IBM Tivoli License Compliance Manager for z/OS

Version 4.1

Administration Guide
Note

Before using this information and the product it supports, read the information under Notices on page 127.
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About this guide

This guide describes how to administer IBM Tivoli License Compliance Manager for z/OS. It provides an overview of the key components of IBM Tivoli License Compliance Manager for z/OS and how they work together to create and display an inventory of software products and corresponding usage data for a system.

This guide contains the following chapters:

• Chapter 1. Introduction
  Provides the overview of the basic concepts and tasks of software inventory management and the program components.

• Chapter 2. Managing the inventory
  Explains what the IBM Tivoli License Compliance Manager for z/OS components are and why you need to manage the product inventory and usage data.

• Chapter 3. Executing jobs
  Describes the common IBM Tivoli License Compliance Manager for z/OS parameters and functional members in the JCL library, and explains how to modify the JCL as appropriate for your installation.

• Chapter 4. Facilities for data management
  Describes the inventory and usage filters, their statements, and explains how to customize the user product data statement to modify the products and vendors in the system.

• Chapter 5. ISPF panel for components and facilities
  Explains how to use ISPF facility to modify JCL and run most of the IBM Tivoli License Compliance Manager for z/OS components.

• Chapter 6. Special topics
  Describes other advanced IBM Tivoli License Compliance Manager for z/OS features that may be required to meet the technical or business needs.

• Appendixes
  Describes disk space requirements and WTO messages.

Who should read this book

This book is intended for system administrators and programmers who use IBM Tivoli License Compliance Manager for z/OS to run the IBM Tivoli License Compliance Manager for z/OS jobs, generate reports, and customize the product. This person should have knowledge of z/OS Version 1.4 (or other supported levels of z/OS), JCL, ISPF, and SMP/E.
Conventions in the guide

This guide uses the following conventions in diagrams:

- **Square Edges, Shaded**
  - Identifier
  - A shaded icon with square edges represents a program supplied by IBM

- **Round Edges, Not Shaded**
  - USRPDATA
  - An icon with rounded edges represents data. If it is not shaded, the user supplies the data.

- **Database, Shaded**
  - Knowledge Base
  - A shaded database icon represents data supplied or generated by IBM.

- **Database, Not Shaded**
  - Your DASD
  - A database icon that is not shaded represents your own data.

When referring to syntax, this guide uses the following conventions:

- **UPPERCASE TYPE**
  - Commands or syntax that you must enter exactly as shown, e.g., //DISTILL EXEC DISTILLR

- **Italic**
  - Emphasis of words; variables and values you must provide; citations of titles of books, diskettes, and CDs

- **Bold**
  - Column headings in a table; keywords

Publications

The IBM Tivoli License Compliance Manager for z/OS documentation describes the concepts, methods, and procedures needed to help generate and manage the software inventory information. The related documentation includes the following documents:

- IBM Tivoli License Compliance Manager for z/OS Version 4.1 Installation Guide
- IBM Tivoli License Compliance Manager for z/OS Version 4.1 Administration Guide
- IBM Tivoli License Compliance Manager for z/OS Version 4.1 Release Notes

Accessing publications

The IBM Tivoli License Compliance Manager for z/OS Version 4.1 documentation CD contains all documents for this release in the PDF format. To access the publications from the web, open http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

IBM posts publications for this and all other Tivoli products to the Tivoli Software Information Center Web site. To access the Tivoli Software Information Center, go to the following Web address:
Ordering publications

You can order the IBM Tivoli License Compliance Manager for z/OS documentation from online web site:


You can also order by telephone at the following numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site:

www.ibm.com/software/tivoli/education/

Contacting software support

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2 and WebSphere products that run on Windows or UNIX operating systems), enroll in Passport Advantage® in one of the following ways:
  - **Online**: Go to the Passport Advantage Web page and click How to Enroll. The Web address is the following:
    www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home
  - **By phone**: For the phone numbers to call in your country, go to the IBM Software Support Web site (techsupport.services.ibm.com/guides/contacts.html) and click the name of your geographic region.

- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries®, pSeries®, and iSeries™ environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web page (www.ibm.com/servers/eserver/techsupport.html).
If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States or, from other countries, go to the contact page of the IBM Software Support Handbook on the Web (techsupport.services.ibm.com/guides/contacts.html) and click the name of your geographic region for phone numbers of people who provide support for your location.

Follow the steps in the topic to contact IBM Software Support:
1. “Determine the business impact of your problem”
2. “Describe your problem and gather background information”
3. “Submit your problem to IBM Software Support”

**Determine the business impact of your problem**

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem you are reporting. Use the following criteria:

<table>
<thead>
<tr>
<th>Severity 1</th>
<th>Critical business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.</th>
</tr>
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<tbody>
<tr>
<td>Severity 2</td>
<td>Significant business impact: The program is usable but is severely limited.</td>
</tr>
<tr>
<td>Severity 3</td>
<td>Some business impact: The program is usable with less significant features (not critical to operations) unavailable.</td>
</tr>
<tr>
<td>Severity 4</td>
<td>Minimal business impact: The problem causes little impact on operations, or a reasonable circumvention to the problem has been implemented.</td>
</tr>
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**Describe your problem and gather background information**

When explaining a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be recreated? If so, what steps led to the failure?
- Have any changes been made to the system? (For example, hardware, operating system, networking software, and so on.)
- Are you currently using a workaround for this problem? If so, please be prepared to explain it when you report the problem.

**Submit your problem to IBM Software Support**

You can submit your problem in one of the two ways:

- Online: Go to the “Submit and track problems” page on the IBM Software Support site (www.ibm.com/software/support/probsub.html). Enter your information into the appropriate problem submission tool.
By phone: For the phone number to call in your country, go to the contacts page of the IBM Software Support Handbook on the Web (techsupport.services.ibm.com/guides/contacts.html) and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM product support Web pages daily, so that other users who experience the same problem can benefit from the same resolutions.

For more information about problem resolution, see “Searching knowledge bases” and “Obtaining fixes”.

Searching knowledge bases

If you have a problem with your IBM software, you want it resolved quickly. Begin by searching the available knowledge bases to determine whether the resolution to your problem is already documented.

Search the information center on your local system or network

IBM provides extensive documentation that can be installed on your local machine or on an intranet server. You can use the search function of this information center to query conceptual information, instructions for completing tasks, reference information, and support documents.

Search the Internet

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem. To search multiple Internet resources for your product, expand the product folder in the navigation frame to the left and select Support on the Web. From this topic, you can search a variety of resources including:

- IBM technotes
- IBM downloads
- IBM Redbooks™
- IBM DeveloperWorks
- Forums and newsgroups
- Google

Obtaining fixes

A product fix might be available to resolve your problem. You can determine what fixes are available for your IBM software product by checking the product support Web site:
2. Under Products A - Z, select your product name. This opens a product-specific support site.
3. Under Self help, follow the link to Search all Downloads, where you will find a list of fixes, fix packs, and other service updates for your product. For tips on refining your search, click Search tips.
4. Click the name of a fix to read the description and optionally download the fix.

To receive weekly e-mail notifications about fixes and other news about IBM products, follow these steps:
1. From the support page for any IBM product, click My support in the upper-right corner of the page.
5. If you have already registered, skip to the next step. If you have not registered, click register in the upper-right corner of the support page to establish your user ID and password. 3. Sign in to My support.
6. On the My support page, click Edit profiles in the left navigation pane, and scroll to Select Mail Preferences. Select a product family and check the appropriate boxes for the type of information you want.
7. Click Submit.
8. For e-mail notification for other products, repeat Steps 4 and 5.

For more information about types of fixes, see the Software Support Handbook (techsupport.services.ibm.com/guides/handbook.html).

**Updating support information**

Information centers typically include one or more support information plug-ins. These plug-ins add IBM technotes and other support documents to the information center. The following steps describe how to update your support information plug-ins:

2. Under Products A - Z, select your product name. This opens a product-specific support site.
3. Under Search support for this product, type the keyword phrase: com.ibm.support. Click the Download check box, and click Submit.
4. Check the search results for updates to support information plug-ins. All support information plug-ins follow the naming convention, __com.ibm.support.product.doc__. If an update is available, select it from the list and view the download instructions.
5. Save the attached zip file to a temporary location on your hard drive.
6. Unzip the downloaded file, making sure that you retain the subfolders.
7. From the location where you unzipped the file, copy the support information plug-in folder to your Eclipse plug-ins folder. For example, if your IBM software product is installed at c:\IBM\WebSphere\, copy the updated plug-in folder (com.ibm.support.product.doc) to c:\IBM\WebSphere\eclipse\plugins.
8. To see the updated support information, start the information center (or shut it down and restart it), and expand the Support information node in the navigation tree.
Chapter 1. Introduction

To quickly gain value from IBM Tivoli License Compliance Manager for z/OS, you should familiarize yourself with the basic concepts and tasks of software inventory management and the program components. This chapter provides an overview of these topics.

Overview

IBM Tivoli License Compliance Manager for z/OS identifies installed software products and their usage patterns in the mainframe environment.

Software identification is a multi-step process. The Surveyor component is run first to collect module information. Next, the Identifier component is run with input from the Surveyor and the Knowledge Base to create software product inventory. Usage is tracked by the Monitor to give you accurate usage information so you can tell what products are being used by what jobs and what users. Finally, the Distiller creates data files that can be used with Spotlight+. Spotlight+ accesses that data for your review with easily customizable views, reports and exports.

Benefits

IBM Tivoli License Compliance Manager for z/OS can help your organization obtain a wide range of business benefits:

• Reduced or eliminated license compliance exposure
• Reduced vendor software expense
• Improved data center consolidation and configuration management
• Improved value-based charge-back programs
• Effective disaster recovery
• Effective software utilization

Some of the benefits your organization can achieve using IBM Tivoli License Compliance Manager for z/OS are relatively easy to obtain and have immediate short-term value. For example, as soon as your software product inventory and product usage data is created, you can use the information to review license and maintenance fees that can be eliminated. When coordinated with a comprehensive software asset management program, the use of data provided by IBM Tivoli License Compliance Manager for z/OS will provide continued savings year after year.
Components and data sets

The following figure shows the key IBM Tivoli License Compliance Manager for z/OS user components and data sets needed to produce and view inventory and usage data.

