tr>
<td>6438</td>
<td>Volume serial library phase error</td>
</tr>
<tr>
<td>6439</td>
<td>Inter Library phase error</td>
</tr>
<tr>
<td>6440</td>
<td>Rules processing phase error</td>
</tr>
<tr>
<td>6444</td>
<td>LPA phase error</td>
</tr>
<tr>
<td>6448</td>
<td>Error while clearing LMOD count</td>
</tr>
<tr>
<td>6449</td>
<td>TDECISION Table is missing FDESCRIPTION and/or FCATEGORY fields</td>
</tr>
<tr>
<td>6450</td>
<td>GKB TPRODUCT record seek error</td>
</tr>
<tr>
<td>6451</td>
<td>LKB TPRODUCT record seek error</td>
</tr>
<tr>
<td>6452</td>
<td>TDECISION record edit error</td>
</tr>
<tr>
<td>6453</td>
<td>KB TVERSION record access error</td>
</tr>
<tr>
<td>6454</td>
<td>KB TPRODUCT record access error</td>
</tr>
<tr>
<td>6455</td>
<td>KB TVENDOR record access error</td>
</tr>
<tr>
<td>6600</td>
<td>Match Engine tables TDECISION and/or TMIGREPORT are missing</td>
</tr>
<tr>
<td>6619</td>
<td>Error opening TPACKAGE table</td>
</tr>
<tr>
<td>6620</td>
<td>Repository table initialization failed</td>
</tr>
<tr>
<td>6621</td>
<td>Failure opening IQ table</td>
</tr>
<tr>
<td>6622</td>
<td>Unable to access GKB TVERSION table</td>
</tr>
<tr>
<td>6623</td>
<td>IQ TMODULE table is empty</td>
</tr>
<tr>
<td>6624</td>
<td>Predecessor inventory ID key does not exist</td>
</tr>
<tr>
<td>6625</td>
<td>Repository is not enabled for Unix System Services</td>
</tr>
<tr>
<td>6626</td>
<td>Repository must be enabled for Unix System Services, when the REPLACE option is in effect</td>
</tr>
<tr>
<td>6627</td>
<td>SYSPLEX ID mismatch in inventory record</td>
</tr>
<tr>
<td>6628</td>
<td>SMFID mismatch in inventory record</td>
</tr>
<tr>
<td>6629</td>
<td>Inventory ID key of zero is not valid</td>
</tr>
<tr>
<td>6630</td>
<td>Error in deleting library record</td>
</tr>
<tr>
<td>6632</td>
<td>Error transferring TLIBRARY information from IQ to Repository</td>
</tr>
<tr>
<td>6633</td>
<td>Error accessing TINVCTL table</td>
</tr>
<tr>
<td>6634</td>
<td>Mismatch found between the TINVCTL record flag and the REPLACE option</td>
</tr>
<tr>
<td>6635</td>
<td>Error updating FMODCNT field in TLIBRARY and TPOVLIB tables</td>
</tr>
<tr>
<td>6636</td>
<td>Product version key error</td>
</tr>
<tr>
<td>6637</td>
<td>Module key error</td>
</tr>
<tr>
<td>6639</td>
<td>Error updating FINVID18 fields in TUIIMPORTCTRL table</td>
</tr>
<tr>
<td>6640</td>
<td>Error updating FINVID field in TINVREG table</td>
</tr>
<tr>
<td>6641</td>
<td>Error updating FINVID field in TINVREG table</td>
</tr>
<tr>
<td>6642</td>
<td>Error updating summary tables</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>6643</td>
<td>Error querying table in FMODID order</td>
</tr>
<tr>
<td>6645</td>
<td>Error marking TLIBRARY, TMODULE, POVLIB, and TPOVINV records as deleted</td>
</tr>
<tr>
<td>6647</td>
<td>Repository type does not match IQ type</td>
</tr>
<tr>
<td>6648</td>
<td>When using a Continuous Inventory, an Inventory Name must be specified</td>
</tr>
<tr>
<td>6666</td>
<td>Error when accessing the TLIBSYS table</td>
</tr>
<tr>
<td>6800</td>
<td>At least one repository failed during initialization</td>
</tr>
<tr>
<td>6802</td>
<td>No matching LPAR found in table</td>
</tr>
<tr>
<td>6803</td>
<td>Primary Inventory ID set to 0 for LPAR</td>
</tr>
<tr>
<td>6804</td>
<td>Error trying to find FMODID or FLIBID</td>
</tr>
<tr>
<td>6805</td>
<td>Inventory ID does not exist</td>
</tr>
<tr>
<td>6806</td>
<td>Unable to find or create TLPAR record for LPAR</td>
</tr>
<tr>
<td>6807</td>
<td>Error trying to find or create Job or User entry</td>
</tr>
<tr>
<td>6808</td>
<td>Error writing MTD record</td>
</tr>
<tr>
<td>6809</td>
<td>Error updating summary tables</td>
</tr>
<tr>
<td>6810</td>
<td>Error adding TUSELIBRARY record</td>
</tr>
<tr>
<td>6811</td>
<td>TLIBRARY update error</td>
</tr>
<tr>
<td>6812</td>
<td>Summary table error</td>
</tr>
<tr>
<td>6813</td>
<td>Error reading import control record</td>
</tr>
<tr>
<td>6814</td>
<td>User initiated stop</td>
</tr>
<tr>
<td>7000</td>
<td>At least one table failed initialization</td>
</tr>
<tr>
<td>7002</td>
<td>Invalid usage summary parameters</td>
</tr>
<tr>
<td>7003</td>
<td>Invalid month in usage summary parameter</td>
</tr>
<tr>
<td>7004</td>
<td>Date order error</td>
</tr>
<tr>
<td>7005</td>
<td>TMODULE record seek error</td>
</tr>
<tr>
<td>7011</td>
<td>Error inserting record into TMODULE table</td>
</tr>
<tr>
<td>7013</td>
<td>TJOBDATA record seek error</td>
</tr>
<tr>
<td>7014</td>
<td>TJOBDATA record add error</td>
</tr>
<tr>
<td>7015</td>
<td>USERDATA record seek error</td>
</tr>
<tr>
<td>7016</td>
<td>USERDATA record add error</td>
</tr>
<tr>
<td>7017</td>
<td>TUSEMTD record seek error</td>
</tr>
<tr>
<td>7018</td>
<td>TUSEMTD record add error</td>
</tr>
<tr>
<td>7019</td>
<td>TUSEMTD record edit error</td>
</tr>
<tr>
<td>7020</td>
<td>TUSEMTD record delete error</td>
</tr>
<tr>
<td>7021</td>
<td>TPOVINV record seek error</td>
</tr>
<tr>
<td>7022</td>
<td>TPERIODS record seek error</td>
</tr>
<tr>
<td>7023</td>
<td>TPERIODS record add error</td>
</tr>
<tr>
<td>7024</td>
<td>TPERIODS record edit error</td>
</tr>
<tr>
<td>7025</td>
<td>TUSEPOVLIB record seek error</td>
</tr>
<tr>
<td>7026</td>
<td>TUSEPOVLIB record add error</td>
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<tr>
<td>7027</td>
<td>TUSEPOVLIB record edit error</td>
</tr>
<tr>
<td>7028</td>
<td>TUSEPOV record seek error</td>
</tr>
<tr>
<td>7029</td>
<td>TUSEPOV record add error</td>
</tr>
<tr>
<td>Code</td>
<td>Message</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>7030</td>
<td>TUSEPOV record edit error</td>
</tr>
<tr>
<td>7034</td>
<td>TUSEMTD critical failure</td>
</tr>
<tr>
<td>7035</td>
<td>TUSEMTD error updating record with zero FMTID</td>
</tr>
<tr>
<td>7036</td>
<td>TVERSION record seek error</td>
</tr>
<tr>
<td>7037</td>
<td>TUSEPO record seek error</td>
</tr>
<tr>
<td>7038</td>
<td>TUSEPO record seek error</td>
</tr>
<tr>
<td>7039</td>
<td>TUSEPO record edit error</td>
</tr>
<tr>
<td>7040</td>
<td>TUSEPO record delete error</td>
</tr>
<tr>
<td>7043</td>
<td>TMODULE record edit error</td>
</tr>
<tr>
<td>7044</td>
<td>TUSEPOVLIB record delete error</td>
</tr>
<tr>
<td>7045</td>
<td>TUSEPOV record delete error</td>
</tr>
<tr>
<td>7046</td>
<td>TPERIODS record delete error</td>
</tr>
<tr>
<td>7048</td>
<td>IDS_USUM_TUSELIB_AUTONUM_ERROR</td>
</tr>
<tr>
<td>7049</td>
<td>TUSELIB record delete error</td>
</tr>
<tr>
<td>7051</td>
<td>TUSELIB record delete error</td>
</tr>
<tr>
<td>7052</td>
<td>IDS_USUM_TUSELIB_AUTONUM_ERROR</td>
</tr>
<tr>
<td>7055</td>
<td>TLPAR record edit error</td>
</tr>
<tr>
<td>7056</td>
<td>TUSELIB record seek error</td>
</tr>
<tr>
<td>7057</td>
<td>TUSELIB record add error</td>
</tr>
<tr>
<td>7058</td>
<td>TPOVLIB record seek error</td>
</tr>
<tr>
<td>7060</td>
<td>TLPAR record seek error</td>
</tr>
<tr>
<td>7061</td>
<td>Join record seek error</td>
</tr>
<tr>
<td>7062</td>
<td>TLIBRARY record edit error</td>
</tr>
<tr>
<td>7063</td>
<td>TLIBRARY record seek error</td>
</tr>
<tr>
<td>7065</td>
<td>Invalid SUMBY value</td>
</tr>
<tr>
<td>7066</td>
<td>Date formatting error</td>
</tr>
<tr>
<td>7067</td>
<td>Usage Summary schema is empty</td>
</tr>
<tr>
<td>7068</td>
<td>PRODUCT_USE delete error</td>
</tr>
<tr>
<td>7069</td>
<td>PRODUCT_USE_DETAIL delete error</td>
</tr>
<tr>
<td>7201</td>
<td>Inventory to be deleted does not exist in repository</td>
</tr>
<tr>
<td>7203</td>
<td>TLIBRARY record delete failure</td>
</tr>
<tr>
<td>7204</td>
<td>TPOVINV record delete failure</td>
</tr>
<tr>
<td>7205</td>
<td>TPERIODS record delete failure</td>
</tr>
<tr>
<td>7206</td>
<td>TLPAR record delete failure</td>
</tr>
<tr>
<td>7207</td>
<td>TUIMPCTRL record delete failure</td>
</tr>
<tr>
<td>7208</td>
<td>Failure updating Delete Inventory ID record</td>
</tr>
<tr>
<td>7209</td>
<td>Failure deleting TINVCTL records of deleted inventory</td>
</tr>
<tr>
<td>7210</td>
<td>Error scanning product version</td>
</tr>
<tr>
<td>7211</td>
<td>Error reassigning predecessor links in successor InvCTL records</td>
</tr>
<tr>
<td>7600</td>
<td>Table initialization failure</td>
</tr>
<tr>
<td>7601</td>
<td>Destination repository column size failure</td>
</tr>
<tr>
<td>7602</td>
<td>TINVCTL record seek error</td>
</tr>
<tr>
<td>7603</td>
<td>TINVCTL record edit error</td>
</tr>
<tr>
<td>7604</td>
<td>TINVCTL record add error</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>7605</td>
<td>TINVCTL record delete error</td>
</tr>
<tr>
<td>7606</td>
<td>TLIBRARY record seek error</td>
</tr>
<tr>
<td>7607</td>
<td>TLIBRARY record edit error</td>
</tr>
<tr>
<td>7608</td>
<td>TLIBRARY record add error</td>
</tr>
<tr>
<td>7609</td>
<td>TLIBRARY record delete error</td>
</tr>
<tr>
<td>7610</td>
<td>Transfer product version join seek error</td>
</tr>
<tr>
<td>7611</td>
<td>TPOVLIB record seek error</td>
</tr>
<tr>
<td>7612</td>
<td>TPOVLIB record edit error</td>
</tr>
<tr>
<td>7613</td>
<td>TPOVLIB record add error</td>
</tr>
<tr>
<td>7614</td>
<td>TPOVLIB record delete error</td>
</tr>
<tr>
<td>7615</td>
<td>TPOVINV record seek error</td>
</tr>
<tr>
<td>7616</td>
<td>TPOVINV record edit error</td>
</tr>
<tr>
<td>7617</td>
<td>TPOVINV record add error</td>
</tr>
<tr>
<td>7618</td>
<td>TPOVINV record delete error</td>
</tr>
<tr>
<td>7619</td>
<td>Table TINVPOV failed in initialization</td>
</tr>
<tr>
<td>7620</td>
<td>TVERSION record seek error</td>
</tr>
<tr>
<td>7621</td>
<td>TVERSION record edit error</td>
</tr>
<tr>
<td>7622</td>
<td>TVERSION record add error</td>
</tr>
<tr>
<td>7623</td>
<td>TVERSION record delete error</td>
</tr>
<tr>
<td>7624</td>
<td>Table TVERSION open failed</td>
</tr>
<tr>
<td>7625</td>
<td>TPRODUCT record seek error</td>
</tr>
<tr>
<td>7626</td>
<td>TPRODUCT record edit error</td>
</tr>
<tr>
<td>7627</td>
<td>TPRODUCT record add error</td>
</tr>
<tr>
<td>7628</td>
<td>TPRODUCT record delete error</td>
</tr>
<tr>
<td>7629</td>
<td>TPRODUCT open error</td>
</tr>
<tr>
<td>7630</td>
<td>TVENDOR record seek error</td>
</tr>
<tr>
<td>7631</td>
<td>TVENDOR record edit error</td>
</tr>
<tr>
<td>7632</td>
<td>TVENDOR record add error</td>
</tr>
<tr>
<td>7633</td>
<td>TVENDOR record delete error</td>
</tr>
<tr>
<td>7634</td>
<td>TVENDOR open error</td>
</tr>
<tr>
<td>7635</td>
<td>TMODULE record seek error</td>
</tr>
<tr>
<td>7636</td>
<td>TMODULE record edit error</td>
</tr>
<tr>
<td>7637</td>
<td>TMODULE record add error</td>
</tr>
<tr>
<td>7638</td>
<td>TMODULE record delete error</td>
</tr>
<tr>
<td>7639</td>
<td>TREGCLASS record seek error</td>
</tr>
<tr>
<td>7640</td>
<td>TREGCLASS record edit error</td>
</tr>
<tr>
<td>7641</td>
<td>TREGCLASS record add error</td>
</tr>
<tr>
<td>7642</td>
<td>TREGCLASS record delete error</td>
</tr>
<tr>
<td>7643</td>
<td>TREGION record seek error</td>
</tr>
<tr>
<td>7644</td>
<td>TREGION record edit error</td>
</tr>
<tr>
<td>7645</td>
<td>TREGION record add error</td>
</tr>
<tr>
<td>7646</td>
<td>TREGION record delete error</td>
</tr>
<tr>
<td>7647</td>
<td>TREGLEAF record seek error</td>
</tr>
<tr>
<td>7648</td>
<td>TREGLEAF record edit error</td>
</tr>
<tr>
<td>7649</td>
<td>TREGLEAF record add error</td>
</tr>
<tr>
<td>7650</td>
<td>TREGLEAF record delete error</td>
</tr>
</tbody>
</table>
7649  TREGLEAF record add error
7650  TREGLEAF record delete error
7651  TINVREG record seek error
7652  TINVREG record edit error
7653  TINVREG record add error
7654  TINVREG record delete error
7655  TJOBDATA record seek error
7656  TJOBDATA record edit error
7657  TJOBDATA record add error
7658  TJOBDATA record delete error
7659  TUSERDATA record seek error
7660  TUSERDATA record edit error
7661  TUSERDATA record add error
7662  TUSERDATA record delete error
7663  TLPAR record seek error
7664  TLPAR record edit error
7665  TLPAR record add error
7666  TLPAR record delete error
7667  TUSEMTD record seek error
7668  TUSEMTD record edit error
7669  TUSEMTD record add error
7670  TUSEMTD record delete error
7671  TUSELIB record seek error
7672  TUSELIB record edit error
7673  TUSELIB record add error
7674  TUSELIB record delete error
7675  TPERIODS record seek error
7676  TPERIODS record edit error
7677  TPERIODS record add error
7678  TPERIODS record delete error
7679  TUSEPOVLIB record seek error
7680  TUSEPOVLIB record edit error
7681  TUSEPOVLIB record add error
7682  TUSEPOVLIB record delete error
7683  TUSEPOVLIB open error
7684  TUSEPOV record seek error
7685  TUSEPOV record edit error
7686  TUSEPOV record add error
7687  TUSEPOV record delete error
7688  TUSEPOV open error
7689  TUSEPO record seek error
7690  IDS_MRGE_TUSEPO_EDIT_ERROR
7691  TUSEPO record add error
7692  TUSEPO record delete error
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7693</td>
<td>TUSEPO open error</td>
</tr>
<tr>
<td>7694</td>
<td>TUIMPORTCTRL record seek error</td>
</tr>
<tr>
<td>7695</td>
<td>TUIMPORTCTRL record edit error</td>
</tr>
<tr>
<td>7696</td>
<td>TUIMPORTCTRL record add error 7697</td>
</tr>
<tr>
<td>7697</td>
<td>TUIMPORTCTRL record delete error</td>
</tr>
<tr>
<td>7698</td>
<td>Source and destination repositories are not the same type</td>
</tr>
<tr>
<td>7699</td>
<td>Source and/or Destination Repositories are not the correct category database</td>
</tr>
</tbody>
</table>
Appendix B. Analyzer