Components and data sets are described as follows.

**Base components**

The following are the IBM Tivoli License Compliance Manager for z/OS base components.

**Monitor**

The Monitor determines which load modules on your system are being used.

**Surveyor**

The Surveyor produces an inventory of the load libraries that are present and the load modules they contain by examining the DASD on your system.

**Extractor**

The Extractor provides information to identify IBM products by their product numbers and versions, by extracting relevant information from SMP/E data sets.

**Knowledge Base**

The Knowledge Base is a comprehensive list of product names and detailed information about selected associated load modules.
Identifier

The Identifier uses the Knowledge Base load library inventory collected by the Surveyor, and, optionally, USRPDATA, the Reference Identifier File and information from the Extractor, to produce an inventory of all your system’s products.

Reporter

The Reporter uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to produce reports about inventory and usage information.

Exporter

The Exporter uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to produce sequential data sets that you can use with analysis tools and reporting programs (such as SAS).

Distiller

The Distiller uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to produce a file for Spotlight+.

Spotlight+

Spotlight+ is a Windows-based application that provides enterprise-wide display and reporting of the inventory and usage information generated by IBM Tivoli License Compliance Manager for z/OS.

Customization Components

The following are the IBM Tivoli License Compliance Manager for z/OS customization components.

User Product Data File

The User Product Data File (USRPDATA) allows you to temporarily supplement or override the information in the Knowledge Base.

Knowledge Base Customization Tool

The Knowledge Base Customization Tool allows you to make permanent changes to the Knowledge Base. Changes are specified through Control Statements.

Reference Identification File

The Reference Identification File (RIF) is an input of the Identifier that contains information about modules that can be used to identify the same set of modules wherever they are installed.

Selector

The Selector is an optional component that organizes the usage data collected by the Monitor to create output files used as input by the Distiller, Reporter, or Exporter.
Basic concepts

This section provides the basic concepts of IBM Tivoli License Compliance Manager for z/OS and how it can work in your mainframe environment.

Software inventory creation

As shown in the following diagram, the creation of a software product inventory for a system requires the Surveyor, Identifier, and Knowledge Base.

Surveyor

The Surveyor examines the DASD on a system to produce an inventory of load libraries and the load modules they contain. Run the Surveyor on each system where products are installed.

The Surveyor output contains information on surveyed load libraries and modules that is used as input to the Identifier. The Surveyor produces the two logs (described as follows) that are useful for maintaining a history of IBM Tivoli License Compliance Manager for z/OS processing.

**Surveyed Volumes Log**

The Surveyed Volumes Log lists all volumes on the system and indicates whether they were processed. For each volume processed, the log indicates the total number of load libraries, and how many of these were processed.

**Surveyed Load Libraries Log**

The Surveyed Load Libraries Log lists all load libraries processed by the Surveyor.
Knowledge Base

The Knowledge Base contains data that identifies products and features. It relates those products and features to vendors. The Knowledge Base contains over 4,000 products or features. To keep this information current based on customers’ needs, an updated version of the Knowledge Base is distributed quarterly.

Identifier

The Identifier uses the Knowledge Base and the load library inventory collected by the Surveyor to produce an inventory of your system’s products. The Identifier optionally uses the Extractor Output File (XOF) to determine product numbers and versions for IBM products.

The Identifier output contains products identified in your surveyed load library inventory. The software inventory is used as input to the Reporter and Distiller. The Identifier also creates the Products by Vendor report that documents the products identified for each vendor.

Usage data capture

Usage data is matched with the identified product inventory to determine the products that are being used.

Monitor

To capture usage data for a system, run the Monitor. As shown in the following diagram, the usage reported for a product is a total of the three sources (batch jobs, TSO users, and started tasks) used to access the product. The breakdown of usage data by its source can be viewed in Spotlight+.

Monitor output includes the following information on load module usage that is used as input to the Reporter and Distiller.

- User Identification (job name, TSO user ID, started task name, job number, job accounting information)
- Date and time of use
To ensure that the maximum usage data is captured, run the Monitor as a started task on each system where usage data needs to be tracked. Start the Monitor as soon as IBM Tivoli License Compliance Manager for z/OS is installed. You should run the Monitor continuously and always start it again immediately after a system restart.

**Inventory and usage data review**

The inventory and usage data is reviewed and analyzed by:

- Running the Distiller and viewing the data in Spotlight+.
- Running the Reporter to view additional inventory and usage data.

**Distiller**

The Distiller uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to produce a file with information on product inventory and usage for a system. The Distiller lets you specify the following information about the source of inventory and usage data.

- **Enterprise Name**: The name of a company or institution (Acme World Enterprises).
- **Location Name**: The physical location of a system (Albany, Denver).
- **System Name**: The name of the system where the Monitor is running (Prod Sys D, Prod Sys F).

You must download Distiller output files to a workstation and import them into Spotlight+.
Spotlight+

Spotlight+ is a Windows-based application that is used to display the inventory and usage information generated by IBM Tivoli License Compliance Manager for z/OS. As shown in the following image, Spotlight+ provides a consolidated view of the data across all the systems in the enterprise and lets you view data for a location, partition (system), data center or CPU.

Data about the usage of a product, including the breakdown of usage by its source and the usage start and end date, is provided. Use the Reporter to view usage details such as the user ID or the name of a job.

Reporter

The Reporter uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to generate reports. (For a view across all systems, use the Distiller to prepare data for Spotlight+.) The Reporter generates the following types of reports:

- **Inventory reports**
  Show all the libraries where a product is installed or all the products installed in a library. These reports provide product and vendor codes that can be used for setting filters or making changes to the inventory. Usage data need not be provided to produce inventory reports.

- **Usage reports**
  Show the use of a product by a user or job. These reports can be used to supplement the usage information displayed in Spotlight+.

- **Total usage reports**
  Show the total usage of a product in different libraries or the usage of all the products installed in a library.

**Note:** For information on the Exporter and Extractor, see Chapter 6, *Special topics* on page 81.
Chapter 2. Managing the inventory

The initial inventory generated by IBM Tivoli License Compliance Manager for z/OS identifies the products that are installed on a system and their usage. To support your organization’s Software Asset Management needs over time requires implementing additional IBM Tivoli License Compliance Manager for z/OS components and features. For example, you will need to run the Extractor to ensure that all IBM products are identified with version information.

To create an inventory of software products and usage data, you will run the Surveyor, Identifier, and Monitor. To view and analyze the data, run the Reporter, Distiller, and Spotlight+ components.

Using filters

Use filter statements to reduce processing time and organize data. For example, the volumes or libraries that are surveyed can be limited, a report can be processed for a specific vendor, or usage data can be saved for a specified period of time. Filters to include or exclude data are available for most components.

- Surveyed load library inventory data is included or excluded based on volume, library, or module.
- Identified software product inventory data is included or excluded based on vendor or product. Because it is also surveyed, the above filters are also valid.
- Usage data is included or excluded based on time, date, user ID, job name, system name, and accounting data.

There are no filters available for the Monitor or the Extractor. Usage data produced by the Monitor is filtered using the Selector. Components that use the output of the Monitor (the Distiller, Reporter, and Exporter) also can filter usage data.

Hierarchy of filters

The execution of filters is based on a presumed hierarchy of data (volume/library/module and vendor/product). If an item of data is included, the subsequent items of data in the hierarchy are included. Once an item of data is excluded, a subsequent item of data in the hierarchy is excluded. In addition, once an item of data is excluded, it cannot be subsequently included. For example:

- If a volume is excluded, all libraries on that volume are excluded. Subsequent filters to include that volume or the libraries on those volumes will have no effect.
- If a vendor is excluded from a run, all products for that vendor are excluded for that run. Filters to include the vendor or the products for that vendor will have no effect. This rule applies to any component accepting vendor and product filters.
In the following example, filter statements specify that only those libraries that begin with SYS1 and SYS2 can be surveyed. The Identifier uses that Surveyor file as input so the inventory data generated contains only those libraries. No filters are specified for the Identifier. Filters statements are then used to specify that a report is generated for only certain vendors.

As a result, the report will include CA and IBM products for the inventory data. The Reporter can be run again with filters that include or exclude different vendors or products.

Managing the product inventory

The initial software inventory produced by IBM Tivoli License Compliance Manager for z/OS provides a record of your inventory at a certain point in time. Because inventories change all the time as products are added and removed, the inventory reported by IBM Tivoli License Compliance Manager for z/OS needs to be refreshed on an ongoing basis. To keep the inventory current, run the Surveyor whenever a new product is installed. At a minimum, you should run it whenever the Knowledge Base changes.

The Surveyor can be run daily; it will only scan changed libraries and volumes.

You must review the initial inventory to make sure it includes the products you need to track. For example, you may be licensing a single component of the product, but the current Knowledge Base records that product as part of a suite. There may also be IBM products without product numbers and version information.

To enhance the product inventory and maintain the product inventory:

- Re-run the Surveyor periodically to update and add new products.
- Re-run the Identifier with the new Surveyor output and other data as input.
Surveyor

The first time the Surveyor is run, it creates an inventory of load library and module information. The scope of that inventory can include all libraries or those libraries that have been included through the use of filters. In the following example, the inventory includes all libraries that have a first level qualifier of SYS1.

When the Surveyor is run again, it will automatically process any new libraries within the scope and rescan only those libraries that have changed.

In this example:
- The libraries included in the initial survey will be processed.
- The new library with a first level qualifier of SYS1 (SYS1.ISP.SISPLOAD), because it meets the criteria of the initial scope, will also be processed.
- Additional filters are used to expand the scope, so all libraries with a first level qualifier of SYS2, will also be processed.
- A filter is used to reduce the scope, so that the library SYS1.LINKLIB is not re-surveyed. Data about the libraries surveyed initially remain in the load library inventory.

**Filters and the Surveyor**

Filters are useful to reduce Surveyor processing time. When setting filters make sure that all data that is needed for subsequent IBM Tivoli License Compliance Manager for z/OS processing is included. The following are some guidelines:

- Set filters only to eliminate those volumes and libraries that do not contain relevant inventory data, such as print, spool, or paging volumes.
- Use additional filters only to eliminate the collection of data that is not relevant to your Software Asset Management needs. For example, there may be no need to survey in-house application libraries.

The Surveyor supports both permanent and temporary filters. Permanent filters are saved and honored from run to run. Temporary filters are used to limit the current run (for example, to scan only a particular volume or library).

**Identifier**

To identify the name of a product and its vendor, the Identifier uses the module data collected by the Surveyor and information about those modules that is stored in the Knowledge Base. The inventory data produced can be enhanced using, as required, USPRDATA statements, a Reference Identification File (RIF), and the output of the Extractor as input to the Identifier.

**Identifier processing with USRPDATA**

USRPDATA customization statements are used to add new vendors and products and change information about products and vendors that are currently in the Knowledge Base. As shown in the following diagram, the Identifier processes the statements in the USRPDATA file to perform product identification. The Knowledge Base is not changed directly.

```
USRPDATA (Customization Statements) -> Identifier
```

USRPDATA statements supercede the Knowledge Base data when identifying products.
**Version information for IBM products**

The Identifier uses information in the Knowledge Base to determine the version and product numbers for IBM products. For example, you may have three versions of the IBM product ACF/NCP identified, as well as a product that the Identifier knows is ACP/NCP, but does not have enough information to determine the version. The four products are related by a version group that has the same name as the product without a version.

**Extractor**

Because new versions of products are regularly installed, it may be necessary to run the Extractor so that the versions of IBM products installed in your enterprise are identified. The Extractor provides information to identify IBM products by their product numbers and versions, by extracting relevant information from SMP/E data sets. SMP/E is the IBM-supplied tool that manages the installation of IBM products on your z/OS system and tracks the modifications made to those products. Information about SMP/E can be found in the *SMP/E User’s Guide* provided by IBM with your z/OS system software.

Data in SMP/E is stored in a Consolidated Software Inventory (CSI). As shown in the following diagram, IBM Tivoli License Compliance Manager for z/OS extracts the data it needs from the CSIs specified by the user through control statements. Although SMP/E records data for some Independent Software Vendor (ISV) products, IBM Tivoli License Compliance Manager for z/OS uses data for IBM products only. Therefore, there is no need to extract non-IBM data.

Within SMP/E, DDDEF records the information SMP/E needs to dynamically allocate a particular data set. The Extractor uses SMP/E DDDEF information to supply data set and volume information for product installation libraries. If the DDDEF information is incomplete or incorrect, Extractor control statements may be required to supply pertinent file names.

The Extractor output contains the information collected from the SMP/E data files, including the names of modules and the name of the target library where the modules are installed. The Extractor data set is used as input to successive Extractor runs and as input to the Identifier.

The Extractor can also generate these reports:
• **Extractor Output Summary Report**: Displays the module count for each target library name that was extracted from the SMP/E files and recorded in the Extractor Output File.

• **Extractor Output Detail Report**: Displays all the module names for each target library name that was extracted from the SMP/E data files and recorded in the Extractor Output File.

You should run the Extractor on the same partition as the Surveyor (and at approximately the same time) and where products are installed using SMP/E.

**Identifier processing with the Extractor**

The following diagram shows that when the Identifier finds a match between the library information found by the Extractor file and the load library information found by the Surveyor, IBM product number identification takes place, using information in the Knowledge Base.

The Identifier produces the **Matching Exceptions Report** that summarizes the results of comparing the libraries found in the Extractor output file and the Surveyor output file. This includes:

- A list of libraries found by the Extractor but not found by the Surveyor.
- A list of libraries found by the Surveyor that are not found by the Extractor.

**Managing usage data**

Usage data produced by the Monitor can be managed by:

- Implementing the spin-off process
- Use of the Selector to filter usage data
Spinning off usage data

The amount of usage data generated by the Monitor can be large, so the Monitor might create more data than one data set can contain. IBM Tivoli License Compliance Manager for z/OS installation instructions recommend that you pre-allocate two or more sequential data sets for the Monitor to write usage data to. The following example shows how the IBM-supplied spin-off process works with two usage data sets. When the Monitor fills one usage data set (MONDTL01), it automatically begins writing the usage data to the next pre-allocated data set (MONDTL02).

![Diagram of the spin-off process]

After the switch, the usage data is copied to a permanent means of storage (such as tape). The spin-off process then empties the original data set so it can be used again. When the last pre-allocated data set is filled, the Monitor returns to using the first data set. The process is initiated by specifying a cataloged procedure or library member when the Monitor is installed. This process can also be initiated manually.

Selector

The Selector organizes usage data collected by the Monitor to create output files used as input by the Distiller, Reporter, or Exporter. As shown in the following diagram, the Selector creates usage output based on filter statements. For example, usage output can be created for a specified period of time.
The new output can then be used by the Distiller, Reporter, and Exporter.

**Note:** Usage Data may be stored on disk or tape.

The Selector output contains the filtered usage data. Selector data sets are used as input to the Reporter, Exporter, and Distiller. A single Selector run can create up to 100 output files. Each output data set of usage data created can be based on a different set of filter statements. For example, you could organize unprocessed Monitor usage data into monthly and quarterly output files.

In addition, the Selector creates these reports:

- **Filter Statement for Group Number**
  - Provides a list of the filter statements you specified. It includes the filter statement, the count, and the date range. If you used multiple FILTERnn data sets, one report prints for each filter data set.

- **Execution Statistics**
  - Provides a summary of the Selector’s execution statistics. It includes the earliest start date, latest end date, and the number of input records. If you used multiple FILTERnn data sets, one report prints for each filter data set.
Chapter 3. Executing jobs

The JCL required to execute the components and facilities of IBM Tivoli License Compliance Manager for z/OS is installed in the IBM Tivoli License Compliance Manager for z/OS JCL library. You will modify the JCL as appropriate for your installation. IBM Tivoli License Compliance Manager for z/OS components are designed to operate with a minimum amount of customization by the user. For most parameters, the default settings are recommended and no changes are required.

Common parameters

The following sections describe library specification parameters and print and data space parameters.

Library specification parameters

The following parameters specify the libraries that contain the IBM Tivoli License Compliance Manager for z/OS components and related procedures.

IDX Specifies the high level qualifier of the libraries that contain the IBM Tivoli License Compliance Manager for z/OS components and procedures. The default value is AUDITLCM.

VER Specifies the second level qualifier of the libraries that contain the IBM Tivoli License Compliance Manager for z/OS components and procedures. The default value is V4R1M0.

Parameters are specified in the PROC job step. You can override them by coding them as individual parameters in the EXEC statement for the PROC

By default, the IBM Tivoli License Compliance Manager for z/OS components are installed in library using the convention above. If these names have not been modified during the installation process, no changes are required.
Print and data space parameters

The following parameters control the printed output of many of the IBM Tivoli License Compliance Manager for z/OS components and are specified in the PARM field of the appropriate job step. In some cases, they can be supplied via the PARAM symbolic parameter of the job.

Table 1. Print and Data Space Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATEFORMAT=SPEC DATEF=</td>
<td>Format in which dates appear on reports and for processing (for example, in filter statements). An 8-character or 10-character string consisting of the letters DD, MM, and either YY or CCYY, separated by an arbitrary character. The default is MM/DD/CCYY. All components support multiple date formats. Date filters are assumed to be in the same format as the one specified using DATEFORMAT.</td>
</tr>
<tr>
<td>LINECT=NNN LC=</td>
<td>Number of lines to be printed per page of all printed output produced. This is a number from 30 to 999, or 0. The default is 60. Use of the default is recommended.</td>
</tr>
<tr>
<td>UPPERCASE UPPER UP</td>
<td>Output is printed in all upper case characters. By default, output is printed in mixed (upper and lower) case. Use of the default is recommended.</td>
</tr>
<tr>
<td>BOLD NOBOLD</td>
<td>Use the BOLD parameter to have some lines of output printed in bold type by overprinting the same line several times. NOBOLD is the default. Use of the default is recommended. Not available for the Selector.</td>
</tr>
<tr>
<td>RPTHDR=TEXT...</td>
<td>A string of up to 93 characters (optionally including embedded blanks) to appear at the top of each page of each report. For example, the header can be used to identify the system from which the information in the report has been gathered. RPTHDR must be the last parameter; otherwise, whatever follows (even with other possible parameters) is treated as part of the heading. Not available for the Selector or Extractor.</td>
</tr>
<tr>
<td>DATASPACE DSP=</td>
<td>ALL: All processing tables are in data spaces in storage. SELECTED: IBM Tivoli License Compliance Manager for z/OS determines which processing tables use data spaces. This is the default. Use of the default is recommended. NONE: Data space support is disabled. DASD work files are used instead.</td>
</tr>
</tbody>
</table>

By default, all components of IBM Tivoli License Compliance Manager for z/OS use data spaces to maintain processing tables in storage. You may either use, partially disable, or totally disable this function.
Surveyor

To run the Surveyor, use the member SURVEYOR in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data sets (DD statements)

The following is a list of DD Statements with description.

<table>
<thead>
<tr>
<th>Data Set (DD Statement)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTERS</td>
<td>Optional. Filter statements. These filters are considered permanent and will be retained.</td>
</tr>
<tr>
<td>TEMPFLTR</td>
<td>Optional. Filter statements. These filters are temporary and applied only to the current execution. They can be used to limit the survey to particular data sets or volumes.</td>
</tr>
<tr>
<td>SURVDATA (SRVDATA)</td>
<td>Required. Surveyor output. The value in parenthesis can be specified in the SURVEYOR PROC EXEC statement. Note: This data set must be a PDSE.</td>
</tr>
</tbody>
</table>

Parameters

Parameters specified during the initial Surveyor run are applied to subsequent Surveyor runs. These initial parameters cannot be changed, but subsequent Surveyor runs can be executed without specifying parameters. Use of the default is recommended for the following parameters.