This appendix contains information about:
- “Analyzer online mode navigation”
- “Analyzer Asset reports” on page 176.
- “Analyzer Discovery reports” on page 193.
- “Analyzer administration” on page 212.
- “Analyzer report parameters” on page 221.
- “Analyzer report output columns” on page 222.

Analyzer online mode navigation

The Analyzer online mode of navigation uses a PC Browser, for example Firefox, to communicate with the Analyzer for interactive queries.

The screen prints in this appendix have a resolution of 1024 x 768 so that they can fit into this manual. However it is recommended that you use a larger screen resolution, such as 1440 x 900 or larger, as some of the reports contain a large amount of information.

If the Analyzer has been configured with SECURITY=SYSTEM, you communicate with HTTPS (HTTP with SSL encryption) and logon with your z/OS system user ID and password.

If the Analyzer has been configured with SECURITY=BASIC (the default), you communicate with HTTP and logon with a configured user ID and password. The user ID and passwords are supplied by default:
- TADZADM / TADZ This user ID has full access.
- TADZUSR / TADZ This user ID does not have access to, and does not see, the Administration menu items.

When you first connect to the Analyzer you are prompted to enter your user ID and password:

After you logon, you will see a screen with several menu tabs.

The Assets menu tab contains reports that query high level aggregated data; for example Product Versions. This level of data is useful if you are reconciling
product licenses.

The Discovery menu tab contains reports that query low-level discovery data; for example, Product Releases, libraries, and modules. This level of data is useful if you support z/OS systems.

The Administration menu tab contains administration tasks and troubleshooting reports. These reports are designed for Tivoli Asset Discovery for z/OS administrators. Users do not see this menu unless they have been granted specific access.
The Custom menu tab contains reports that you have customized locally. Two samples are provided. See the "Analyzer custom queries" on page 84 section for more details.

When you click a report, you are presented with a parameter screen appropriate for that report. For example:
Parameter selection lists are based on the data that is in your database. The database in the preceding example contains data for five systems; AU01, AU02, US01, US02, and US03.

Multiple selections are possible by clicking the item you want while holding down the Ctrl or Shift key.

On the upper right of the screen there are hyperlinks to open a New Window or go to the Home menu screen.

Click Submit at the bottom of the screen to run the Analyzer query.
At the bottom of every report, the report name and parameters are shown in the same syntax that you can use to run the report in batch mode. Cut and paste from the report into the HSISANLB batch job SYSIN DD deck.

If you choose the Output format as Browser (the default), you get results that have hyperlinks that you can drill down on for more information. For example, clicking the Last Used hyperlink in the preceding sample invokes the Produce Use Trend report with the appropriate filter parameters.
If you want to compare several drill downs, right click the hyperlink and select Open Link in New Tab.
All HTML reports have embedded content so you can save them using the Browser menu; File and Save, or by using the Analyzer Download HTM and emailing them.

When you download the report in Excel, you are prompted to save the file or open in Excel. To save the file in Excel you need Microsoft Excel 2002, or above, installed on your PC. If you have a different spreadsheet package installed, choose the Download: csv option.

The Excel spreadsheet has a filter bar within the column headings for easy filtering.
Analyzer Asset reports

This section contains a list of the asset reports. For each report, two sample screens are provided. The first screen displays sample parameters, followed by sample output. Directly following these screens is a table which describes the function of each hyperlink in the output section of the report.

Machine Inventory

Description: System z® Machine inventory summary

Batch name: /asset/machine_inventory

Sample parameters:

The Download: htm option saves the HTML report without hyperlinks. This report is useful if you want to email the reports.

The Download: txt option produces a simple text line mode file.

The Download: csv option produces a Comma Separated Value file. This format is compatible with other tools, including open source spreadsheet tools.
Table 26. Machine Inventory hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems</td>
<td>Drill down to Product by System report to see more information about products that have been used on Systems which have run on the Machine, or Logical Partition (LPAR).</td>
</tr>
</tbody>
</table>

Product Inventory

**Description:** Product version inventory summary

**Batch name:** /asset/product_inventory

Sample parameters:
Sample output:

![Image of the Product Inventory hyperlinks](image.png)

**Table 27. Product Inventory hyperlinks**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovered</td>
<td>Drill down to <strong>Product by System</strong> report to see more information about</td>
</tr>
<tr>
<td>Installed</td>
<td>products that have been used on Systems which have run on the Machine,</td>
</tr>
<tr>
<td></td>
<td>or Logical Partition (LPAR).</td>
</tr>
<tr>
<td>Systems</td>
<td>Drill down to <strong>Product by System</strong> report to see which systems the product</td>
</tr>
<tr>
<td>Installed</td>
<td>has been discovered on.</td>
</tr>
<tr>
<td>Last Used</td>
<td>Drill down to <strong>Product use Trend</strong> report to see product usage trends and</td>
</tr>
<tr>
<td></td>
<td>details.</td>
</tr>
<tr>
<td>Systems Used</td>
<td>Drill down to <strong>Product by System</strong> report</td>
</tr>
<tr>
<td>Machines Used</td>
<td>Drill down to <strong>Product Use by Machine</strong> report to see which machines the</td>
</tr>
<tr>
<td></td>
<td>product has been used on.</td>
</tr>
</tbody>
</table>

**Product Audit Trail**

**Description:** Product version audit trail

**Batch name:** /asset/audit_trail
Sample parameters:

The Product Audit Trail report contains a lot of information and is often better displayed as a spreadsheet in which you can filter and sort the data as wanted.

Sample output:

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Product</th>
<th>Version</th>
<th>Machine</th>
<th>Status</th>
<th>Model</th>
<th>Installed</th>
<th>Type</th>
<th>First Used</th>
<th>Last Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 28. Product Audit Trail hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td>Drill down to see which user IDs have used the product.</td>
</tr>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
</tbody>
</table>
Table 28. Product Audit Trail hyperlinks (continued)

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
</tbody>
</table>

**Product by System**

*Description:* Cross reference of product versions by System

**Batch name:** /asset/product_system

Sample parameters:

![Product by System Parameters](image1.png)

Sample output:

![Product by System Output](image2.png)
Table 29. Product by System Inventory hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>First Used</td>
<td></td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries report.</td>
</tr>
</tbody>
</table>

Product by Sysplex

Description: Cross Reference of product versions by Sysplex

Batch name: /asset/product_sysplex

Sample parameters:

Sample output:
Table 30. Product by Sysples hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to <strong>Product Use Trend</strong> report.</td>
</tr>
<tr>
<td>First Used</td>
<td></td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to <strong>Product Libraries report</strong>.</td>
</tr>
</tbody>
</table>

**Product by System Group**

**Description:** Cross reference of product versions by System Group

**Batch name:** /asset/product_sysgroup

Sample parameters:
Table 31. Product by System Group hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to <strong>Product Use Trend</strong> report.</td>
</tr>
<tr>
<td>First Used</td>
<td><strong>Product Libraries</strong> report.</td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Discovered</td>
<td></td>
</tr>
<tr>
<td>Installed</td>
<td></td>
</tr>
</tbody>
</table>

**Product by Repository**

**Description:** Cross reference of product versions by Repository

**Batch name:** /asset/product_repository
Table 32. Product by Repository hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>First Used</td>
<td></td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries report.</td>
</tr>
</tbody>
</table>

**Vendor Use by Month**

**Description:** Cross reference of vendor products used by Month by System
Batch name /asset/vendor_use_month

Sample parameters:

Sample output:

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sysplex</td>
<td>Drill down to <strong>Product Use Trend</strong> report.</td>
</tr>
<tr>
<td>System</td>
<td>Drill down to <strong>Product Use Trend</strong> report.</td>
</tr>
<tr>
<td>Events Users</td>
<td>Drill down to see which user IDs have used the product.</td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
</tbody>
</table>

**Product Use by Month**

**Description:** Cross reference of product versions used per Month by System
**Batch name:** /asset/product_use_month

Sample parameters:

```
<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sysplex</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>System</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see which user IDs have used the product.</td>
</tr>
<tr>
<td>Users</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
</tbody>
</table>
```

Sample output:

```
Table 34. Product Use by Month hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sysplex</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>System</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see which user IDs have used the product.</td>
</tr>
<tr>
<td>Users</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
</tbody>
</table>
```
Product Use Trend

Description: Product version usage trend chart

Batch name: /asset/product_use_trend

Sample parameters:

Mouse over the chart to see the values.

Sample output:
Table 35. Product Use Trend hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td>Drill down to see which user IDs have used the product.</td>
</tr>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to Product Library Usage report.</td>
</tr>
<tr>
<td></td>
<td>Drill down to Product Inventory report.</td>
</tr>
<tr>
<td></td>
<td>Drill down to Product by System report.</td>
</tr>
<tr>
<td></td>
<td>Drill down to Product Use by Machine report.</td>
</tr>
</tbody>
</table>

**Product Use by Machine**

**Description:** Cross reference of product versions used by machine

**Batch name:** /asset/product_use_machine

Sample parameters:
Table 36. Product Use by Machine hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
<tr>
<td>First Used</td>
<td></td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>SCRT MSU</td>
<td></td>
</tr>
</tbody>
</table>

Product Use by Machine MSU

Description: Cross reference of product versions by Machine MSU capacity

Batch name: /asset/product_use_machine_msu

Sample parameters:

![Product Use by Machine MSU interface](image-url)
Table 37. Product Use by Machine MSU hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSU</td>
<td>Drill down to Product Use Trend report.</td>
</tr>
</tbody>
</table>

**Search User Ids**

**Description:** Search product version usage details for user IDs

**Batch name:** /asset/product_use_search_userid

Sample parameters:
Sample output:

![Image of a user interface for searching user IDs]

Table 38. Search User IDs hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Names</td>
<td>Drill down to see which job names have used the product.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to see which job account codes have used the product.</td>
</tr>
<tr>
<td>Products</td>
<td>Drill down to Search user IDs to show all Products.</td>
</tr>
<tr>
<td>Systems</td>
<td>Drill down to Search user IDs to show all Systems.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see module usage details.</td>
</tr>
</tbody>
</table>

**Search Job Names**

**Description:** Search product version usage details for job names

**Batch name:** /asset/product_use_search_jobname

Sample parameters:
### Search Job Account Codes

**Description:** Search product version usage details for job account codes

**Batch name:** /asset/product_use_search_jobacc

Sample parameters:

---

**Table 39. Search Job Names hyperlinks**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>User IDs</td>
<td>Drill down to Search Users.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to Search Job Accounts.</td>
</tr>
<tr>
<td>Products</td>
<td>Drill down to Search Job Names to show all Products.</td>
</tr>
<tr>
<td>Systems</td>
<td>Drill down to Search Job Names to show all Systems.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see module usage details.</td>
</tr>
</tbody>
</table>

---
Sample output:

Table 40. Search Job Account Codes hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>User IDs</td>
<td>Drill down to Search Users.</td>
</tr>
<tr>
<td>Job Accounts</td>
<td>Drill down to Search Job Accounts.</td>
</tr>
<tr>
<td>Products</td>
<td>Drill down to Search Job Names to show all Products.</td>
</tr>
<tr>
<td>Systems</td>
<td>Drill down to Search Job Names to show all Systems.</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see module usage details.</td>
</tr>
</tbody>
</table>

Analyzer Discovery reports

This section contains a list of the discovery reports. For each report, two sample screens are provided. The first screen displays sample parameters, followed by sample output. Directly following these screens is a table which describes the function of each hyperlink in the output section of the report.