Note: The Surveyor looks at the Surveyor Output data set (SURVDATA DD) and if it is empty, a new inventory is created, applying any filters specified to limit the scope. If the data set is found to contain a valid inventory, the Surveyor will re-survey the volumes previously surveyed according to the time interval specified by the INTERVAL parameter for re-survey, plus any new volumes specified by new filters to expand the scope.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATLIBSONLY CATLIBS</td>
<td>Survey only cataloged libraries. By default all load library data sets are surveyed.</td>
</tr>
<tr>
<td>STOPONERROR STOP</td>
<td>Stops the Surveyor the first time it fails to access a data set due to security violations.</td>
</tr>
<tr>
<td>NUMTASKS NUMT</td>
<td>The maximum number of subtasks to activate. The default is 3.</td>
</tr>
</tbody>
</table>
Filters

The Surveyor accepts the following filters.

Table 4. Surveyor Filters

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBINCL/LIBEXCL</td>
<td>Name of library</td>
</tr>
<tr>
<td>MODINCL/MODEXCL</td>
<td>Name of module</td>
</tr>
<tr>
<td>VOLINCL/VOLEXCL</td>
<td>Name of volume</td>
</tr>
</tbody>
</table>

SURVEYOR execution JCL

The following displays the SURVEYOR execution JCL.

```plaintext
//SURVEYOR JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
//**
//** +----------------------------------------------------------+ **
//** | LICENSED MATERIALS - PROPERTY OF IBM | **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 | **
//** | ALL RIGHTS RESERVED. | **
//** | | **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. | **
//** +----------------------------------------------------------+ **
//**
/* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER */
/* FOR z/OS SURVEYOR. */
/*
/* THIS JOB ASSUMES THAT THE SURVEYOR DATA SET HAS BEEN PRE-*/
/* ALLOCATED VIA THE ALOCDATA JOB AND IS A PDSE. */
/*
/* NOTE: WHEN SPECIFYING A VALUE FOR "SRVDATA" ON THE */
/* CALLING EXEC STATEMENT, REMEMBER TO SPECIFY THE */
/* FULL DATA SET NAME IN SINGLE QUOTES. */
/*
/* NOTE: BLOCKSIZE 0 LETS SYSTEM PICK THE BEST FIT. */
/*
```
Identifier

To run the Identifier, use the member IDNTFIER in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data sets (DD statements)

The following is a list of DD Statements with description.

Table 5. Identifier Data Sets (DD Statements)

<table>
<thead>
<tr>
<th>Data Set (DD Statement)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDITDB</td>
<td>Required. Specifies the name of the Knowledge Base.</td>
</tr>
<tr>
<td>AUDRIF (RIFDATA)</td>
<td>Optional. Reference Identification File (RIF). The value in parenthesis can be specified in the IDNTFIER PROC EXEC statement.</td>
</tr>
<tr>
<td>AUDITXOF (XOFDATA)</td>
<td>Optional. Extractor output. The value in parenthesis can be specified in the IDNTFIER PROC EXEC statement.</td>
</tr>
<tr>
<td>FILTERS</td>
<td>Optional. Filter statements.</td>
</tr>
</tbody>
</table>
Use of the default is recommended for the following parameters.

Table 6. Identifier Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPYR</td>
<td>Specifies that copyright information be used in module identification. The default, NOCOPYR, indicates that copyright information, even if available, should not be used for module identification. If copyright information was not collected during the Surveyor run, it will not be available to the Identifier. The Upgrader will propagate copyright information if present in the original Surveyor data set.</td>
</tr>
<tr>
<td>NOCOPYR</td>
<td></td>
</tr>
<tr>
<td>DLIB</td>
<td>Specify NODLIB to exclude SMP/E distribution libraries specified in the Extractor Output file from identification. DLIB (to include these libraries) is the default.</td>
</tr>
<tr>
<td>NODLIB</td>
<td></td>
</tr>
<tr>
<td>MINMODULES=NN</td>
<td>The minimum number of modules associated with a product that must be found in a library before the identification of a product is made. Valid values are 1 through 10. The default value is 2.</td>
</tr>
<tr>
<td>STOP</td>
<td>Stops the Identifier due to a conflict between the ASSIGN and DONTHAVE statements.</td>
</tr>
<tr>
<td>STOPONERROR</td>
<td></td>
</tr>
<tr>
<td>SYSNAME</td>
<td>Selects the specified system from the inventory file for identification. If omitted, and more than one system represented in inventory, the current system name is used. If omitted, and only one system is in the inventory, that system is identified. When the requested or default system name is not found in the inventory, a message is produced and the Identifier terminates.</td>
</tr>
<tr>
<td>UNV</td>
<td></td>
</tr>
<tr>
<td>UNVERSIONED</td>
<td>Identifies all modules identified as versioned products to be identified without a version.</td>
</tr>
</tbody>
</table>
Table 6. Identifier Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXUPLV=NN</td>
<td>Specifies the maximum percentage of unknown modules allowed in a library (that otherwise contains a single identified product) that still qualifies for versioning by library name. The default is 10.</td>
</tr>
<tr>
<td>LPV</td>
<td>Use LIBPVER to activate product versioning inferences by library name. The default NOLIBPVER indicates that product versioning inferences by library name should not take place.</td>
</tr>
<tr>
<td>NOSMP</td>
<td>Run the Identifier without using Extractor data.</td>
</tr>
<tr>
<td>PRINTUSRPDATA</td>
<td>Lists the entire contents of the User Product Data file, if one is used in the current run of the Identifier. By default, the Identifier lists only those statements in the User Product Data file that contain errors.</td>
</tr>
<tr>
<td>NOSA</td>
<td>Use NOSHOWALL to exclude those modules that are marked –UNRECOG (and those that are marked with a hyphen) from being displayed in output. The default, SHOWALL will display these modules. Use of vendor or product filters with values containing a leading hyphen (for example, PRODEXCL=–UNRECOG) will cause the SHOWALL parameter to be in effect regardless of the SHOWALL/NOSHOWALL parameter specified.</td>
</tr>
<tr>
<td>VCPCT</td>
<td>Set this percentage to determine the version of those identified but non-versioned modules in a library. If the percentage of modules in library identified with a versioned group exceeds the VCPCT value, then all modules in the library that have been identified to the same product, are assigned the same version. The default is 30. There can be only one versioned product in the library.</td>
</tr>
</tbody>
</table>

Filters

The following filters can be specified using the IDNTFIER job.

Table 7. Identifier Filters

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBINCL/LIBEXCL</td>
<td>Name of library</td>
</tr>
<tr>
<td>MODINCL/MODEXCL</td>
<td>Name of module</td>
</tr>
<tr>
<td>PRODINCL/PRODEXCL</td>
<td>Name of product</td>
</tr>
</tbody>
</table>
The following displays the IDNTFIER execution JCL.

```
//IDNTFIER JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
/**
/** +----------------------------------------------------------+ **
/** | LICENSED MATERIALS - PROPERTY OF IBM |                     **
/** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 |              **
/** | ALL RIGHTS RESERVED. |                                     **
/** | **
/** | **
/** | **
/** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
/** | OR DISCLOSURE RESTRICTED BY GSA ADF SCHEDULE CONTRACT | **
/** | WITH IBM CORP. |                                           **
/** +----------------------------------------------------------+ **
/** **
/* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER
/* FOR Z/OS IDENTIFIER.
/*
/* THIS JOB DELETES THE CURRENT IDENTIFIER DATA SET, AND
/* THEN CREATES A NEW ONE, BASED UPON THE CURRENT SURVEYOR
/* DATA SET, THE CURRENT KNOWLEDGE DATA BASE,
/* AND (IF AVAILABLE) THE CURRENT EXTRACTOR OUTPUT FILE
/* AND AN IDENTIFIER REFERENCE FILE.
/*
/* NOTE: WHEN SPECIFYING A VALUE FOR "SRVDATA", "XOFDATA",
/* "RIFDATA" AND "IDDATA" ON THE CALLING EXEC STATEMENT,
/* REMEMBER TO SPECIFY THE FULL DATA SET NAMES IN
/* SINGLE QUOTES.
/*
/* NOTE: "IDDATA" BLOCKSIZE 0 LETS SYSTEM PICK THE BEST FIT.
/*
/* NOTE: THE OPTIONAL DD-STATEMENTS "FILTERS" AND "USRFDATA"
/* MUST INCLUDE THE STEP-NAME "IDENTIFY", IF ADDED
/* AS OVERRIDING STATEMENTS, AS IN
/*
/* //IDENTIFY.FILTERS DD ....
/* //IDENTIFY.USRFDATA DD ....
/*
/* ----------------------------------------------------------------
//IDNTFIER PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
//VER=V4R1M0, - CURRENTLY INSTALLED VERSION
//SRVDATA=, - SURVEYOR-DATA DATA SET NAME
//RIFDATA=NULLFILE, - REFERENCE-IDENTIFIER-FILE NAME
//XOFDATA=NULLFILE, - EXTRACTOR-OUTPUT FILE DATA SET NAME
//IDDATA=, - IDENTIFIER-DATA DATA SET NAME
//UNIT=SYSALLDA, - UNIT FOR IDENTIFIER DATA SET
//IDVOL=, - VOLSER FOR IDENTIFIER DATA SET
//PARAM=, - IDENTIFIER PARAM FIELD
//IDSPACE=50, - PRI/SEC SPACE FOR IDENTIFIER DATA SET
//IDBLK=0, - BLOCKSIZE FOR IDENTIFIER DATA SET
```

### Table 7. Identifier Filters

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>VENDINCL/VENDEXCL</td>
<td>Name of vendor</td>
</tr>
<tr>
<td>VOLINCL/VOLEXCL</td>
<td>Name of volume</td>
</tr>
</tbody>
</table>

IDNTFIER execution JCL
// WRKUNIT=SYSALLDA, - UNIT FOR WORK DATA SETS
// SRTUNIT=SYSALLDA, - UNIT FOR SORT WORK DATA SETS
// SRTSPAC=20, - PRI/SEC SPACE FOR SORT WORK DATA SETS
// WRKSPAC=50 - PRI/SEC SPACE FOR WORK DATA SETS

/*----------------------------------------------------------------
*========= DELETE OLD DATA SET ================================
*----------------------------------------------------------------
// CLEAR EXEC PGM=IEFBR14
// IDNTDATA DD DISP=(MOD,DELETE,DELETE),DSN=&IDDATA,
// UNIT=&UNIT,SPACE=(TRK,0)
// identify the identifier
*----------------------------------------------------------------
* IDNTFIER EXEC IDNTFIER,
// IDVOL=XXXXXX, <=== SPECIFY VOLSER
// SRVDATA='XXXXX', <=== SPECIFY DATA SET NAME IN QUOTES
// XOFDATA='NULLFILE', <=== SPECIFY DATA SET NAME IN QUOTES
// RIFDATA='NULLFILE', <=== SPECIFY DATA SET NAME IN QUOTES
// IDDATA='XXXXX' <=== SPECIFY DATA SET NAME IN QUOTES
Monitor

To run the Monitor as a started task, use the member AUDITLCM in the IBM Tivoli License Compliance Manager for z/OS JCL library. Make sure this member has been modified as appropriate for your installation and has been moved into an existing system procedure library.

Data sets (DD statements)

The following is a list of DD Statements with description

<table>
<thead>
<tr>
<th>Data Set (DD Statement)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONDTL01 (MONDTL)</td>
<td>Monitor output. You can specify an unlimited number of such DD statements, in the form MONDTLxx, where xx are any two characters valid in a DD name. If a job is submitted to empty a MONDTLxx data set, a member of that name must exist in the AUDJOB library parameters. The value in parenthesis can be specified in the AUDITLCM PROC EXEC statement.</td>
</tr>
<tr>
<td>MONDTL02 (MONDTL)</td>
<td></td>
</tr>
<tr>
<td>AUDJOB (DTLCOPY)</td>
<td>Optional with DTLPROC (otherwise required). If DTLPROC is not present, the job contained in the member name equal to the MONDTLxx DD name is submitted from the PDS file specified in the AUDJOB DD statement. The value in parenthesis can be specified in the AUDITLCM PROC EXEC statement.</td>
</tr>
<tr>
<td>AUDINRDR</td>
<td>Optional. Specifies a system internal reader. If specified, an internal reader is allocated for the duration of the Monitor’s execution. If omitted, a JES internal reader is dynamically allocated when needed and released when no longer needed.</td>
</tr>
<tr>
<td>AUDLIB</td>
<td>Contains the APF authorized Monitor load modules, as described in the <em>IBM Tivoli License Compliance Manager for z/OS Installation Guide</em>. Optional if the load modules are included in the STEPLIB data set and that data set is APF authorized.</td>
</tr>
</tbody>
</table>
Parameters

Use of the default is recommended for the following parameters.

Table 9. AUDITLCM Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
</table>
| DTLPROC=NAME OF CATALOGED PROCEDURE. | Specifies the name of the cataloged procedure started when the current data set is full. When the data set fills up, the Monitor issues the following MVS operator command: START dtproc-name,MONDTL='usage-file-name'
If DTLPROC is not present, the job corresponding to the MONDTLxx DD name is submitted. |
| NEWCOPY             | Loads and starts a new copy of the Monitor and attempts to remove the previous resident version. Use this parameter when restarting the Monitor after maintenance has been applied. |
| NOLPA               | Causes the Monitor to bypass library identification of LPA modules. Use NOLPA if the Monitor is not authorized to read LPA libraries. If specified, modules are still identified as being in the LPA, but are not attributed to a particular library. |
| STEPINFO            | Causes the Monitor to record usage information at the job step level (rather than only at the job level). The STEPINFO parameter collects step name, step start time and step start date. This increases the amount of data gathered. |

Filters

Filters are not used by in the Monitor. However, the Selector can filter the output of the Monitor.

AUDITLCM execution JCL

The following displays the AUDITLCM execution JCL.

```
//AUDITLCM PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
// VER=V4R1M0, - CURRENTLY INSTALLED VERSION
// CLASS=A, - SYSOUT CLASS
// AUTHLIB=, - NAME OF AUTHORIZED LIBRARY
// MONDTL=, - PREFIX FOR MONITOR DETAIL DATA SETS
// DTLCOPY= - PDS WITH JCL TO COPY MONDTLXX
//**                                                              **
//** +-------------------------------------------------------------------+ **
//** | LICENSED MATERIALS - PROPERTY OF IBM | **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 1998, 2005 | **
//** | ALL RIGHTS RESERVED. | **
//** | | **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. | **
```
Monitor operations

This section describes how to operate the Monitor.

Run the Monitor as a started task

The IBM Tivoli License Compliance Manager for z/OS JCL procedure contains the instructions necessary to start the Monitor as a started task. Issue the MVS START command from the operator console, like this:

S TASKNAME

where taskname is the name of the Monitor started task, such as:

S MONITOR

The Monitor responds with a message to the operator console indicating that it has begun operation.

To run the Monitor as a started task, the JCL must be copied in a system procedure library during the installation. See the IBM Tivoli License Compliance Manager for z/OS Installation Guide for more information.

Stop the Monitor

Issue the MVS STOP command from the operator console. If the Monitor is a batch job, issue the following command:

P JOBNAME

where jobname is the name of the Monitor job.

If the Monitor is a started task, issue the following command:
where taskname is the name of the Monitor started task

The Monitor issues a message to the operator console indicating that it has terminated operation.

If the Monitor is a batch job, console message IEF352I or IEF355A may be displayed. This indicates that, to preserve the integrity of the cross-memory environment, MVS terminated the initiator under which the job was running. This is normal. If you want to reuse this initiator, you must restart it.

You can also stop the Monitor by using the MODIFY command and specifying the parameter STOP, like this:

F AUDITLCM, STOP

You can restart the Monitor at any time, either by submitting the batch job again or by issuing another MVS START command from the operator console.

Except in an emergency, do not use the CANCEL or FORCE command to stop the Monitor. If you cancel the Monitor, all usage data not yet written to disk is lost.

Stop the Monitor without spin-off

To stop the Monitor job without allowing it to spin-off the current usage data set, issue the MVS MODIFY command. If the Monitor is a batch job, issue the following command:

F JOBNAME, STOP, IMMED

where jobname is the name of the Monitor job.

If the Monitor is a started task, issue the following command:

F TASKNAME, STOP, IMMED

where taskname is the name of the Monitor started task.

When this command is issued, the Monitor outputs all pending usage information, closes the current usage data set, and terminates without spinning off or emptying the current usage data set. The output data set that was in use at the time the Monitor was stopped will be spun off when the Monitor is restarted.

You can restart the Monitor at any time, either by submitting the batch job again or by issuing the MVS START command from the operator console. Once the Monitor is restarted, it spins off the usage data set that was in use and uses the next available empty data set that was preallocated for its use.

Start an updated version of the Monitor

If maintenance has been applied to any of the Monitor components (AUDMONTR, AUDINSVC, and AUDLPALB) since it was last started, make sure your system administrator has restarted the Monitor job as specified in the IBM Tivoli License Compliance Manager for z/OS Installation Guide.
Spin off usage data manually

To initiate the spin-off process manually, do one of the following:

- Run the SPINOFF job by submitting the SPINOFF JCL.
- Issue the MVS MODIFY command from the operator console or via TSO.

If the Monitor is a batch job, issue the following command:

F JOBNAME, SPINOFF

where jobname is the name of the Monitor job.

If the Monitor is a started task, issue the following command:

F TASKNAME, SPINOFF

where taskname is the name of the Monitor started task. The Monitor issues a message to the operator console indicating that it has performed the requested operation.

Run the Monitor as a batch job

The member MONITOR in the IBM Tivoli License Compliance Manager for z/OS JCL library is used to run the Monitor as a standard batch job. Make sure it has been modified as appropriate for your installation. In a production environment, the Monitor should be run as a started task. This feature should be used for testing purposes only.

MONITOR execution JCL

The following displays the MONITOR execution JCL.

```
//MONITOR JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
//**  **
//** +----------------------------------------------------------+ **
//** | LICENSED MATERIALS - PROPERTY OF IBM | **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 | **
//** | ALL RIGHTS RESERVED. | **
//** | **
//** | **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. | **
//** +-----------------------------------------------------------------------+ **
//**  **
//** /* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER **
//** /* FOR Z/OS MONITOR JOB. **
//** /*
//** /* THIS JOB EXECUTES THE MONITOR. **
//** /*
//** /* REGION SIZE SHOULD BE AT LEAST 2400K !!!! **
//** /*
//** /* NOTE: WHEN SPECIFYING VALUES FOR "AUTHLIB", "DTLCOPY", AND **
//** "MONDTL" ON THE CALLING EXEC STATEMENT, REMEMBER TO **
//** /* SPECIFY THE FULL DATA SET NAMES IN SINGLE QUOTES. **
```
/*
/* NOTE: IF YOU SPECIFIED MORE THAN TWO MONDTLXX DATA SETS WHEN
/* YOU RAN THE ALOCDATA JOB, THEN ADD MORE DATA SET
/* DEFINITIONS TO THIS JOB AS WELL.
/*
/* NOTE: DD(AUDINRDR) IS OMITTED BY DEFAULT. IT WILL BE DYNAMICALLY
/* ALLOCATED AT SPINOFF TIME AND IMMEDIATELY FREED.
/*
/*----------------------------------------------------------------
//MONITOR PROC
// AUTHLIB=, - NAME OF AUTHORIZED LIBRARY
// MONDTL=, - PREFIX FOR MONITOR DETAIL DATA SETS
// DTLCOPY=, - PDS WITH JCL TO COPY MONDTLXX
// PARAM= - MONITOR PARM FIELD
/*----------------------------------------------------------------
/*
//MONITOR EXEC PGM=AUDMONTR,TIME=1440,REGION=0M,
// PARM='&PARAM'
//STEPLIB DD DISP=SHR,DSN=&AUTHLIB
//AUDLIB DD DISP=SHR,DSN=&AUTHLIB
//MONDTL01 DD DISP=SHR,DSN=&MONDTL..MONDTL01
//MONDTL02 DD DISP=SHR,DSN=&MONDTL..MONDTL02
//AUDJOB DD DISP=SHR,DSN=&DTLCOPY
//SYSPRINT DD SYSOUT=* 
//AUDLOG DD SYSOUT=* 
//AUDSNAP DD SYSOUT=* 
//SYSABEND DD SYSOUT=* 
//*AUDINRDR DD SYSOUT=(A,INTRDR),FREE=CLOSE 
//PEND
/*================================================================
/*
//MONITOR EXEC MONITOR,
// AUTHLIB='XXXXX', <=== SPECIFY LIBRARY NAME IN QUOTES
// DTLCOPY='XXXXX', <=== SPECIFY DATA SET NAME IN QUOTES
// MONDTL='XXXXX' <=== SPECIFY PREFIX NAME IN QUOTES

Distiller

To run the Distiller, use the member DISTILLR in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data sets (DD statements)

Use of the default is recommended for the following parameters.