GKB Summary

Description: Summary of products in the Global Knowledge Base catalog

Batch name: /disc/gkb_summary

Sample parameters:
Table 41. GKB Summary hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery</td>
<td>Drill down to GKB Summary to see more Product Release Options</td>
</tr>
<tr>
<td>Release Options</td>
<td></td>
</tr>
<tr>
<td>Releases</td>
<td>Drill down to GKB Summary to see more Releases</td>
</tr>
<tr>
<td>Asset Versions</td>
<td>Drill down to GKB Summary to see more Asset Versions</td>
</tr>
</tbody>
</table>

**GKB Discovery Summary**

**Description:** Summary of products in the Global Knowledge Base catalog showing which products have been discovered

**Batch name:** /disc/gkb_disc_summary
Sample parameters:

Sample output:
Table 42. GKB Discovery Summary hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery</td>
<td>Drill down to GKB Summary to see more Product Release Options</td>
</tr>
<tr>
<td>Release Options</td>
<td>Drill down to GKB Summary to see more Releases</td>
</tr>
<tr>
<td>Discovery Status</td>
<td>Drill down to Product Libraries</td>
</tr>
<tr>
<td>Asset Versions</td>
<td>Drill down to GKB Summary to see more Asset Versions</td>
</tr>
</tbody>
</table>

**Discovered Product Summary**

**Description:** Summary of discovered products

**Batch name:** /disc/products

Sample parameters:

![Sample parameters](image)

Sample output:

![Sample output](image)
Table 43. Discovered Product Summary hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
<tr>
<td>Libraries</td>
<td>Drill down to Product Libraries</td>
</tr>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
</tbody>
</table>

**Discovered Product Audit Trail**

**Description:** Audit trail of discovered products

**Batch name:** /disc/audit_trail

Sample parameters:

![Sample output]

Sample output:
### Table 44. Discovered Product Audit Trail hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
<tr>
<td>Discovered</td>
<td>Drill down to Product Libraries</td>
</tr>
<tr>
<td>Installed</td>
<td></td>
</tr>
<tr>
<td>Usage Month</td>
<td>Drill down to Product Library Usage</td>
</tr>
</tbody>
</table>

### Discovered Product by System

**Description:** Cross-reference of discovered products by System

**Batch name:** `/disc/product_system`

**Sample parameters:**

![Discovered Product by System screenshot]
Table 45. Discovered Product by System hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries</td>
</tr>
</tbody>
</table>

**Discovered Product by System Group**

**Description:** Cross-reference of discovered products per System Group

**Batch name:** /disc/product_sysgroup
Sample parameters:

![Sample parameters image]

Sample output:

![Sample output image]

Table 46. Discovered Product by System Group hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
</tbody>
</table>
Table 46. Discovered Product by System Group hyperlinks (continued)

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries</td>
</tr>
</tbody>
</table>

### Discovered Product by Repository

**Description:** Cross-reference of discovered products by Repository

**Batch name:** /disc/product_repository

Sample parameters:

![Image of discovered product by repository parameters]

Sample output:

![Image of discovered product by repository output]
Table 47. Discovered Product by Repository hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
<tr>
<td>Module Events</td>
<td></td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries</td>
</tr>
</tbody>
</table>

**Discovered Product Use by Month**

**Description:** Cross-reference of discovered products used per Month by System

**Batch name:** /disc/product_use_month

Sample parameters:

![Image of parameters]

Sample output:

![Image of output]
Table 48. Discovered Product Use by Month hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Events</td>
<td>Drill down to Product Library Usual</td>
</tr>
<tr>
<td>User ID Count</td>
<td></td>
</tr>
<tr>
<td>Job Name Count</td>
<td></td>
</tr>
<tr>
<td>Job Account Count</td>
<td></td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Drill down to Product Libraries</td>
</tr>
</tbody>
</table>

End of Service Products

Description: Summary of discovered products that have a known End of Service date

Batch name: /disc/eos

Sample parameters:

Sample output:

Table 49. Discovered Product Use by Month hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
</tbody>
</table>
Table 49. Discovered Product Use by Month hyperlinks (continued)

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
</tbody>
</table>

**Product Libraries**

**Description:** Summary of discovered product libraries

**Batch name:** /disc/product_libraries

Sample parameters:

Sample output:

Table 50. Product Libraries hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
<tr>
<td>Product Modules</td>
<td>Drill down to Search Modules to show the Product modules in the library</td>
</tr>
<tr>
<td>Library Modules</td>
<td>Drill down to Search Modules to show all modules in the library</td>
</tr>
</tbody>
</table>
Table 50. Product Libraries hyperlinks (continued)

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library Usage</td>
</tr>
</tbody>
</table>

**Product Library Usage**

**Description:** Summary of discovered product library usage

**Batch name:** /disc/product_library_usage

Sample parameters:

![Sample parameters](image)

Sample output:

![Sample output](image)

Table 51. Product Library Usage hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Version</td>
<td>Drill down to Product Inventory</td>
</tr>
<tr>
<td>Events</td>
<td>Drill down to see module usage details</td>
</tr>
</tbody>
</table>
Volumes by System

**Description:** Summary of discovered library volumes by system

**Batch name:** /disc/volume_system

Sample parameters:

![Screenshot of Volumes by System interface](image)

Sample output:

![Screenshot of Volumes by System output](image)

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries, Discovered Installed</td>
<td>Drill down to Search Libraries for volume and system</td>
</tr>
</tbody>
</table>

**Data set HLQs by System**

**Description:** Summary of discovered data set high-level qualifiers by system

**Batch name:** /disc/hlq_system
Sample parameters:

![Parameter screenshot]

Sample output:

![Output screenshot]

**Table 53. Dataset HLQs by System hyperlinks**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries, Discovered</td>
<td>Drill down to Search Libraries</td>
</tr>
<tr>
<td>Installed</td>
<td></td>
</tr>
</tbody>
</table>

**Libraries by System**

Description: Summary of discovered libraries by system

Batch name: /disc/library_system
Sample parameters:

Sample output:

Table 54. Libraries by System hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries, Discovered</td>
<td>Drill down to Search Libraries</td>
</tr>
<tr>
<td>Installed</td>
<td></td>
</tr>
</tbody>
</table>

Search Libraries

**Description:** Search Libraries, with optional filters for library name mask, and containing module name mask

**Batch name:** /disc/search_libraries
Sample parameters:

![Search Libraries Parameters](image)

Sample output:

![Search Libraries Output](image)

**Table 55. Search Libraries hyperlinks**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to see module usage details</td>
</tr>
<tr>
<td>Found Modules</td>
<td>Drill down to Search Modules to see the found modules in the library</td>
</tr>
<tr>
<td>Modules</td>
<td>Drill down to Search Modules to see all modules in the library</td>
</tr>
</tbody>
</table>

**Search Modules**

**Description:** Search Modules with optional filters for module name mask and library name mask

**Batch name:** /disc/search_modules
Table 56. Search Modules hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Used</td>
<td>Drill down to see module usage details</td>
</tr>
</tbody>
</table>

**Job Use by Product Library**

**Description:** Product release usage summary by Job name and Product Library

**Batch name:** /disc/jobname_use_library
Sample parameters:

Sample output:

Usage Monitor File Detail

Description: Inspect usage detail in Usage Monitor raw data compressed files or ZCAT compressed files

Batch name: /disc/um_file
Analyzer administration

This section contains a list of the administration reports. For each report, two sample screens are provided. The first screen displays sample parameters, followed by sample output. Directly following these screens is a table which describes the function of each hyperlink in the output section of the report.

Define Repository Name

Description: Define the Repository name, which is shown in the report header and Repository selection parameter
Define System Groups

**Description:** Define System Groups which are used in the Product by System Group report

Sample parameters:
Libraries with Unknown Modules

**Description:** Libraries with modules that have not been identified to a product release

**Batch name:** /disc/product_library_usage

This report shows cases where Tivoli Asset Discovery for z/OS cannot accurately identify a product release for a module. Common reasons why this occurs are:

- The module is a customer developed application module, not a vendor product module.
- The library contains a small subset of product modules that have been copied from a product library.
- A new product release has been installed and it is not in the Global Knowledge Base.

In cases where the Match Engine cannot accurately identify a product release, it uses the following assignment logic:

1. IF at least 70% of the module names in the library match a known product, THEN
   - The Vendor, Product, and Option are set to the known product.
   - The Release is set to UNKNOWN.
2. ELSE the module name is in the Knowledge Base, THEN
   - The vendor is set to Not identified.
   - The Product, Option, and Release are set to UNKNOWN.
3. ELSE
   - The Vendor is set to Not identified.

Sample output:
The Product, Option, and Release are set to None.

Sample parameters:

![Sample parameters image]

Sample output:

![Sample output image]

Table 57. Search Libraries hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems</td>
<td>Drill down to Libraries with Unknown Modules showing all systems</td>
</tr>
<tr>
<td>Unknown Modules</td>
<td>Drill down to Search Modules to see all unknown modules in the library</td>
</tr>
<tr>
<td>Library Modules</td>
<td>Drill down to Search Modules to see all modules in the library</td>
</tr>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library usage for unknown modules</td>
</tr>
</tbody>
</table>

LKB Summary

Description: Summary of products in the Local Knowledge Base catalog.

Batch name: /admin/lkb_summary
Sample parameters:

![Image of Database Statistics](image)

Sample output:

![Image of Database Statistics](image)

Table 58. Search Libraries hyperlinks

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Releases</td>
<td>Drill down to LKB Summary to see all releases</td>
</tr>
<tr>
<td>Modules</td>
<td>Drill down to see all modules</td>
</tr>
<tr>
<td>Library</td>
<td>Drill down to Search Modules to see all modules in the library</td>
</tr>
<tr>
<td>Modules</td>
<td>Drill down to Search Modules to see all modules in the library</td>
</tr>
<tr>
<td>Last Used</td>
<td>Drill down to Product Library usage for unknown modules</td>
</tr>
</tbody>
</table>

Database Statistics

**Description:** Database statistics, including space used

**Batch name:** /admin/database_stats
Sample parameters:

![Database Statistics Parameters](image1.png)

Sample output:

![Database Statistics](image2.png)

**Table 59. Search Libraries hyperlinks**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBNAME</td>
<td>Drill down to browse table</td>
</tr>
</tbody>
</table>

**SQL Select Query**

**Description:** Ad hoc SQL Select query.

**Batch name:** /admin/sql_select
Support

Description: Tivoli Asset Discovery for z/OS Support Portal

URL: [http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Asset_Discovery_for_z~OS](http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Asset_Discovery_for_z~OS)
Download GKB

**Description:** Download the latest Global Knowledge Base from IBM Fix Central

Analyzer report parameters

This table describes all of the Analyzer Report parameters. See the Analyzer Reports section for which parameters are applicable to specific reports.

Table 60. Analyzer report parameters

<table>
<thead>
<tr>
<th>On-line Mode Parameter</th>
<th>Batch Mode Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclude Unknown Releases</td>
<td>exclunknown=on</td>
<td>Exclude data that has not been identified to a product release. For example, customer applications</td>
</tr>
<tr>
<td>Include Product identification</td>
<td>incident=on</td>
<td>Instead of only formatting the raw data, also query the database and show what product the module has been identified for</td>
</tr>
<tr>
<td>Job Account code search criteria</td>
<td>jobacc=...</td>
<td>Job Account Code search criteria</td>
</tr>
<tr>
<td>Job Name search criteria</td>
<td>jobname=...</td>
<td>Job Name search criteria</td>
</tr>
<tr>
<td>Library search criteria</td>
<td>library=...</td>
<td>Library search criteria</td>
</tr>
<tr>
<td>Machine</td>
<td>machine=...</td>
<td>Machine search criteria</td>
</tr>
<tr>
<td>Metric (Discovered Installed)</td>
<td>metric=DISCINST</td>
<td>Show Discovered Installed date</td>
</tr>
<tr>
<td>Metric (Module Events)</td>
<td>metric=EVENT</td>
<td>Show Module event count</td>
</tr>
<tr>
<td>Metric (Job Account Count)</td>
<td>metric=JAC</td>
<td>Show Job Account count</td>
</tr>
<tr>
<td>Metric (Job Name Count)</td>
<td>metric=JOBNAME</td>
<td>Show Job Name count</td>
</tr>
<tr>
<td>Metric (Last Used)</td>
<td>metric=LASTUSED</td>
<td>Show Last Used month</td>
</tr>
<tr>
<td>Metric (Libraries)</td>
<td>metric=LIBRARIES</td>
<td>Show library count</td>
</tr>
<tr>
<td>Metric (SCRT MSU)</td>
<td>metric=SCRT</td>
<td>Show SCRT MSU</td>
</tr>
<tr>
<td>Metric (User Id Count)</td>
<td>metric=USERID</td>
<td>Show User Id count</td>
</tr>
<tr>
<td>Module name search criteria</td>
<td>module=...</td>
<td>Module name search criteria</td>
</tr>
<tr>
<td>Month</td>
<td>month=...</td>
<td>Show data for specified month</td>
</tr>
<tr>
<td>Month From</td>
<td>monthfrom=...</td>
<td>Show data from specified month</td>
</tr>
<tr>
<td>Month To</td>
<td>monthto=...</td>
<td>Show data to specified month</td>
</tr>
<tr>
<td>MSU Type (Full Capacity MSU)</td>
<td>metric=MSU</td>
<td>Show Full Capacity MSU</td>
</tr>
<tr>
<td>MSU Type (Sub Capacity MSU)</td>
<td>metric=SUBCAPMSU</td>
<td>Show Sub-capacity MSU</td>
</tr>
<tr>
<td>Output format (Browser)</td>
<td>outfmt=</td>
<td>Output format is HTML with hyperlinks</td>
</tr>
<tr>
<td>Output format (Download CSV)</td>
<td>outfmt=csv</td>
<td>Output format is Comma Separated Value (CSV)</td>
</tr>
<tr>
<td>Output format (Download HTM)</td>
<td>outfmt=htm</td>
<td>Output format is HTML without hyperlinks</td>
</tr>
<tr>
<td>Output format (Download TXT)</td>
<td>outfmt=txt</td>
<td>Output format is Text line</td>
</tr>
<tr>
<td>Output format (Download XLS)</td>
<td>outfmt=xls</td>
<td>Output format is Excel 2002</td>
</tr>
<tr>
<td>Product</td>
<td>product=...</td>
<td>Asset Product search criteria</td>
</tr>
<tr>
<td>Product Release</td>
<td>prodrel=...</td>
<td>Discovery Product search criteria</td>
</tr>
<tr>
<td>Repository</td>
<td>repository=...</td>
<td>Repository</td>
</tr>
<tr>
<td>Repository Name</td>
<td>repname=...</td>
<td>Repository name</td>
</tr>
<tr>
<td>Repository tables only</td>
<td>showreponly=on</td>
<td>Show only tables for the Repository</td>
</tr>
<tr>
<td>Result row limit</td>
<td>outlimit=...</td>
<td>Limit the number of rows returned by the query</td>
</tr>
<tr>
<td>Scope (Libraries with any modules unknown)</td>
<td>scope=</td>
<td>Show libraries with any modules unknown</td>
</tr>
<tr>
<td>Scope (Libraries with all modules unknown)</td>
<td>scope=ALL</td>
<td>Show libraries with all modules unknown</td>
</tr>
</tbody>
</table>
### Table 60. Analyzer report parameters (continued)

<table>
<thead>
<tr>
<th>On-line Mode Parameter</th>
<th>Batch Mode Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope (Libraries with partial modules unknown)</td>
<td>scope=PARTIAL</td>
<td>Show libraries with partial modules unknown</td>
</tr>
<tr>
<td>Show all Asset Versions</td>
<td>showver=on</td>
<td>Show all Asset Versions</td>
</tr>
<tr>
<td>Show all Job Names</td>
<td>showalljobname=on</td>
<td>Show all Job Names</td>
</tr>
<tr>
<td>Show all Product Release Options</td>
<td>showoption=on</td>
<td>Show all Product Release Options</td>
</tr>
<tr>
<td>Show all Products</td>
<td>showallprod=on</td>
<td>Show all Products</td>
</tr>
<tr>
<td>Show all Releases</td>
<td>showrel=on</td>
<td>Show all Releases</td>
</tr>
<tr>
<td>Show all Systems</td>
<td>showallsys=on</td>
<td>Show all Systems</td>
</tr>
<tr>
<td>Show all User Ids</td>
<td>showalluserid=on</td>
<td>Show all User Ids</td>
</tr>
<tr>
<td>Show Asset Product Version Title</td>
<td>showvername=on</td>
<td>Show Asset Product Version Title</td>
</tr>
<tr>
<td>Show Features</td>
<td>showfeature=on</td>
<td>Show Features</td>
</tr>
<tr>
<td>Show Logical Partitions (LPARs)</td>
<td>showlpars=on</td>
<td>Show Logical Partitions (LPARs)</td>
</tr>
<tr>
<td>Show only APF libraries</td>
<td>apf=on</td>
<td>Show only APF libraries</td>
</tr>
<tr>
<td>Show only Vendors for discovered products</td>
<td>showdiscvendors=on</td>
<td>Show only Vendors for discovered products</td>
</tr>
<tr>
<td>Show Product Release Options</td>
<td>showoption=on</td>
<td>Show Product Release Options</td>
</tr>
<tr>
<td>Show product version title</td>
<td>showvername=on</td>
<td>Show product version title</td>
</tr>
<tr>
<td>SQL</td>
<td>select=...</td>
<td>SQL Select statement to issue</td>
</tr>
<tr>
<td>Status (Installed &amp; Not used)</td>
<td>status=Installed &amp; Not used</td>
<td>Audit report to include this status</td>
</tr>
<tr>
<td>Status (Installed &amp; Used (history))</td>
<td>status=Installed &amp; Used (history)</td>
<td>Audit report to include this status</td>
</tr>
<tr>
<td>Status (Installed &amp; Used (last))</td>
<td>status=Installed &amp; Used (last)</td>
<td>Audit report to include this status</td>
</tr>
<tr>
<td>Status (Uninstalled)</td>
<td>status=Un-installed</td>
<td>Audit report to include this status</td>
</tr>
<tr>
<td>Sysplex</td>
<td>sysplex=...</td>
<td>Sysplex search criteria</td>
</tr>
<tr>
<td>System</td>
<td>system=...</td>
<td>System search criteria</td>
</tr>
<tr>
<td>System Group</td>
<td>sysgroup=...</td>
<td>System Group search criteria</td>
</tr>
<tr>
<td>User Id search criteria</td>
<td>userid=...</td>
<td>User Id search criteria</td>
</tr>
<tr>
<td>Vendor</td>
<td>vendor=...</td>
<td>Vendor search criteria</td>
</tr>
<tr>
<td>Volume search criteria</td>
<td>volume=...</td>
<td>Volume search criteria</td>
</tr>
</tbody>
</table>

### Analyzer report output columns

#### Table 61. Analyzer Report output columns

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Feature</td>
<td>Name of product version feature</td>
</tr>
<tr>
<td>Asset Product Name</td>
<td>Name of product version. This is usually the same as the official title. The name is normalized so that similar product versions are shown together when in a sorted list.</td>
</tr>
<tr>
<td>Asset Version</td>
<td>Version of product</td>
</tr>
<tr>
<td>Asset Version Title</td>
<td>Title of product version</td>
</tr>
<tr>
<td>APF</td>
<td>Indicates that the library was discovered as being defined to z/OS Authorized Program Facility</td>
</tr>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Creation Date</td>
<td>Create date of the library</td>
</tr>
<tr>
<td>Date</td>
<td>Date raw usage data was monitored</td>
</tr>
<tr>
<td>Discovered First</td>
<td>Date the resource was first discovered</td>
</tr>
<tr>
<td>Discovered Installed</td>
<td>Date the product was first discovered as being installed</td>
</tr>
<tr>
<td>Discovered Last</td>
<td>Date the resource was last discovered</td>
</tr>
<tr>
<td>Discovered Uninstalled</td>
<td>Date the product was discovered to be missing after previously</td>
</tr>
<tr>
<td></td>
<td>been discovered as installed</td>
</tr>
<tr>
<td>Discovery Release Name</td>
<td>Name of discovered product release</td>
</tr>
<tr>
<td>Discovery Release Option</td>
<td>Name of discovered product option</td>
</tr>
<tr>
<td>Discovery Status</td>
<td>A value of “Found” means that the product has been discovered</td>
</tr>
<tr>
<td>End of Service</td>
<td>Date the vendor has said that the product release is no longer being supported</td>
</tr>
<tr>
<td>Events</td>
<td>The amount of times Usage Monitor has detected a module being loaded into</td>
</tr>
<tr>
<td></td>
<td>storage for execution by an address space</td>
</tr>
<tr>
<td>EID</td>
<td>Feature Entitlement Identifier</td>
</tr>
<tr>
<td>Feature</td>
<td>Name of product version feature</td>
</tr>
<tr>
<td>First Date</td>
<td>First date in month that usage was detected</td>
</tr>
<tr>
<td>First Discovered</td>
<td>Date resource was first discovered</td>
</tr>
<tr>
<td>First Used</td>
<td>First date in month that usage was detected</td>
</tr>
<tr>
<td>Found Modules</td>
<td>Number of modules found for the search criteria</td>
</tr>
<tr>
<td>FMID</td>
<td>Product FMID</td>
</tr>
<tr>
<td>GKB Level</td>
<td>Global Knowledge Base level</td>
</tr>
<tr>
<td>HLQ</td>
<td>Data set High Level Qualifier</td>
</tr>
<tr>
<td>HW Model</td>
<td>Hardware Model</td>
</tr>
<tr>
<td>HW Name</td>
<td>Hardware Name</td>
</tr>
<tr>
<td>HW Plant</td>
<td>Hardware Plant</td>
</tr>
<tr>
<td>HW Serial</td>
<td>Hardware Serial number</td>
</tr>
<tr>
<td>HW Type</td>
<td>Hardware Type</td>
</tr>
<tr>
<td>Job Account</td>
<td>Job Account Code</td>
</tr>
<tr>
<td>Job Id</td>
<td>Last JES job id that usage was detected</td>
</tr>
<tr>
<td>Job Name</td>
<td>Job Name</td>
</tr>
<tr>
<td>Last Date</td>
<td>Last date in month that usage was detected</td>
</tr>
<tr>
<td>Last Job Id</td>
<td>Last JES job id that usage was detected</td>
</tr>
<tr>
<td>Last Used</td>
<td>Last date in month that usage was detected</td>
</tr>
<tr>
<td>Library</td>
<td>Library name. z/OS data set name or USS path name</td>
</tr>
<tr>
<td>Library Modules</td>
<td>Number of modules in the library</td>
</tr>
<tr>
<td>LPAR Name</td>
<td>Name of Logical Partition</td>
</tr>
<tr>
<td>LPAR Number</td>
<td>Number of Logical Partition</td>
</tr>
<tr>
<td>LPARs</td>
<td>Count of Logical Partitions</td>
</tr>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Machine</td>
<td>Machine</td>
</tr>
<tr>
<td>Max MSU</td>
<td>Maximum MSU capacity</td>
</tr>
<tr>
<td>Max SCRT-MSU</td>
<td>Maximum Subcapacity MSU</td>
</tr>
<tr>
<td>Module</td>
<td>Module name</td>
</tr>
<tr>
<td>Module Size</td>
<td>Module size</td>
</tr>
<tr>
<td>Modules</td>
<td>Count of modules</td>
</tr>
<tr>
<td>Month</td>
<td>Month of usage</td>
</tr>
<tr>
<td>MSU</td>
<td>Million of Service Units capacity</td>
</tr>
<tr>
<td>Observed Deleted</td>
<td>Date the resource was observed to be deleted</td>
</tr>
<tr>
<td>Observed First</td>
<td>Date the resource was first observed</td>
</tr>
<tr>
<td>Observed Last</td>
<td>Date the resource was last observed</td>
</tr>
<tr>
<td>Product</td>
<td>Name of Product</td>
</tr>
<tr>
<td>Product Modules</td>
<td>Count of product modules</td>
</tr>
<tr>
<td>Product Option</td>
<td>Product Release Option name</td>
</tr>
<tr>
<td>Product Release Name</td>
<td>Product Release name</td>
</tr>
<tr>
<td>Product Release Option</td>
<td>Product Release Option name</td>
</tr>
<tr>
<td>PID</td>
<td>Product Identifier</td>
</tr>
<tr>
<td>Referenced Date</td>
<td>Date library was last referenced</td>
</tr>
<tr>
<td>Release</td>
<td>Release</td>
</tr>
<tr>
<td>Repository</td>
<td>Repository name</td>
</tr>
<tr>
<td>S&amp;S PID</td>
<td>Service Subscription Product Identifier</td>
</tr>
<tr>
<td>Status</td>
<td>Audit Trail status:</td>
</tr>
<tr>
<td></td>
<td>• Installed and Not used</td>
</tr>
<tr>
<td></td>
<td>• Installed and Used (history)</td>
</tr>
<tr>
<td></td>
<td>• Installed and Used (last)</td>
</tr>
<tr>
<td></td>
<td>• Uninstalled</td>
</tr>
<tr>
<td>Sysplex</td>
<td>Sysplex name</td>
</tr>
<tr>
<td>System</td>
<td>System name</td>
</tr>
<tr>
<td>System Group</td>
<td>System Group name</td>
</tr>
<tr>
<td>SCRT MSU</td>
<td>Sub-Capacity Reporting Tool MSU</td>
</tr>
<tr>
<td>Type</td>
<td>Node type:</td>
</tr>
<tr>
<td></td>
<td>• • HW</td>
</tr>
<tr>
<td></td>
<td>• • LPAR</td>
</tr>
<tr>
<td>Unknown Modules</td>
<td>Number of unknown modules</td>
</tr>
<tr>
<td>Usage Month</td>
<td>Month usage was detected</td>
</tr>
<tr>
<td>User Id</td>
<td>User id</td>
</tr>
<tr>
<td>User Name</td>
<td>User Name</td>
</tr>
<tr>
<td>Vendor</td>
<td>Vendor Name</td>
</tr>
<tr>
<td>Version</td>
<td>Product Version</td>
</tr>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Version</td>
<td>Product Version Title</td>
</tr>
<tr>
<td>Volume</td>
<td>Volume</td>
</tr>
</tbody>
</table>
### Appendix C. Repository table layouts