Table 10. Distiller Data Sets (DD Statements)

<table>
<thead>
<tr>
<th>Data Sets (DD Statements)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTOUT (DISTOUT)</td>
<td>Required. Distiller output. The value in parenthesis can be specified in the DISTILLR PROC EXEC statement.</td>
</tr>
<tr>
<td>IDNTDATA (IDDATA)</td>
<td>Required. Identifier output. The value in parenthesis can be specified in the DISTILLR PROC EXEC statement.</td>
</tr>
</tbody>
</table>
Parameters

Use of the default is recommended for the following parameters.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOWDEL</td>
<td>Shows the deleted inventory and the current inventory. By default, the current inventory only is displayed.</td>
</tr>
<tr>
<td>UNV</td>
<td>Use UNV to identify all modules identified as versioned products to be identified without a version.</td>
</tr>
<tr>
<td>IGNORESYSNAME</td>
<td>By default, allows usage for the first encountered system in the Monitor detail file to be processed even if it does not match the inventory system name. All other systems in usage data are ignored. Usage data for other systems can be matched to inventory data by using a SYSINCL filter.</td>
</tr>
<tr>
<td>NOSA</td>
<td>Use NOSHOWALL to exclude those modules that are marked –UNRECOG (and those that are marked with a hyphen) from being displayed in output. The default, SHOWALL will display these modules. Use of vendor or product filters with values containing a leading hyphen (for example, PRODEXCL=–UNRECOG) will cause the SHOWALL parameter to be in effect regardless of the SHOWALL/NOSHOWALL parameter specified.</td>
</tr>
<tr>
<td>USERS</td>
<td>Summarize usage by groups of users, specified by the DEFINEGROUPS/ENDGROUPS keywords in SYSIN. This parameter is used to summarize usage by groups of users. For more information, see Distiller grouped usage on page 93.</td>
</tr>
<tr>
<td>USERG</td>
<td>Dynamically summarize usage groups of users. A User Exit Name may be specified. This parameter is used to summarize usage by groups of users. For more information, see Distiller grouped usage on page 93.</td>
</tr>
</tbody>
</table>
Control statements

The enterprise, location and system name are specified by control statements generated in SYSIN.

*Table 12.* Distiller Control Statements

<table>
<thead>
<tr>
<th>Control Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTERPRISE=NAME OF ENTERPRISE</td>
<td>Required. Specifies the name of the enterprise. The maximum length is 50 characters. For example: ENTERPRISE=ACME WORLD ENTERPRISES</td>
</tr>
<tr>
<td>LOCNAME=NAME OF LOCATION</td>
<td>Required. Specifies a location in the enterprise. The maximum length is 50 characters. For example: LOCNAME=Albany</td>
</tr>
<tr>
<td>LOCDESC=LOCATION DESCRIPTION</td>
<td>Optional. Specifies additional descriptive information about the location. The maximum length is 50 characters.</td>
</tr>
<tr>
<td>SYSLOCNM=NAME OF PARTITION</td>
<td>Required. Names a logical partition where an instance of IBM Tivoli License Compliance Manager for z/OS is installed and running the Monitor. The maximum length of the system location name is 50 characters. For example: SYSLOCN=Prod Sys D</td>
</tr>
<tr>
<td>SYSLDESC=LOCATION DESCRIPTION</td>
<td>Optional. Specifies additional descriptive information about the system location. The maximum length of the system location description is 50 characters.</td>
</tr>
<tr>
<td>SYSLNOTE=LOCATION NOTES</td>
<td>Optional. Allows additional information to be annotated to the System Location. The maximum length of the system location notes is 58 characters. Multi-line statements may be required.</td>
</tr>
</tbody>
</table>

Filters

The following filters can be specified using the DISTILLR job.

*Table 13.* Distiller Filters

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTINCL/ACCTEXCL</td>
<td>Job accounting fields</td>
</tr>
<tr>
<td>DATEINCL/DATEEXCL</td>
<td>Date job was started</td>
</tr>
<tr>
<td>JOBINCL/JOBEXCL</td>
<td>Job name</td>
</tr>
<tr>
<td>LIBINCL/LIBEXCL</td>
<td>Name of library</td>
</tr>
<tr>
<td>PRODINCL/PRODEXCL</td>
<td>Name of product</td>
</tr>
<tr>
<td>SYSINCL/SYSEXCL</td>
<td>System name</td>
</tr>
<tr>
<td>TIMEINCL/TIMEEXCL</td>
<td>Time job was started</td>
</tr>
<tr>
<td>UIDINCL/UIDEXCL</td>
<td>User ID</td>
</tr>
<tr>
<td>VENDINCL/VENDEXCL</td>
<td>Name of vendor</td>
</tr>
</tbody>
</table>
The following displays the DISTILLR execution JCL.

```plaintext
//DISTILLR JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
//**
//** +----------------------------------------------------------+ **
//** | LICENSED MATERIALS - PROPERTY OF IBM | **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 1998, 2005 | **
//** | ALL RIGHTS RESERVED. | **
//** | | **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. | **
//** +----------------------------------------------------------+ **
//**
//* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER
//* FOR Z/OS DISTILLER.
//*
//* NOTE: WHEN SPECIFYING VALUES FOR "IDDATA", "MONDETL",
//* AND "DISTOUT" ON THE CALLING EXEC STATEMENT, REMEMBER TO
//* SPECIFY THE FULL DATA SET NAMES IN SINGLE QUOTES.
//*
//* NOTE: THE OPTIONAL DD-STATEMENT "FILTERS"
//* MUST INCLUDE THE STEP-NAME "DISTILL", IF ADDED
//* AS AN OVERRIDING STATEMENT, AS IN
//*
//* //DISTILL.FILTERS DD ....
//*
//*----------------------------------------------------------------
//DISTILLR PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
// VER=V4R1M0, -CURRENTLY INSTALLED VERSION
// PARAM=, -DISTILLER PARM FIELD
// IDDATA=, -PDS WITH IDENTIFIER DATA
// MONDETL=NULLFILE, -SEQUENTIAL DATA SET WITH DETAIL DATA
// DISTOUT=, -DISTILLER OUTPUT DATA SET
// OUTUNIT=SYSALLDA, -UNIT FOR OUTPUT DATA SETS
// OUTVOL=, -VOLUME SERIAL FOR OUTPUT DATA SETS
// SRTUNIT=SYSALLDA, -UNIT FOR SORT WORK DATA SETS
// SRTSPAC=10, -PRI/SEC SPACE FOR SORT WORK DATA SETS
// WRKUNIT=SYSALLDA, -UNIT FOR WORK DATA SETS
// WRKSPAC=50 -PRI/SEC SPACE FOR WORK DATA SETS
//*----------------------------------------------------------------
//*=================================================================
//*========= DELETE OLD DATA SET ===============================
//*CLEAR EXEC PGM=IEFBR14
//DISTOUT DD DISP=(MOD,DELETE,DELETE), DSN=&DISTOUT,
// UNIT=&OUTUNIT, SPACE=(TRK,0)
//*=================================================================
//*========= EXECUTE THE DISTILLER ===============================
//*DISTILL EXEC PGM=AUDDIST,REGION=0M,PARM='&PARAM'
//STEP LIB DD DISP=SHR, DSN=&IDX..&VER..LOADLIB
//SYSOUT DD SYSOUT=* 
//SYSPRINT DD SYSOUT=* 
//AUDLOG DD SYSOUT=* 
```
Reporter

To run the Reporter, use the member REPORTER in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data sets (DD statements)

Use of the default is recommended for the following parameters.

Table 14. Reporter Data Sets (DD Statements)

<table>
<thead>
<tr>
<th>Data Sets (DD Statements)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTERS</td>
<td>Optional. Filter statements.</td>
</tr>
<tr>
<td>IDNTDATA (IDDATA)</td>
<td>Required. Identifier output. The value in parenthesis can be specified in the REPORTER PROC EXEC statement</td>
</tr>
<tr>
<td>MONDETL (MONDETL)</td>
<td>Optional. Monitor output. Required for usage reports. The value in parenthesis can be specified in the REPORTER PROC EXEC statement.</td>
</tr>
<tr>
<td>AUDPROD</td>
<td>Optional. Report output. Specifies that a data set containing the product IDs and names is produced.</td>
</tr>
</tbody>
</table>
Parameters

Use of the default is recommended for the following parameters.

### Table 15. Reporter Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCLUDEUNSURVEY INCUNSV</td>
<td>Activates the reporting of modules that have usage reported by the Monitor, but are in a library that was not surveyed.</td>
</tr>
<tr>
<td></td>
<td>The Reporter can also generate a file containing filter statements for every library that contains unsurveyed modules. The generated filters may be used to include libraries during subsequent Surveyor runs.</td>
</tr>
<tr>
<td>ONLYDEL</td>
<td>Shows the deleted inventory only.</td>
</tr>
<tr>
<td>SHOWDEL</td>
<td>Shows the deleted inventory and the current inventory. By default, the current inventory only is displayed.</td>
</tr>
<tr>
<td>UNV UNVERSIONED</td>
<td>Use UNV to identify all modules identified as versioned products to be identified without a version.</td>
</tr>
<tr>
<td>IGNORESYSNAME IGNSYSNM</td>
<td>By default, allows usage for the first encountered system in the Monitor detail file to be processed even if it does not match the inventory system name. All other systems in usage data are ignored. Usage data for other systems can be matched to inventory data by using a SYSINCL filter.</td>
</tr>
<tr>
<td>NOSA SA NOSHOWALL SHOWALL</td>
<td>Use NOSHOWALL to exclude those modules that are marked –UNRECOG (and those that are marked with a hyphen) from being displayed in output. The default, SHOWALL will display these modules. Use of vendor or product filters with values containing a leading hyphen (for example, PRODEXCL=–UNRECOG) will cause the SHOWALL parameter to be in effect regardless of the SHOWALL/NOSHOWALL parameter specified.</td>
</tr>
</tbody>
</table>

Control statements

The name of the report and any thresholds for usage reports are specified by control statements generated in SYSIN. Multiple reports, with different threshold parameters, may be requested in a single REPORTER run.
The following is a list of control statements with description.