#### Table 62. NODE

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NODE_KEY</td>
<td>Char</td>
<td>32</td>
<td>Global Unique ID (GUID) for this entry</td>
</tr>
<tr>
<td>NODE_TYPE</td>
<td>Char</td>
<td>4</td>
<td>Entry Type: HW or LPAR</td>
</tr>
<tr>
<td>HW_TYPE</td>
<td>Char</td>
<td>4</td>
<td>System z Hardware Type, for example 2096</td>
</tr>
<tr>
<td>HW_MODEL</td>
<td>Char</td>
<td>3</td>
<td>System z Hardware Model, for example P03</td>
</tr>
<tr>
<td>HW_PLANT</td>
<td>Char</td>
<td>2</td>
<td>System z Hardware Plant, for example 02</td>
</tr>
<tr>
<td>HW_SERIAL</td>
<td>Char</td>
<td>12</td>
<td>System z Hardware Serial, for example. 000000013EED</td>
</tr>
<tr>
<td>HW_NAME</td>
<td>Char</td>
<td>10</td>
<td>Configured Hardware Name</td>
</tr>
<tr>
<td>HW_VENDOR</td>
<td>Char</td>
<td>10</td>
<td>System z Hardware Vendor, for example IBM</td>
</tr>
<tr>
<td>LPAR_NUMBER</td>
<td>Char</td>
<td>4</td>
<td>Logical Partition Number, for example 1</td>
</tr>
<tr>
<td>LPAR_NAME</td>
<td>Integer</td>
<td></td>
<td>Logical Partition Name, for example LPARSYS1</td>
</tr>
<tr>
<td>VMGUEST_NAME</td>
<td>Char</td>
<td>10</td>
<td>z/VM® Guest Name (if z/OS is running under z/VM)</td>
</tr>
<tr>
<td>HW_NODE_KEY</td>
<td>Char</td>
<td>32</td>
<td>NODE_KEY for related hardware parent</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
</tbody>
</table>

#### Table 63. NODE_CAPACITY

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NODE_KEY</td>
<td>Char</td>
<td>32</td>
<td>NODE GUID</td>
</tr>
<tr>
<td>PERIOD</td>
<td>Date</td>
<td></td>
<td>Month for this entry</td>
</tr>
<tr>
<td>START_TIME</td>
<td>Timestamp</td>
<td></td>
<td>First date that this entry is applicable for this Month</td>
</tr>
<tr>
<td>END_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Last date that this entry is applicable for this Month</td>
</tr>
<tr>
<td>METRIC_TYPE</td>
<td>Char</td>
<td>10</td>
<td>Metric Type: MSU, SUBCAPMSTY</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
<tr>
<td>QUANTITY</td>
<td>Integer</td>
<td></td>
<td>Metric Value</td>
</tr>
</tbody>
</table>

#### Table 64. PRODUCT

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW_KEY</td>
<td>Char</td>
<td>32</td>
<td>Global Unique ID (GUID) for this entry. For SW_TYPE=VERSION this will be the same value as VERSION_GUID For SW_TYPE=FEATURE this will be the same value as FEATURE_GUID</td>
</tr>
<tr>
<td>SW_TYPE</td>
<td>Char</td>
<td>8</td>
<td>Entry type - VERSION or FEATURE</td>
</tr>
<tr>
<td>VENDOR_NAME</td>
<td>Char</td>
<td>50</td>
<td>Vendor name</td>
</tr>
<tr>
<td>Column Name</td>
<td>Column Type</td>
<td>Column Length</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PRODUCT_NAME</td>
<td>Char</td>
<td>50</td>
<td>Product name, which is a normalized form of Version Name in order to group different versions of products under the same product name</td>
</tr>
<tr>
<td>VERSION</td>
<td>Integer</td>
<td></td>
<td>Version</td>
</tr>
<tr>
<td>VERSION_NAME</td>
<td>Char</td>
<td>50</td>
<td>Product Version Title</td>
</tr>
<tr>
<td>FEATURE_NAME</td>
<td>Char</td>
<td>50</td>
<td>Product Feature Title</td>
</tr>
<tr>
<td>PID</td>
<td>Char</td>
<td>16</td>
<td>Product Identifier</td>
</tr>
<tr>
<td>EID</td>
<td>Char</td>
<td>8</td>
<td>Entitlement Identifier for the Product Feature</td>
</tr>
<tr>
<td>SSPID</td>
<td>Char</td>
<td>8</td>
<td>Subscription &amp; Support Product Identifier</td>
</tr>
<tr>
<td>SSEID</td>
<td>Char</td>
<td>8</td>
<td>Subscription &amp; Support Entitlement Identifier for the Product Feature</td>
</tr>
<tr>
<td>PRICETYPE</td>
<td>Char</td>
<td>10</td>
<td>Price Type (not used in 7.2)</td>
</tr>
<tr>
<td>SUBCAPACITY</td>
<td>Char</td>
<td>20</td>
<td>IPLA Subcapacity type: Execution-based, Reference-based, z/OS-based, Not eligible, NULL</td>
</tr>
<tr>
<td>ICA</td>
<td>Char</td>
<td>1</td>
<td>Y or N: IBM Company Agreement license</td>
</tr>
<tr>
<td>IPLA</td>
<td>Char</td>
<td>1</td>
<td>Y or N: International Program License Agreement</td>
</tr>
<tr>
<td>VUE</td>
<td>Char</td>
<td>8</td>
<td>IPLA Value Unit Exhibit</td>
</tr>
<tr>
<td>VENDOR_GUID</td>
<td>Char</td>
<td>32</td>
<td>Globally Unique ID for VENDOR_NAME</td>
</tr>
<tr>
<td>PRODUCT_GUID</td>
<td>Char</td>
<td>32</td>
<td>Globally Unique ID for VENDOR_NAME + PRODUCT_NAME</td>
</tr>
<tr>
<td>VERSION_GUID</td>
<td>Char</td>
<td>32</td>
<td>Globally Unique ID for VENDOR_NAME + VERSION_NAME + VERSION</td>
</tr>
<tr>
<td>FEATURE_GUID</td>
<td>Char</td>
<td>32</td>
<td>Globally Unique ID for VENDOR_NAME + VERSION_NAME + VERSION + FEATURE_NAME</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW_KEY</td>
<td>Char</td>
<td>32</td>
<td>Product GUID</td>
</tr>
<tr>
<td>SYSTEM_KEY</td>
<td>Char</td>
<td>32</td>
<td>System GUID</td>
</tr>
<tr>
<td>INSTALL_DATE</td>
<td>Date</td>
<td></td>
<td>Date the product was first observed to be installed on this System</td>
</tr>
<tr>
<td>UNINSTALL_DATE</td>
<td>Date</td>
<td></td>
<td>Date the product was first observed to be missing from this System</td>
</tr>
<tr>
<td>LAST_USED_DATE</td>
<td>Date</td>
<td></td>
<td>Date the product was last used on this System</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW_KEY</td>
<td>Char</td>
<td>32</td>
<td>Product GUID</td>
</tr>
</tbody>
</table>
Table 66. PRODUCT_NODE_CAPACITY (continued)

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NODE_KEY</td>
<td>Date</td>
<td></td>
<td>Node GUID</td>
</tr>
<tr>
<td>PERIOD</td>
<td>Timestamp</td>
<td></td>
<td>Month for this entry</td>
</tr>
<tr>
<td>START_TIME</td>
<td>Timestamp</td>
<td></td>
<td>First date that this entry is applicable for this Month</td>
</tr>
<tr>
<td>END_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Last date that this entry is applicable for this Month</td>
</tr>
<tr>
<td>METRIC_TYPE</td>
<td>Integer</td>
<td></td>
<td>Metric Type: INSTALLED, JOBNAMES, MODULES, USERS, SUBCAPMSU</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
<tr>
<td>QUANTITY</td>
<td>Float</td>
<td></td>
<td>Metric Value</td>
</tr>
</tbody>
</table>

Table 67. PRODUCT_USE

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERIOD</td>
<td>Date</td>
<td>32</td>
<td>Month for this entry</td>
</tr>
<tr>
<td>SYSTEM_KEY</td>
<td>Char 32</td>
<td></td>
<td>System GUID</td>
</tr>
<tr>
<td>SW_KEY</td>
<td>Char 32</td>
<td></td>
<td>Product GUID</td>
</tr>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td></td>
<td>TLPAR.FLPARID for convenient linking with PRODUCT_USE_DETAIL</td>
</tr>
<tr>
<td>HW_NODE_KEY</td>
<td>Char 32</td>
<td></td>
<td>NODE GUID for Hardware NODE that this System was last running on in this month</td>
</tr>
<tr>
<td>USER_CNT</td>
<td>Integer</td>
<td>32</td>
<td>MAX distinct Userid count</td>
</tr>
<tr>
<td>JOBNAME_CNT</td>
<td>Integer</td>
<td>32</td>
<td>MAX distinct Job Name count</td>
</tr>
<tr>
<td>ACCOUNT_CNT</td>
<td>Integer</td>
<td></td>
<td>MAX distinct Account Code count</td>
</tr>
<tr>
<td>SCRT_MSU</td>
<td>Double</td>
<td></td>
<td>Sub-capacity Reporting Tool MSU (millions of service units per hour)</td>
</tr>
<tr>
<td>EVENT_CNT</td>
<td>Double</td>
<td></td>
<td>SUM of Module usage</td>
</tr>
<tr>
<td>START_DATE</td>
<td>Date</td>
<td></td>
<td>Date within this Period that usage was for first recorded</td>
</tr>
<tr>
<td>END_DATE</td>
<td>Date</td>
<td></td>
<td>Date within this Period that usage was for last recorded</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
</tbody>
</table>

Table 68. PRODUCT_USE_DETAIL

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERIOD</td>
<td>Date</td>
<td>32</td>
<td>Month for this entry</td>
</tr>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td>32</td>
<td>System TLPAR.FLPARID for convenient linking with PRODUCT_USE</td>
</tr>
<tr>
<td>VERSION_GUID</td>
<td>Char 32</td>
<td>32</td>
<td>Product Version GUID</td>
</tr>
<tr>
<td>FEATURE_GUID</td>
<td>Char 32</td>
<td>32</td>
<td>Product Feature GUID</td>
</tr>
<tr>
<td>USERNAME</td>
<td>Char 8</td>
<td>8</td>
<td>User ID</td>
</tr>
<tr>
<td>JOBNAME</td>
<td>Char 8</td>
<td>8</td>
<td>Job Name</td>
</tr>
<tr>
<td>ACCOUNTCODE</td>
<td>Char 20</td>
<td>20</td>
<td>First 20 chars of the Job Account Code</td>
</tr>
<tr>
<td>EVENT_CNT</td>
<td>Double</td>
<td></td>
<td>SUM of Module usage</td>
</tr>
</tbody>
</table>
Table 68. **PRODUCT_USE_DETAIL** (continued)

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>START_DATE</td>
<td>Date</td>
<td></td>
<td>Date within this Period that usage was for first recorded</td>
</tr>
<tr>
<td>END_DATE</td>
<td>Date</td>
<td></td>
<td>Date within this Period that usage was for last recorded</td>
</tr>
</tbody>
</table>

Table 69. **SYSTEM**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM_KEY</td>
<td>Char</td>
<td>32</td>
<td>Global Unique ID (GUID) for this entry</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
<tr>
<td>SID</td>
<td>Char</td>
<td>4</td>
<td>Product system ID. By default this is the SMFID. In cases where the same SMFID is used on different systems, the SID must be defined to a unique value for the customer enterprise in the Usage Monitor</td>
</tr>
<tr>
<td>SMFID</td>
<td>Char</td>
<td>4</td>
<td>z/OS SMF ID</td>
</tr>
<tr>
<td>SYSPLEX</td>
<td>Char</td>
<td>8</td>
<td>z/OS Sysplex name</td>
</tr>
</tbody>
</table>

Table 70. **SYSTEM_NODE**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM_KEY</td>
<td>Char</td>
<td>32</td>
<td>System GUID</td>
</tr>
<tr>
<td>NODE_KEY</td>
<td>Char</td>
<td>32</td>
<td>Node GUID</td>
</tr>
<tr>
<td>PERIOD</td>
<td>Date</td>
<td></td>
<td>Month this entry is for</td>
</tr>
<tr>
<td>START_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time it was first observed that this system is using this Node in this month period</td>
</tr>
<tr>
<td>END_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time it was last observed that this system is using this Node in this month period</td>
</tr>
<tr>
<td>LAST_UPDATE_TIME</td>
<td>Timestamp</td>
<td></td>
<td>Time stamp entry was last updated</td>
</tr>
</tbody>
</table>

Table 71. **TACCOUNT**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACOUNTID</td>
<td>Integer</td>
<td></td>
<td>Account ID</td>
</tr>
<tr>
<td>FACOUNTCODE</td>
<td>Char</td>
<td>20</td>
<td>Job Account Code, truncated to 20 characters</td>
</tr>
</tbody>
</table>