**REPORT=reportname**

Specifies the report or reports to be generated, where reportname is identical to the name of the report with any punctuation omitted and each space replaced with a hyphen. For example:

```plaintext
REPORT=PRODUCT-USAGE-SUMMARY-BY-PRODUCT
```

If no report is specified, no report is produced.

**IGNOREABOVE=threshold**

Where threshold equals a usage count above which items at the highest level of the report are excluded from the report.

**IGNOREBELOW=threshold**

Where threshold equals a usage count below which items at the highest level of the report are excluded from the report.

- Valid values for IGNOREABOVE/IGNOREBELOW are NONE (the default), which specifies that no threshold is applied, and 1–9999999.
- IGNOREABOVE and IGNOREBELOW are mutually exclusive.
- Because control statements are processed sequentially, the most recently specified IGNOREABOVE or IGNOREBELOW is the one that applies to subsequent reports.

**Example**

The following example shows the JCL to produce the Product Usage Summary by Product report that lists only those products used by less than five jobs and the Product Usage Summary by User ID, Product and Library report that lists only those products used by more than 100 jobs.

```plaintext
//REPORTER JOB ...
.
. (YOUR REPORTER JCL)
.
//SYSIN DD *
IGNOREABOVE=5
REPORT=PRODUCT-USAGE-SUMMARY-BY-PRODUCT
IGNOREBELOW=100
REPORT=PRODUCT-USAGE-SUMMARY-BY-USERID-PRODUCT-AND-LIBRARY
/*
```

**Filters**

The following filters can be specified using the REPORTER job.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTINCL/ACCTEXCL</td>
<td>Job accounting fields</td>
</tr>
<tr>
<td>DATEINCL/DATEEXCL</td>
<td>Date job was started</td>
</tr>
<tr>
<td>JOBINCL/JOBEXCL</td>
<td>Job name</td>
</tr>
</tbody>
</table>

---

Chapter 3. Executing jobs 37
REPORTER execution JCL

The following displays the REPORTER execution JCL.

```plaintext
//REPORTER JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
//**                                                              **
//** | LICENSED MATERIALS - PROPERTY OF IBM |                     **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 2005 |                    **
//** | ALL RIGHTS RESERVED. |                                     **
//** | |                                                          **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. |                                           **
//** +-----------------------------------------------------------------+ **
//**                                                              **
//* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER
//* FOR Z/OS REPORTER.
//*
//* NOTE: WHEN SPECIFYING VALUES FOR "IDDATA" AND
//* "MONDETL" ON THE CALLING EXEC STATEMENT, REMEMBER TO
//* SPECIFY THE FULL DATA SET NAMES IN SINGLE QUOTES.
//*
//* NOTE: WHEN RUNNING USAGE REPORTS THAT HAVE A LARGE VOLUME OF
//* USAGE DATA (AND THE "DSP=NONE" OPTION IS IN EFFECT), THE
//* "WRK9DSN" PARAMETER MAY BE SPECIFIED TO USE A DASD WORKFILE
//* TO BE USED WHILE PROCESSING THE USAGE DATA. THIS OPTION CAN
//* UTILIZED BY CHANGING THE DEFAULT WRK9DSN=NULLFILE TO
//* WRK9DSN=&TEMP (OR SOME OTHER TEMPORARY DATASET NAME.)
//* THIS OPTION IS IGNORED WHEN DATASPACES ARE USED.
//*
//* NOTE: IF SPECIFYING A DATASET NAME FOR "UNSRV" THAT IS OTHER
//* THAN 'NULLFILE' (THE DEFAULT) THEN THAT DATASET MUST BE
//* PRE-ALLOCATED. MINIMAL DCB ATTRIBUTES ARE REQUIRED.
//* EX: DSN=..., 
//* VOL=..., 
//* UNIT=..., 
//* SPACE=(TRK,(1,1)), 
//* DCB=LRECL=80
//*
//* NOTE: THE OPTIONAL DD-STATEMENT "FILTERS"
//* MUST INCLUDE THE STEP-NAME "REPORT", IF ADDED
//* AS AN OVERRIDING STATEMENT, AS IN
```
Reports

The following lists each IBM Tivoli License Compliance Manager for z/OS report and the syntax used to specify the report in the JCL.
These examples are intended to display the type of information produced by the Reporter. Complete reporting of inventory identification and usage monitoring for a system are not represented.

## Inventory reports

Inventory reports provide inventory information by vendor, product, and library.

### Products by Vendor

**JCL syntax: PRODUCTS-BY-VENDOR**

This report documents the products identified by the Identifier, and provides the vendor IDs and product IDs used with filters and USRPDATA. It also provides version group information.

<table>
<thead>
<tr>
<th>VENDOR NAME</th>
<th>GROUP NAME</th>
<th>PRODUCT NAME</th>
<th>VENDOR ID</th>
<th>GROUP ID</th>
<th>DESCRIPTION</th>
<th>SHORTNAME</th>
<th>MARCHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA-ACF/ICS</td>
<td>ACF/ICS</td>
<td>ACF/ICS</td>
<td>ACF/ICS</td>
<td>ACF/ICS</td>
<td>ACF/ICS</td>
<td>ACF/ICS</td>
<td>9</td>
</tr>
<tr>
<td>CA-AQF/CTC</td>
<td>ACF/CTC</td>
<td>ACF/CTC</td>
<td>ACF/CTC</td>
<td>ACF/CTC</td>
<td>ACF/CTC</td>
<td>ACF/CTC</td>
<td>9</td>
</tr>
<tr>
<td>CA-ESA/DB</td>
<td>DB/2</td>
<td>DB/2</td>
<td>DB/2</td>
<td>DB/2</td>
<td>DB/2</td>
<td>DB/2</td>
<td>9</td>
</tr>
<tr>
<td>CA-ESAT/RX</td>
<td>RX/Signon</td>
<td>RX/Signon</td>
<td>RX/Signon</td>
<td>RX/Signon</td>
<td>RX/Signon</td>
<td>RX/Signon</td>
<td>9</td>
</tr>
<tr>
<td>CA-FORMO</td>
<td>FORM/Office</td>
<td>FORM/Office</td>
<td>FORM/Office</td>
<td>FORM/Office</td>
<td>FORM/Office</td>
<td>FORM/Office</td>
<td>9</td>
</tr>
<tr>
<td>CA-HSM</td>
<td>HSM</td>
<td>HSM</td>
<td>HSM</td>
<td>HSM</td>
<td>HSM</td>
<td>HSM</td>
<td>9</td>
</tr>
<tr>
<td>CA-RHOSIDE</td>
<td>RHOSIDE</td>
<td>RHOSIDE</td>
<td>RHOSIDE</td>
<td>RHOSIDE</td>
<td>RHOSIDE</td>
<td>RHOSIDE</td>
<td>9</td>
</tr>
<tr>
<td>CAM ICM</td>
<td>ICM</td>
<td>ICM</td>
<td>ICM</td>
<td>ICM</td>
<td>ICM</td>
<td>ICM</td>
<td>9</td>
</tr>
<tr>
<td>CMS</td>
<td>CMS</td>
<td>CMS</td>
<td>CMS</td>
<td>CMS</td>
<td>CMS</td>
<td>CMS</td>
<td>9</td>
</tr>
<tr>
<td>V5 Cobol</td>
<td>Cobol</td>
<td>Cobol</td>
<td>Cobol</td>
<td>Cobol</td>
<td>Cobol</td>
<td>Cobol</td>
<td>9</td>
</tr>
</tbody>
</table>

### Installed Product Summary

**JCL syntax: INSTALLED-PRODUCT-SUMMARY**

This report lists the products found on the system. For each product, it lists the libraries in which the product was found.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>LAST UPGRADE</th>
<th>AVERAGE</th>
<th>LAST UPGRADE</th>
<th>VOLUME</th>
<th>LIBRARY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>02/12/1998</td>
<td>-CTLG-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>02/13/1996</td>
<td>-CTLG-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICS</td>
<td>07/28/2001</td>
<td>-CTLG-</td>
<td>02/28/2001</td>
<td>-SYSC.</td>
<td>SYSC.</td>
</tr>
<tr>
<td></td>
<td>07/28/2001</td>
<td>-CTLG-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>07/28/2001</td>
<td>-CTLG-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>07/28/2001</td>
<td>-CTLG-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Installed Product Identification Detail

JCL syntax: INSTALLED-PRODUCT-IDENTIFICATION-DETAIL

This report lists the products found on the system. For each product, it lists each library and volume where the product was identified. Within each library and volume, it lists the modules of the product found there.

A subsection entitled “Modules not used for identification of a product” appears at the end of this report. This subsection contains the list of modules that were not used in the identification of any products in any libraries.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>LIBRARY</th>
<th>VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA-Easytrieve Plus</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP01</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP02</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP03</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP04</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP05</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP06</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP07</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP08</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP09</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP10</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP11</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP12</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP13</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP14</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP15</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP16</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP17</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP18</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP19</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP20</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP21</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP22</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP23</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP24</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP25</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP26</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP27</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP28</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP29</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP30</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP31</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP32</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP33</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP34</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP35</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP36</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP37</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP38</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP39</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP40</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP41</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP42</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP43</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP44</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP45</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP46</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP47</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP48</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP49</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
<tr>
<td>EZTP50</td>
<td>EZTP01L</td>
<td>-</td>
</tr>
</tbody>
</table>

Load Library Summary

JCL syntax: LOAD-LIBRARY-SUMMARY

This report lists each library and, within each library, each volume on which that library was found. For each library and volume, it lists each product that was identified.