Table 72. **TINVCTL**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
<tr>
<td>FINVNAME</td>
<td>Char</td>
<td>24</td>
<td>Inventory ID name</td>
</tr>
<tr>
<td>FVERSIONGKBID</td>
<td>Char</td>
<td>15</td>
<td>Version of the Global KB used for matching</td>
</tr>
<tr>
<td>FIQDATE</td>
<td>Timestamp</td>
<td></td>
<td>Current date that the Inquisitor was run on the mainframe</td>
</tr>
<tr>
<td>FIQDATEFIRST</td>
<td>Timestamp</td>
<td></td>
<td>Date the Inquisitor was first run on the mainframe</td>
</tr>
<tr>
<td>FMIGDATEFIRST</td>
<td>Timestamp</td>
<td></td>
<td>Initial migrate date</td>
</tr>
<tr>
<td>Column Name</td>
<td>Column Type</td>
<td>Column Length</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>---------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>FMIGDATE</td>
<td>Timestamp</td>
<td></td>
<td>Date Inquisitor data was loaded to Repository</td>
</tr>
<tr>
<td>FSYSCPUID</td>
<td>Char 12</td>
<td></td>
<td>CPU Serial number</td>
</tr>
<tr>
<td>FSYSPLEXID</td>
<td>Char 8</td>
<td></td>
<td>Sysplex name</td>
</tr>
<tr>
<td>FSYSFMID</td>
<td>Char 8</td>
<td></td>
<td>System FMID</td>
</tr>
<tr>
<td>FSMFID</td>
<td>Char 20</td>
<td></td>
<td>SMF ID</td>
</tr>
<tr>
<td>FPREVINVID</td>
<td>Integer</td>
<td></td>
<td>Predecessor Inventory ID</td>
</tr>
<tr>
<td>FIQSYSPLEXUSE</td>
<td>Smallint</td>
<td></td>
<td>Was the SYSPLEX option turned on?</td>
</tr>
<tr>
<td>FVENDORCNT</td>
<td>Integer</td>
<td></td>
<td>Number of Vendors in Inventory</td>
</tr>
<tr>
<td>FPRODUCTCNT</td>
<td>Integer</td>
<td></td>
<td>Total Product count in Inventory ID</td>
</tr>
<tr>
<td>FLIBCNT</td>
<td>Integer</td>
<td></td>
<td>Total number of libraries in the inventory</td>
</tr>
<tr>
<td>FINVCONT</td>
<td>Char 1</td>
<td></td>
<td>Continuous Inventory</td>
</tr>
<tr>
<td>FINVTYPE</td>
<td>Smallint</td>
<td></td>
<td>Type of Inventory</td>
</tr>
<tr>
<td>FIQNAME</td>
<td>Varchar 254</td>
<td></td>
<td>Inquisitor Filename and path for DB2 schema name</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREGIONID</td>
<td>Integer</td>
<td></td>
<td>Parent Region ID</td>
</tr>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHISTORYID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
<tr>
<td>FIQDATE</td>
<td>Timestamp</td>
<td></td>
<td>Inquisitor date</td>
</tr>
<tr>
<td>FMIGTYPE</td>
<td>Smallint</td>
<td></td>
<td>Migrate type</td>
</tr>
<tr>
<td>FIPADDR</td>
<td>Varchar 254</td>
<td></td>
<td>List of IP Addresses</td>
</tr>
<tr>
<td>FSUBNETMASK</td>
<td>Varchar 254</td>
<td></td>
<td>List of Subnet Masks</td>
</tr>
<tr>
<td>FMACADDR</td>
<td>Varchar 254</td>
<td></td>
<td>List of MAC Addresses</td>
</tr>
<tr>
<td>FOSNAME</td>
<td>Varchar 254</td>
<td></td>
<td>Operating System Name</td>
</tr>
<tr>
<td>FSTYPE</td>
<td>Varchar 254</td>
<td></td>
<td>OS type e.g. &quot;WINNT&quot;</td>
</tr>
<tr>
<td>FOSVERSION</td>
<td>Varchar 254</td>
<td></td>
<td>Operating System Version</td>
</tr>
<tr>
<td>FOSBUILDNUMBER</td>
<td>Varchar 254</td>
<td></td>
<td>Build Number of OS</td>
</tr>
<tr>
<td>FOSCSDFVERSION</td>
<td>Varchar 254</td>
<td></td>
<td>Latest Service Pack Installed</td>
</tr>
<tr>
<td>FOSERNUM</td>
<td>Varchar 254</td>
<td></td>
<td>OS product serial identification number.</td>
</tr>
<tr>
<td>FOSINSTDATE</td>
<td>Timestamp</td>
<td></td>
<td>Date of OS installation. Null if unknown.</td>
</tr>
<tr>
<td>FOSLASTBOOTDATE</td>
<td>Timestamp</td>
<td></td>
<td>Date of OS last boot. Null if unknown.</td>
</tr>
<tr>
<td>FOSLASTBOOTDATE</td>
<td>Timestamp</td>
<td></td>
<td>Date of OS last boot. Null if unknown.</td>
</tr>
<tr>
<td>FTOTALMEMORY</td>
<td>Integer</td>
<td></td>
<td>Total Physical Memory in MB</td>
</tr>
<tr>
<td>FVERSIONGKB</td>
<td>Char 15</td>
<td></td>
<td>The Version the of the GKB the IQ was matched with.</td>
</tr>
<tr>
<td>Column Name</td>
<td>Column Type</td>
<td>Column Length</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>---------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>FJOBNAME</td>
<td>Char</td>
<td>8</td>
<td>Job Name</td>
</tr>
<tr>
<td>FJOBID</td>
<td>Integer</td>
<td></td>
<td>Job ID</td>
</tr>
<tr>
<td>FJOBTYPE</td>
<td>Char</td>
<td>6</td>
<td>Job Type</td>
</tr>
</tbody>
</table>

**Table 76. TLIBRARY**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIBID</td>
<td>Integer</td>
<td></td>
<td>Library ID</td>
</tr>
<tr>
<td>FLIBNAME</td>
<td>Char</td>
<td>128</td>
<td>Library name</td>
</tr>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
<tr>
<td>FCREATIONDATE</td>
<td>Timestamp</td>
<td></td>
<td>Library creation date on Mainframe</td>
</tr>
<tr>
<td>FLIBDEVNUM</td>
<td>Char</td>
<td>4</td>
<td>DASD device number</td>
</tr>
<tr>
<td>FREFERENCEDATE</td>
<td>Timestamp</td>
<td></td>
<td>Date library last referenced</td>
</tr>
<tr>
<td>FLIBVOLSER</td>
<td>Char</td>
<td>8</td>
<td>Volser library resides on</td>
</tr>
<tr>
<td>FTRACKSALLOC</td>
<td>Char</td>
<td>10</td>
<td>Number of allocated tracks</td>
</tr>
<tr>
<td>FTRACKSUSED</td>
<td>Char</td>
<td>10</td>
<td>Number of used tracks</td>
</tr>
<tr>
<td>FORIGIN</td>
<td>Char</td>
<td>1</td>
<td>Blank - PDS, E - PDSE, V - VTOC</td>
</tr>
<tr>
<td>FCATALOG</td>
<td>Char</td>
<td>1</td>
<td>S - SMS managed, C - Cataloged, U uncataloged W - cataloged on wrong volume</td>
</tr>
<tr>
<td>FLINKLIST</td>
<td>Char</td>
<td>1</td>
<td>Is this a link listed library?</td>
</tr>
<tr>
<td>FLINKPACK</td>
<td>Char</td>
<td>1</td>
<td>Is this library in the Linkpack</td>
</tr>
<tr>
<td>FAPFAUTH</td>
<td>Char</td>
<td>1</td>
<td>Is this library APF authorized</td>
</tr>
<tr>
<td>FLASTUSAGE</td>
<td>Date</td>
<td></td>
<td>1st month of the most recent usage applied to any module in this library</td>
</tr>
<tr>
<td>FUSEFLAG</td>
<td>Smallint</td>
<td></td>
<td>Flag for library usage</td>
</tr>
<tr>
<td>FMODCNT</td>
<td>Integer</td>
<td></td>
<td>Number of modules in library</td>
</tr>
<tr>
<td>FOBSEVEREFIRST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was first observed</td>
</tr>
<tr>
<td>FOBSEVERELAST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was last observed</td>
</tr>
<tr>
<td>FOBSEVEREDELETED</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was deleted from Inquisitor data.</td>
</tr>
<tr>
<td>FCHECKSUM</td>
<td>Char</td>
<td>40</td>
<td>A checksum of module names and sizes in a given library used to determine whether a library has changed.</td>
</tr>
<tr>
<td>FSTORAGEGROUP</td>
<td>Char</td>
<td>8</td>
<td>The storage group the library belongs to</td>
</tr>
</tbody>
</table>

**Table 77. TLIBSYS**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIBID</td>
<td>Integer</td>
<td></td>
<td>Library ID</td>
</tr>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FOBSEVEREFIRST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was first observed</td>
</tr>
<tr>
<td>FOBSEVERELAST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was last observed</td>
</tr>
<tr>
<td>FOBSEVEREDELETED</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that library was deleted from Inquisitor data.</td>
</tr>
</tbody>
</table>
Table 78. TLPAR

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FLPARNNAME</td>
<td>Char 20</td>
<td></td>
<td>Name of the LPAR</td>
</tr>
<tr>
<td>FUSEFLAG</td>
<td>Smallint</td>
<td></td>
<td>Indicates if usage has been attributed to this LPAR</td>
</tr>
<tr>
<td>FEDITFLAG</td>
<td>Smallint</td>
<td></td>
<td>Has this LPAR record been updated manually</td>
</tr>
<tr>
<td>FMANF</td>
<td>Char 10</td>
<td></td>
<td>Machine manufacturer</td>
</tr>
<tr>
<td>FMACHINE</td>
<td>Char 12</td>
<td></td>
<td>CPU Model</td>
</tr>
<tr>
<td>FSERIALNO</td>
<td>Char 12</td>
<td></td>
<td>CPU Serial number</td>
</tr>
<tr>
<td>FSYSPLEXID</td>
<td>Char 8</td>
<td></td>
<td>Sysplex name if in a Sysplex</td>
</tr>
<tr>
<td>FMIPS</td>
<td>Integer</td>
<td></td>
<td>Number of MIPS for LPAR</td>
</tr>
</tbody>
</table>

Table 79. TMODULE

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMODID</td>
<td>Integer</td>
<td></td>
<td>Module ID</td>
</tr>
<tr>
<td>FMODNAME</td>
<td>Char 40</td>
<td></td>
<td>Module name</td>
</tr>
<tr>
<td>FLIBID</td>
<td>Integer</td>
<td></td>
<td>Library ID</td>
</tr>
<tr>
<td>FPOVLIBID</td>
<td>Integer</td>
<td></td>
<td>Product Library ID</td>
</tr>
<tr>
<td>FMODFLAG</td>
<td>Smallint</td>
<td></td>
<td>Module indication flag as to which product version it belongs to and whether it has been superseded.</td>
</tr>
<tr>
<td>FFMID</td>
<td>Char 12</td>
<td></td>
<td>FMID</td>
</tr>
<tr>
<td>FMODSIZE</td>
<td>Char 8</td>
<td></td>
<td>Module size</td>
</tr>
<tr>
<td>FUSEFLAG</td>
<td>Smallint</td>
<td></td>
<td>Flag for module usage</td>
</tr>
<tr>
<td>FMODTYPE</td>
<td>Smallint</td>
<td></td>
<td>Type of module</td>
</tr>
<tr>
<td>FOBserveFIRST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that module was first observed</td>
</tr>
<tr>
<td>FOBserveLAST</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that module was last observed</td>
</tr>
<tr>
<td>FOBserveDELETE</td>
<td>Timestamp</td>
<td></td>
<td>Date and time that module was deleted from Inquisitor data</td>
</tr>
</tbody>
</table>

Table 80. TPARAM

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FKEY</td>
<td>Char 64</td>
<td></td>
<td>Parameter Key</td>
</tr>
<tr>
<td>FVALUE</td>
<td>Char 254</td>
<td></td>
<td>Parameter Value</td>
</tr>
</tbody>
</table>

Table 81. TPERIODS

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td></td>
<td>Calendar month for usage</td>
</tr>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
<tr>
<td>FSUMMARISED</td>
<td>Smallint</td>
<td></td>
<td>Summary status</td>
</tr>
</tbody>
</table>

Table 82. TPOVINV
<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPOVINVID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FPOVID</td>
<td>Integer</td>
<td></td>
<td>Product ID</td>
</tr>
<tr>
<td>FINVID</td>
<td>Integer</td>
<td></td>
<td>Inventory ID</td>
</tr>
<tr>
<td>FPOVGID</td>
<td>Integer</td>
<td></td>
<td>Global Knowledge Base Version ID</td>
</tr>
<tr>
<td>FOBSERVEFIRST</td>
<td>Timestamp</td>
<td></td>
<td>First time observation was made</td>
</tr>
<tr>
<td>FOBSERVELAST</td>
<td>Timestamp</td>
<td></td>
<td>Last time observation was made</td>
</tr>
<tr>
<td>FOBSERVEDELETED</td>
<td>Timestamp</td>
<td></td>
<td>First time observation was not found in this library</td>
</tr>
<tr>
<td>FPRODUCTID</td>
<td>Integer</td>
<td></td>
<td>Product ID</td>
</tr>
<tr>
<td>FVENDORID</td>
<td>Integer</td>
<td></td>
<td>Vendor ID</td>
</tr>
<tr>
<td>FPRODINVID</td>
<td>Integer</td>
<td></td>
<td>Product and Inventory ID</td>
</tr>
<tr>
<td>FPATCHLIST</td>
<td>Varchar</td>
<td>254</td>
<td>List of current patches applied to z/OS UNIX product.</td>
</tr>
</tbody>
</table>

**Table 83. TPOVLIB**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPOVLIBID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FOPOVINVID</td>
<td>Integer</td>
<td></td>
<td>Product inventory ID</td>
</tr>
<tr>
<td>FLIBID</td>
<td>Integer</td>
<td></td>
<td>Library ID</td>
</tr>
<tr>
<td>FPOVLIBPID</td>
<td>Integer</td>
<td></td>
<td>Previous Product Version ID</td>
</tr>
<tr>
<td>FMATCHCODE</td>
<td>Char</td>
<td>3</td>
<td>Matching code</td>
</tr>
<tr>
<td>FMATCHID</td>
<td>Integer</td>
<td></td>
<td>Link to Inquisitor Decision table</td>
</tr>
<tr>
<td>FPRODUCTPCT</td>
<td>Integer</td>
<td></td>
<td>Product percentage used during match</td>
</tr>
<tr>
<td>FVERSIONPCT</td>
<td>Integer</td>
<td></td>
<td>Version percentage used during match</td>
</tr>
<tr>
<td>FOBSERVEFIRST</td>
<td>Timestamp</td>
<td></td>
<td>First time observation was made</td>
</tr>
<tr>
<td>FOBSERVELAST</td>
<td>Timestamp</td>
<td></td>
<td>Last time observation was made</td>
</tr>
<tr>
<td>FOBSERVEDELETED</td>
<td>Timestamp</td>
<td></td>
<td>First time observation was not found in this library</td>
</tr>
<tr>
<td>FMODCNT</td>
<td>Integer</td>
<td></td>
<td>Number of load modules in library for product</td>
</tr>
</tbody>
</table>

**Table 84. TPRODUCT**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPRODUCTID</td>
<td>Integer</td>
<td></td>
<td>Product ID</td>
</tr>
<tr>
<td>FPRODUCTNAME</td>
<td>Char</td>
<td>50</td>
<td>Product Name (could be alias name)</td>
</tr>
<tr>
<td>FGLOBALNAME</td>
<td>Char</td>
<td>50</td>
<td>Product Name (always Global Name if Alias is used)</td>
</tr>
<tr>
<td>FOPTIONNAME</td>
<td>Char</td>
<td>30</td>
<td>Option Name</td>
</tr>
<tr>
<td>FVENDORID</td>
<td>Integer</td>
<td></td>
<td>Vendor ID</td>
</tr>
<tr>
<td>FPRODSTATUS</td>
<td>Smallint</td>
<td></td>
<td>Billable Status</td>
</tr>
<tr>
<td>FCATEGORY</td>
<td>Char</td>
<td>30</td>
<td>Product Category</td>
</tr>
<tr>
<td>FDESCRIPTION</td>
<td>Varchar</td>
<td>254</td>
<td>Product Description</td>
</tr>
</tbody>
</table>
### Table 85. TREGCLASS

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREGCLASSID</td>
<td>Smallint</td>
<td></td>
<td>Region Class ID</td>
</tr>
<tr>
<td>FCLASSNAME</td>
<td>Char</td>
<td>24</td>
<td>Region classification title</td>
</tr>
<tr>
<td>FICONID</td>
<td>Smallint</td>
<td></td>
<td>Icon Lookup</td>
</tr>
</tbody>
</table>

### Table 86. TREGION

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREGIONID</td>
<td>Integer</td>
<td></td>
<td>Region ID</td>
</tr>
<tr>
<td>FREGIONNAME</td>
<td>Char</td>
<td>64</td>
<td>Region Name</td>
</tr>
<tr>
<td>FPARENTID</td>
<td>Integer</td>
<td></td>
<td>Owning Region ID</td>
</tr>
<tr>
<td>FREGCLASSID</td>
<td>Smallint</td>
<td></td>
<td>Region category</td>
</tr>
<tr>
<td>FSEQ</td>
<td>Smallint</td>
<td></td>
<td>Sequence number for regions</td>
</tr>
</tbody>
</table>

### Table 87. TREGLEAF

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPARENTID</td>
<td>Integer</td>
<td></td>
<td>Parent Region ID</td>
</tr>
<tr>
<td>FREGIONID</td>
<td>Integer</td>
<td></td>
<td>Region ID</td>
</tr>
</tbody>
</table>

### Table 88. TUIMPORTCTRL

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINVID1</td>
<td>Integer</td>
<td></td>
<td>Primary Inventory ID</td>
</tr>
<tr>
<td>FINVID2</td>
<td>Integer</td>
<td></td>
<td>Second ID</td>
</tr>
<tr>
<td>FINVID3</td>
<td>Integer</td>
<td></td>
<td>Third ID</td>
</tr>
<tr>
<td>FINVID4</td>
<td>Integer</td>
<td></td>
<td>Fourth ID</td>
</tr>
<tr>
<td>FINVID5</td>
<td>Integer</td>
<td></td>
<td>Fifth ID</td>
</tr>
<tr>
<td>FINVID6</td>
<td>Integer</td>
<td></td>
<td>Sixth ID</td>
</tr>
<tr>
<td>FINVID7</td>
<td>Integer</td>
<td></td>
<td>Seventh ID</td>
</tr>
<tr>
<td>FINVID8</td>
<td>Integer</td>
<td></td>
<td>Eighth ID</td>
</tr>
<tr>
<td>FMODVPOV</td>
<td>Char</td>
<td>1</td>
<td>If non 0 allows relaxed VPOV assignment</td>
</tr>
<tr>
<td>FLPARNAME</td>
<td>Char</td>
<td>20</td>
<td>LPAR name</td>
</tr>
</tbody>
</table>

### Table 89. TUSELIB

| Column Name  | Column Type | Column Length | Description | |
|--------------|-------------|---------------|-------------|
| FUSELIBID    | Integer     |               | Unique ID   |
| FLPARID      | Integer     |               | LPAR ID     |
| FLIBID       | Integer     |               | Library ID  |

### Table 90. TUSEMTD

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMTDID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FMODID</td>
<td>Integer</td>
<td></td>
<td>Module ID</td>
</tr>
</tbody>
</table>
### Table 90. TUSEMTD (continued)

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FJOBID</td>
<td>Integer</td>
<td>Job ID</td>
</tr>
<tr>
<td>FUSERID</td>
<td>Integer</td>
<td>User ID</td>
</tr>
<tr>
<td>FPOVLIBID</td>
<td>Integer</td>
<td>Product Library ID</td>
</tr>
<tr>
<td>FEVENTCNT</td>
<td>Float</td>
<td>Total calls to module for this month</td>
</tr>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td>Calendar month that usage occurred</td>
</tr>
<tr>
<td>FFIRSTDATE</td>
<td>Date</td>
<td>First day of usage in the month</td>
</tr>
<tr>
<td>FLASTDATE</td>
<td>Date</td>
<td>Last day of usage in the month</td>
</tr>
<tr>
<td>FPROVIDER</td>
<td>Char 4</td>
<td>Provider Service</td>
</tr>
<tr>
<td>FPOVINVID</td>
<td>Integer</td>
<td>Unique ID</td>
</tr>
<tr>
<td>FPRODINVID</td>
<td>Integer</td>
<td>Product and Inventory ID</td>
</tr>
<tr>
<td>FACCOUNTID</td>
<td>Integer</td>
<td>Account ID</td>
</tr>
<tr>
<td>FJESID</td>
<td>Char 8</td>
<td>Last JES job ID updated for the month</td>
</tr>
</tbody>
</table>

### Table 91. TUSEPO

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSEPOVINVID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FLARPID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FPRODINVID</td>
<td>Integer</td>
<td></td>
<td>Product &amp; inventory ID</td>
</tr>
<tr>
<td>FJOBCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Jobs for a product</td>
</tr>
<tr>
<td>FUSERCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Users for a product</td>
</tr>
<tr>
<td>FEVENTCNT1</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product current month</td>
</tr>
<tr>
<td>FEVENTCNT3</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 3 month</td>
</tr>
<tr>
<td>FEVENTCNT6</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 4-6 month</td>
</tr>
<tr>
<td>FEVENTCNT9</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 7-9 month</td>
</tr>
<tr>
<td>FEVENTCNT12</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 10-12 month</td>
</tr>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td></td>
<td>Calendar month in which usage occurred</td>
</tr>
<tr>
<td>FFIRSTUSED</td>
<td>Date</td>
<td></td>
<td>The earliest usage date in month</td>
</tr>
<tr>
<td>FLASTUSED</td>
<td>Date</td>
<td></td>
<td>The most recent usage date in month</td>
</tr>
</tbody>
</table>

### Table 92. TUSEPOV

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSEPOVINVID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FLARPID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FPOVINVID</td>
<td>Integer</td>
<td></td>
<td>POVINV ID</td>
</tr>
<tr>
<td>FJOBCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Jobs for a product</td>
</tr>
<tr>
<td>FUSERCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Users for a product</td>
</tr>
<tr>
<td>FEVENTCNT1</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product current month</td>
</tr>
<tr>
<td>FEVENTCNT3</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 3 month</td>
</tr>
</tbody>
</table>
### Table 92. TUSEPOV (continued)

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEVENTCNT6</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 4-6 month</td>
</tr>
<tr>
<td>FEVENTCNT9</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 7-9 month</td>
</tr>
<tr>
<td>FEVENTCNT12</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 10-12 month</td>
</tr>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td></td>
<td>Calendar month in which usage occurred</td>
</tr>
<tr>
<td>FFIRSTUSED</td>
<td>Date</td>
<td></td>
<td>The earliest usage date in month</td>
</tr>
<tr>
<td>FLASTUSED</td>
<td>Date</td>
<td></td>
<td>The most recent usage date in month</td>
</tr>
<tr>
<td>FPRODINVID</td>
<td>Integer</td>
<td></td>
<td>Product Inventory ID</td>
</tr>
<tr>
<td>FSEQNO</td>
<td>Smallint</td>
<td></td>
<td>Internal use only</td>
</tr>
<tr>
<td>FACCCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct account codes</td>
</tr>
</tbody>
</table>

### Table 93. TUSEPOVLIB

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSEPOVLIBID</td>
<td>Integer</td>
<td></td>
<td>Unique ID</td>
</tr>
<tr>
<td>FLARPID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FPOVLIBID</td>
<td>Integer</td>
<td></td>
<td>POVLIB ID</td>
</tr>
<tr>
<td>FJOBCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Jobs for a product</td>
</tr>
<tr>
<td>FUSERCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct Users for a product</td>
</tr>
<tr>
<td>FEVENTCNT1</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product current month</td>
</tr>
<tr>
<td>FEVENTCNT3</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 3 month</td>
</tr>
<tr>
<td>FEVENTCNT6</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 4-6 month</td>
</tr>
<tr>
<td>FEVENTCNT9</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 7-9 month</td>
</tr>
<tr>
<td>FEVENTCNT12</td>
<td>Float</td>
<td></td>
<td>Sum of calls to this product previous 10-12 month</td>
</tr>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td></td>
<td>Calendar month in which usage occurred</td>
</tr>
<tr>
<td>FFIRSTUSED</td>
<td>Date</td>
<td></td>
<td>The earliest usage date in month</td>
</tr>
<tr>
<td>FLASTUSED</td>
<td>Date</td>
<td></td>
<td>The most recent usage date in month</td>
</tr>
<tr>
<td>FSEQNO</td>
<td>Smallint</td>
<td></td>
<td>Internal use only</td>
</tr>
<tr>
<td>FACCCNT</td>
<td>Integer</td>
<td></td>
<td>Number of distinct account codes</td>
</tr>
</tbody>
</table>

### Table 94. TUSEPRSS

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSEPRSID</td>
<td>Integer</td>
<td></td>
<td>Unique ID for TUSEPRSS table</td>
</tr>
<tr>
<td>FREGVEND</td>
<td>Char</td>
<td>16</td>
<td>Product Registration Vendor name</td>
</tr>
<tr>
<td>FREGPROD</td>
<td>Char</td>
<td>16</td>
<td>Product Registration Product name</td>
</tr>
<tr>
<td>FREGFEAT</td>
<td>Char</td>
<td>16</td>
<td>Product Registration Feature name</td>
</tr>
<tr>
<td>FREGVRN</td>
<td>Char</td>
<td>6</td>
<td>Product Registration Version</td>
</tr>
<tr>
<td>FREGPID</td>
<td>Char</td>
<td>8</td>
<td>Product Registration Product identifier</td>
</tr>
<tr>
<td>FREGFLAGS</td>
<td>Char</td>
<td>8</td>
<td>Product Registration flags</td>
</tr>
</tbody>
</table>
Table 94. TUSEPRS (continued)

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLPARID</td>
<td>Integer</td>
<td></td>
<td>LPAR ID</td>
</tr>
<tr>
<td>FPERIOD</td>
<td>Date</td>
<td></td>
<td>Calendar month when usage occurred</td>
</tr>
<tr>
<td>FFIRSTDATE</td>
<td>Date</td>
<td></td>
<td>The earliest usage date in month</td>
</tr>
<tr>
<td>FLASTDATE</td>
<td>Date</td>
<td></td>
<td>The most recent usage date in month</td>
</tr>
</tbody>
</table>

Table 95. TUSERDATA

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSERID</td>
<td>Integer</td>
<td></td>
<td>User ID</td>
</tr>
<tr>
<td>FUSERNAME</td>
<td>Char</td>
<td>10</td>
<td>User Name</td>
</tr>
<tr>
<td>FORGNAME</td>
<td>Char</td>
<td>8</td>
<td>Owning Organization</td>
</tr>
<tr>
<td>FREALNAME</td>
<td>Char</td>
<td>20</td>
<td>Real person’s name</td>
</tr>
</tbody>
</table>

Table 96. TVENDOR

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVENDORID</td>
<td>Integer</td>
<td></td>
<td>Vendor ID</td>
</tr>
<tr>
<td>FVENDORNAME</td>
<td>Char</td>
<td>50</td>
<td>Vendor Name (could be alias name)</td>
</tr>
<tr>
<td>FGLOBALNAME</td>
<td>Char</td>
<td>30</td>
<td>Vendor Name (always Global Name if Alias is used)</td>
</tr>
<tr>
<td>FVENDORGUID</td>
<td>Char</td>
<td>32</td>
<td>Vendor globally unique ID</td>
</tr>
</tbody>
</table>

Table 97. TVERSION

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Type</th>
<th>Column Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPOVID</td>
<td>Integer</td>
<td></td>
<td>Version ID</td>
</tr>
<tr>
<td>FVERSIONNAME</td>
<td>Char</td>
<td>44</td>
<td>Version name</td>
</tr>
<tr>
<td>FPPNUMNAME</td>
<td>Char</td>
<td>16</td>
<td>PPNUM</td>
</tr>
<tr>
<td>FPRODUCTID</td>
<td>Integer</td>
<td></td>
<td>Product Option ID</td>
</tr>
<tr>
<td>FMINUSAGE</td>
<td>Float</td>
<td></td>
<td>Minimum usage threshold</td>
</tr>
<tr>
<td>FVERSIONGUID</td>
<td>Char</td>
<td>32</td>
<td>Product version globally unique identifier. PRODUCT.SW_KEY for SW_TYPE = 'VERSION'</td>
</tr>
<tr>
<td>FFEATUREGUID</td>
<td>Char</td>
<td>32</td>
<td>Product feature globally unique identifier. PRODUCT.SW_KEY for SW_TYPE = 'FEATURE'</td>
</tr>
</tbody>
</table>
Appendix D. Performance and tuning

Initial space allocation
This section is useful for the database administrator who must determine space requirements for Tivoli Asset Discovery for z/OS. Listed in the table are guidelines for the initial spaces allocation based on the number of LPARs. The value for the SIZE parameter is specified in HSISCUST.

Table 98. Initial space allocation for the product

<table>
<thead>
<tr>
<th>SIZE</th>
<th>Initial space allocation</th>
<th>Number of LPARs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2200 cylinders</td>
<td>1-10</td>
</tr>
<tr>
<td>2</td>
<td>5500 cylinders</td>
<td>11-20</td>
</tr>
<tr>
<td>3</td>
<td>17500 cylinders</td>
<td>&gt;20</td>
</tr>
</tbody>
</table>

Table 99. Initial space allocations for the 4 largest tables

<table>
<thead>
<tr>
<th>SIZE</th>
<th>WMZIQTS (Inquisitor modules)</th>
<th>VMODULE (Repository modules)</th>
<th>VUSEMTD (Repository usage records)</th>
<th>VPRODDET (Repository Product Use Detail Records)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>504,000 KB for 1,000,000 modules</td>
<td>120,960 KB for 1,000,000 modules</td>
<td>72,000 KB for 1,000,000 records</td>
<td>13,680 KB for 100,000 records</td>
</tr>
<tr>
<td>2</td>
<td>1,260,000 KB for 2,500,000 modules</td>
<td>302,400 KB for 2,500,000 modules</td>
<td>432,000 KB for 6,000,000 records</td>
<td>68,400 KB for 500,000 records</td>
</tr>
<tr>
<td>3</td>
<td>3,528,000 KB for 7,000,000 modules</td>
<td>846,720 KB for 7,000,000 modules</td>
<td>1,800,000 KB for 25,000,000 records</td>
<td>684,000 KB for 5,000,000 records</td>
</tr>
</tbody>
</table>

Note: For some sites, table space VUSEMTD can be large. For performance and space management requirements, you should consider defining the table space as a partitioned table space.

Choosing a DB2 subsystem for this product
The DB2 resources required for this product do not need to be defined in a production DB2 subsystem in order to minimize competition for mainframe resources in the DB2 production environments. To avoid competing for mainframe resources, run the jobs for the Inquisitor Import and Usage Import during off-peak periods. In addition, run the utilities Usage Summary and Usage Deletion during off-peak periods.

LOGGED
Parameter LOGGED (as defined in HSISCUST) when set to N, can be used only in version 9 (new function mode), or later. After implementing the product, changes to parameters in DB2 objects can be made with the ALTER TABLESPACE or ALTER INDEX DB2 commands.

Buffer pools
By allocating the appropriate buffer pool to the respective table spaces and indexes, as defined in HSISCUST, you can manage your system resources accordingly. For DB2 performance, first investigate the buffer pools. Check with your site specialist on the types and size of buffer pools that are defined for this product.

Space allocation and utilization
In terms of space utilization, “-1” has been set for all SECQTY to enforce “Sliding Secondary Extents”. This enables DB2 to manage secondary extents efficiently, and minimizes extension failures. You need to extrapolate the
PRIQTY for the table spaces and indexes for the large tables according to your requirements. Definitions for these DB2 objects are listed in the respective jobs in JCLLIB.

Repository tables with the biggest impact on performance due to size are TMODULE, TUSEMTD, and TJOBDATA. Data for the TMODULE table is populated during Inquisitor Import process. TUSEMTD, and TJOBDATA tables are populated during Usage Import. For example, you might have more than 300 million usage records in the TUSEMTD table, and more than 20 million modules identified in the TMODULE table. To minimize space utilization and improve SQL query performance, you must prune your usage records by running the Usage Deletion job HSISUDEL.

Declared Global Temporary tables
Declared Global Temporary tables are used in the Match Engine job, and also during the Asset Aggregator process. The TEMP table spaces must be large enough to handle these two processes. In DB2 Version 8, the DSNDB07 work file database does not have 8 K page size defined as part of the DB2 installation. If you are running version 8, you need to define at least one 8 K table space in a TEMP database.

Work file database
When you run some of the SQL queries, they can produce a large amount of output. In order to avoid any excessive output, increase the number and size of the table spaces in the work file database.

Reorganization and RUNSTATS
It is important to run reorganization of the Repository table spaces periodically, especially after Inquisitor Imports, Usage Imports, and Usage Deletion. After reorganization of the Repository table spaces, it is also a good idea to run RUNSTATS for these table spaces.
Appendix E. Reporting with Tivoli Common Reporting

Appendix E shows how the Tivoli Asset Discovery for z/OS report package is loaded into the Tivoli Common Reporting product, connectivity to the Repository by way of the database, and how it is used to produce reports.

**Note:** The supplied Cognos based report package only contains a Cognos Stage 1 model template. It does not contain any pre-configured reports.

The information in this appendix contains screen captures. You might experience some variation if your choice of browser and the level of Tivoli Common Reporting differ. The levels used in this section are:

- Microsoft Internet Explorer Version: 8.0.6001.18702
- Tivoli Common Reporting Version 2.1
- Tivoli Integrated Portal Build Number cfl11021.10
- Microsoft Windows XP Professional Version 2002 Service Pack 3

For instructions on how to use Tivoli Common Reporting, see the *Tivoli Common Reporting User Guide* SC14-7613 This publication also covers the use of other operating systems.

Following are a number of screen captures which have been reproduced in order to help you understand what is required. Most are portions of the full screen.

The steps are designed to help you load the Tivoli Asset Discovery for z/OS report package, connect to the Repository, and produce reports.

**Phase 1: Load report package for Tivoli Asset Discovery for z/OS into Tivoli Common Reporting**

1. Launch the Tivoli Common Reporting product with the browser through the Integrated Portal. You are prompted to enter a user ID and password. The user ID and password are the values created when Tivoli Common Reporting was installed. The launch URL is the one indicated by the Tivoli Common Reporting product when it is installed.
- Enter user ID and password.
- Click Log in.
- If valid, a Welcome screen is displayed.

2. Move to the Work with reports window.
- Click Reporting followed by Common Reporting
- The Work with reports screen is displayed.
If you have not added report packages from other Tivoli products, there is only one entry shown under the Public Folders icon.

3. You must now locate the report package supplied by Tivoli Asset Discovery for z/OS in C:\IBM\tivoli\tipv2Components\TCRComponent\cognos\deployment, and you should find the file TADz_Model.zip.

4. To load this report package, you must start the Administration component of Tivoli Common Reporting.
   - Select the Launch arrow and choose Administration from the dropdown menu.
Click the **Configuration** tab.

The configuration options for the **Administration** components that can be modified are displayed.

5. To load the report package, click **Content Administration**.

Click the **New Import** icon to open the deployment archive from where you can select the package to import.

Depending on your screen setting, you might be interrupted by a screen requesting a user ID and password. The user ID and password values are the same as the user ID and password used when entering the Tivoli Common Reporting product.
6. From **Select a deployment archive - New Import wizard** pane, select the *TADz_Model* entry and click Next.

7. On the **Specify a name and description - New Import wizard** pane, enter values:
   - Enter **Name**: In the example shown it is z/OS Reporting.
   - Enter **Description**: In the example shown, Report package supplied to report on data from z/OS Source is used.
   - In the example the **Screen tip** value was left blank.
   - Click Next.
8. On the **Select the public folders content - New Import wizard**
   - Click the box next the name `../TADz_Model`. This produces the report package you want to use.
   - In the example shown the default option values are used.
   - Scroll to the bottom and click **Next**.

9. On the **Specify the general options - New Import wizard** pane, use the default values given, unless you want to use other options.
   - Scroll to the bottom of the pane and click **Next**.
10. The **Review the summary - New Import wizard** screen is the final screen to review your entries. You can use the **Back** button to revise entries.
   As this is the first time you are doing this import, the **Modified** column is shown as blank.
   Scroll to the bottom of the screen and click **Next**.

11. On the **Select an action - New Import wizard** pane:
   - Ensure the **Save and run once** action is selected.
   - Click **Finish**.
12. On the Run with options - z/OS Reports pane:
   - Use the default values to run immediately and retain the existing report specifications.
   - Click Run.

13. The IBM Cognos 8 screen requests confirmation of your action.
   - Tick box for View the details of this import after closing this dialog
   - Tick the box for Show this dialog in the future.
   - Click OK.
14. The View run history details - z/OS Reports screen displays the status of the import.
   - To refresh this screen, click the Refresh icon.
   - When completed, the status shows Succeeded.
   - Click Close.
15. The administration screen is displayed. This step completes the import of the report package.

Phase 2: Connect with the ODBC client and access the Tivoli Asset Discovery for z/OS Repository

As Tivoli Asset Discovery for z/OS information is kept in a DB2 system on z/OS, an ODBC connection to that database is needed. It might be necessary to obtain the DB2 Connect product, or a DB2 product that has DB2 Connect. Consult with your DBA on connectivity to the Tivoli Asset Discovery for z/OS Repository database. You must consider:

- Installing a product with DB2 Connect capabilities. Refer to step 2 in "(Optional) Installing Tivoli Common Reporting" on page 85.
- Ensure the following post-installation jobs have been run. Refer to Table 6 on page 19 and Table 8 on page 19
  - HSISGRNT
  - HSISCOGA
  - HSISCOGT
- Performing a bind to load the DB2 packages onto the DB2 subsystem on the host. This requires a minimum authority of BINDADD. This task is usually performed by a DBA. An example of running a bind using a command line is shown here:
  ```
db2 bind path@ddcsmvs.lst blocking all
  sqleerror continue messages ddcsmvs.msg grant public
  ```
  where path = location of bind list file (for example in Windows it would be: C:sqllib\bnd) and ddcsmvs.lst = bind list file

Once you have established the ODBC connection on the system, you must follow these steps:

1. Return to the Administration screen. This screen is displayed in the last step of Phase 1
2. Click the **Data Source Connections** icon on the left panel. If your session has timed out you can repeat steps 1-6 from Phase 1.

3. You must create a new Data Source Connection. To do this click **New Data Source** from the icon at the upper right of the screen.
4. On the **Specify a name and description - New Data wizard**
   - Enter a **Name**: In the example TADz is used.
   - Enter a **Description**: In the example ODBC connection to TADz Repository is used.
   - Leave the **Screen tip**: field blank.
   - Click **Next**.

5. On the **Specify the connection - New Data Source wizard**
   - Enter a **Type** value. In the example shown it is DB2. This value can also be assigned by the drop-down menu.
   - Under the icon **Isolation level** the value Use the default object gateway has been selected. This is the default.
   - Click **Next**.
6. On the Specify the DB2 connection string - New Data Source wizard:
   - Enter a DB2 database name value. In the example the value is qxpomu2de92.
   - Scroll down to the Password field, leaving the prior fields blank (unless you want to edit them).
   - Tick the Password box.
   - To check these values click the string Test the connection.
7. On the Specify the DB2 Connection string - New Data Source wizard screen, click Next.

On the View the results - Test the connection pane shown here:

- Click Test and, if successful, the results are displayed on the View the results - Test the connection pane shown here.

- Click Close to return to the Test the connection - New Data Source wizard screen.

- From there, click Close again, and it returns you to the Specify the DB2 connection string - New Data Source wizard screen.

From there, click Close again, and it returns you to the Specify the DB2 connection string - New Data Source wizard screen.
8. On the Specify the commands - New Data Source wizard screen, there are no changes to be made. Click Finish.

9. The Directory > Cognos screen is displayed, showing the available data sources, one of which is TADz.

10. You now have an ODBC connection to the Tivoli Asset Discovery for z/OS Repository, as well as the Data Source in Tivoli Common Reporting.

Phase 3: Produce reports

1. Move to the Work with reports screen.
   - Click Reporting on the left pane.
   - Click Common Reporting.

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The Work with reports screen is displayed.

2. To create a report select **Query Studio** from the Launch dropdown menu on the right side.

3. From the **Select a package (Navigate)** screen, select the **TAD_Model** icon.
   The next panel might take some time to display
4. The IBM Cognos 8 BI Query Studio - New screen is displayed. Click the Database View icon.

5. Click the + symbol beside Database View and then TADz Asset Tables. This action expands the fields. It shows all items at the table level for the Tivoli Asset Discovery for z/OS Asset Tables.

6. Click on the field for the table PRODUCT to expand it. In order to select multiple fields, hold down the CTRL key and mouse click to select fields you want to report on. You can scroll down to other tables but the CTRL key must remain held otherwise prior selections are lost. In this example 5 fields on the leftmost pane are selected.

7. In order to report on fields that have been selected scroll to the bottom of the screen and click Insert.
8. Depending on your Data Source Connections setup you might be presented with a panel to supply your TSO user ID: and Password. Populate these fields and click OK.

9. The report might take a while to display. When it displays you can use the Top/Page up/Page down/Bottom buttons to navigate through the report.

10. Now you can use the filter and sort actions to fine-tune the report produced. The next graphic shows the filter icon. Do not click on it yet.
11. As an example, you want to report on any products from IBM and other vendors. Click VENDOR_NAME. Then click the Filter icon. You now have a Filter (Pick values from a list) screen. In this example, the box to the left of IBM and Rocket Software Inc. have been selected. Also, the box Prompt every time the report runs, and Apply the filter to individual values in the data source are selected. Click OK.

12. The filtered report displays, with a list of Vendor Names noted on top of each page of the report.

13. Use the Sort function shown here. Do not click on it yet.
14. On the current report if you click PID, and then click the Sort icon, you have a report sorted in PID order. PID stands for Program Identification.

15. To save a report, use the Save icon shown here. Do not click on it yet.

16. Click the Save icon, and enter Name: and Description: followed by the OK button.
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Related publications

Publications referenced in this guide are listed here:
• DB2 Connect Quick Beginnings for DB2 Connect Personal Edition, GC23-5839-03
• Language Environment Programming Reference, SA22-7562
• Language Environment Programming Guide, SA22-7561
• Language Environment Customization, SA22-7564.
• MVS Initialization and Tuning Reference, SA22-7592
• OS/390 V2R10.0 MVS Programming: Assembler Services Guide, (GC28-1762-09)
• Program Directory, GI11-8965
• Tivoli Common Reporting User Guide, SC14-7613-00

Supplied on DVD
• IBM Tivoli Common Reporting (LCD7 - 1995-02)
Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully.

The major accessibility features in this product enable users to do the following:
• Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using those technologies with this product.
• Operate specific or equivalent features using only the keyboard.
• Magnify what is displayed on the screen.

Magnifying what is displayed on the screen

You can enlarge information on the product windows using facilities provided by the operating systems on which the product is run. For example, in a Microsoft Windows environment, you can lower the resolution of the screen to enlarge the font sizes of the text on the screen. Refer to the documentation provided by your operating system for more information.
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