<table>
<thead>
<tr>
<th>LIBRARY</th>
<th>VOLUME</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSLIB.EZTP01L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP01L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP02L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP03L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP04L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP05L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP06L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP07L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP08L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP09L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP10L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP11L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP12L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP13L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP14L</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>EZTP15L</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Module Copyright Data

JCL syntax: MODULE-COPYRIGHT-DATA

This report provides copyright notice information for load modules. The report title is changed according to whether the report lists all modules or non-IBM modules only. This report shows copyright data, but since the Surveyor no longer supports copyright information, this information is present only if an older Surveyor containing that data is upgraded. Filters are not applied to these reports.

Module Copyright Data (non-IBM)

JCL syntax: MODULE-COPYRIGHT-DATA-NON-IBM

This report lists non-IBM modules only. (A module is considered an IBM module only if it has a copyright statement with an IBM product number in it.) Filters are not applied to this report. This report shows copyright data, but since the Surveyor no longer supports copyright information, this information is present only if an older Surveyor containing that data is upgraded. Filters are not applied to these reports.

Usage reports

Usage reports provide product usage information organized by product or library or by the user of the product. Within these reports:

- LPA libraries are marked with #.
- LINKLIST libraries are marked with ##.

Product Usage Summary by User ID and Product

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-USERID-AND-PRODUCT

This report lists the products used by each user ID and the total use count for each product.
### Product Usage Summary by User ID, Product, and Library

**JCL syntax:** PRODUCT-USAGE-SUMMARY-BY-USERID-PRODUCT-AND-LIBRARY

This report lists the products used by each user ID by library and volume. Within library and volume, it gives the total use count for each product.

<table>
<thead>
<tr>
<th>USERID</th>
<th>PRODUCT</th>
<th>LIBRARY</th>
<th>VOLUME</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABDMACI</td>
<td>ABEND-AID/EX ABENDFX (COMP)</td>
<td>SYS.LIB.ABEND.ABEND</td>
<td>ABEND</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ABEND-AID/EX ABENDFX (COMP)</td>
<td>SYS.LIB.ABEND.ABEND</td>
<td>ABEND</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ABEND-AID/EX ABENDFX (COMP)</td>
<td>SYS.LIB.VERM.SDF</td>
<td>OVER</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>IBM 6000-401 (IBM)</td>
<td>SYS.LIB.PSR</td>
<td>OVER</td>
<td>2</td>
</tr>
</tbody>
</table>

### Product Usage Detail by User ID, Product, and Library

**JCL syntax:** PRODUCT-USAGE-DETAIL-BY-USERID-PRODUCT-AND-LIBRARY

This report lists every product used by each user ID on your system. Within each product, it gives each library and volume from which the product was executed and the total use count. Within a library and volume, it lists every job run by that user ID that used each product on your system.

<table>
<thead>
<tr>
<th>USERID</th>
<th>PRODUCT</th>
<th>LIBRARY</th>
<th>VOLUME</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABDMACI</td>
<td>ABEND-AID/EX ABENDFX (COMP)</td>
<td>SYS.LIB.ABEND.ABEND</td>
<td>ABEND</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ABEND-AID/EX ABENDFX (COMP)</td>
<td>SYS.LIB.VERM.SDF</td>
<td>OVER</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>IBM 6000-401 (IBM)</td>
<td>SYS.LIB.PSR</td>
<td>OVER</td>
<td>2</td>
</tr>
</tbody>
</table>
Product Usage Summary by Jobname and Product

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-JOBNAME-AND-PRODUCT

This report lists the products and the total use count for each job.

<table>
<thead>
<tr>
<th>JOBNANE</th>
<th>PRODUCT</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ANLCL</td>
<td>ISPF ISPF (IBM)</td>
<td>1</td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS Component: Comm. Server IP OSTCPIP (IBM)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS BASE, SASHBASE (SAS)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS/GRAPH, SASGRAPH (SAS)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JOBNANE</th>
<th>PRODUCT</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ANLCO</td>
<td>ISPF ISPF (IBM)</td>
<td>1</td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS Component: Comm. Server IP OSTCPIP (IBM)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS BASE, SASHBASE (SAS)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS/GRAPH, SASGRAPH (SAS)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Product Usage Summary by Jobname, Product, and Library

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-JOBNAME-PRODUCT-AND-LIBRARY

This report lists the products used by each job name by library and volume. Within library and volume, it gives the total use count for each job.

<table>
<thead>
<tr>
<th>JOBNANE</th>
<th>PRODUCT</th>
<th>LIBRARY</th>
<th>VOLUME</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ANLCL</td>
<td>ISPF ISPF (IBM)</td>
<td>ISPF.ESPLOAD</td>
<td>-CIL-</td>
<td>1</td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>SYSLINLIB</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>SYSLINLIB</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS Component: Comm. Server IP OSTCPIP (IBM)</td>
<td>TOPS1, SCLPA</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS BASE, SASHBASE (SAS)</td>
<td>SYSLMD, SAS.MDSLIBRARY</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS/GRAPH, SASGRAPH (SAS)</td>
<td>SYSLMD, SAS.MDSLIBRARY</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JOBNANE</th>
<th>PRODUCT</th>
<th>LIBRARY</th>
<th>VOLUME</th>
<th>USE COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ANLCO</td>
<td>ISPF ISPF (IBM)</td>
<td>ISPF.ESPLOAD</td>
<td>-CIL-</td>
<td>1</td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>SYSLINLIB</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS: 2/06 VI 5964-A01 (IBM)</td>
<td>SYSLINLIB</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OS Component: Comm. Server IP OSTCPIP (IBM)</td>
<td>TOPS1, SCLPA</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS BASE, SASHBASE (SAS)</td>
<td>SYSLMD, SAS.MDSLIBRARY</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SAS/GRAPH, SASGRAPH (SAS)</td>
<td>SYSLMD, SAS.MDSLIBRARY</td>
<td>-CIL-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Product Usage Detail by Jobname, Product, and Library

JCL syntax: PRODUCT-USAGE-DETAIL-BY-JOBNAME-PRODUCT-AND-LIBRARY

This report lists every product used by each job name. Within each product, it lists each library and volume from which the product was executed. Within library and volume, it lists every job that used each product on your system.
Product Usage Summary by Product

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-PRODUCT

This report lists every product on your system across libraries and volumes. For each product, it gives the total use count.

Product Usage Summary by Product and Library

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-PRODUCT-AND-LIBRARY

This report lists every product on your system. Within each product, it lists each library and volume on which the product was found. Within library and volume, it gives the total use count for the product.

Product Usage Summary by Library and Product

JCL syntax: PRODUCT-USAGE-SUMMARY-BY-LIBRARY-AND-PRODUCT

This report lists each library and volume and, the products found. For each product, it gives the total use count for the product.
Product Usage Detail by Product and Library

JCL syntax: PRODUCT-USAGE-DETAIL-BY-PRODUCT-AND-LIBRARY

This report lists every product on your system. Within each product, it lists each library and volume on which the product was found. Within library and volume, it lists every job that used each product on your system.

Product Usage Detail by Library and Product

JCL syntax: PRODUCT-USAGE-DETAIL-BY-LIBRARY-AND-PRODUCT

This report lists every library on your system. Within each library, it lists each product found. Within product, it lists every job that used the product.

Module Usage Summary by Library

JCL syntax: MODULE-USAGE-SUMMARY-BY-LIBRARY
This report lists, for each library, the total usage for a module. This report does not contain product information.

<table>
<thead>
<tr>
<th>Data Sets (DD Statements)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDITXOF (XOFDATA)</td>
<td>Optional. Data set created during a previous run of the Extractor job. The value in parenthesis can be specified in the EXTRACTR PROC EXEC statement.</td>
</tr>
<tr>
<td>SYSIN</td>
<td>Required. Specifies the data set that contains the Extractor input statements that identify the SMP/E data to be processed.</td>
</tr>
<tr>
<td>UPDATXOF (UPDATXOF)</td>
<td>Optional. Extractor output. For Extractor reporting only, do not specify the name of a data set. The value in parenthesis can be specified in the EXTRACTR PROC EXEC statement.</td>
</tr>
</tbody>
</table>

**Parameters**

Use of the default is recommended for the following parameters.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOSMP</td>
<td>Supports maintenance of destination libraries within the Extractor Output file without accessing SMP/E data.</td>
</tr>
</tbody>
</table>
The Extractor supports the following control statements, entered via the SYSIN statement in EXTRACTR job.

The following is a list of control statements with description.

**CSINAME=CSIname**

The name of a cataloged data set or pattern containing an SMP/E CSI. The CSINAME can be specified using the both character (%) and string (*) wildcards. If not specified, all cataloged VSAM clusters ending in .CSI are used. For example:

CSINAME=P0500.OS390.GLOBAL.CSI
CSINAME=P0500.DB2.GLOBAL.CSI
CSINAME=P0500.CICS.GLOBAL.*

**ZONE=ZONEname**

A zone within a global CSI. Multiple ZONE statements can be used. A CSINAME statement must precede each group of ZONE statements. All zones are assumed if not specified. For example:

CSINAME=P0500.OS390.GLOBAL.CSI
ZONE=M430B2T
CSINAME=P0500.DB2.GLOBAL.CSI
ZONE=M430B2T
ZONE=M430C3T

**DELZONE**

Deletes a zone (and all related destination library information) recorded in the Extractor Output file. A zone statement is required and must precede the DELZONE statement. For example:

ZONE=M430B2T
DELZONE

### Table 18. Extractor Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAUTODEST</td>
<td>Notifies the Extractor not to automatically process data found in SMP/E for the defined CSI.</td>
</tr>
<tr>
<td>NOAD</td>
<td></td>
</tr>
<tr>
<td>NOREPORT</td>
<td>NOREPORT suppresses all reporting.</td>
</tr>
<tr>
<td>NRPT</td>
<td></td>
</tr>
<tr>
<td>REPORTDETAIL</td>
<td>By default, a report listing only the libraries and other information extracted from SMP/E data is produced. REPORTDETAIL/FULLREPORT results in a report showing a detailed list of all items extracted from within the SMP/E data set, including modules.</td>
</tr>
<tr>
<td>RPTDTL</td>
<td></td>
</tr>
<tr>
<td>FRPT</td>
<td></td>
</tr>
<tr>
<td>FULLREPORT</td>
<td></td>
</tr>
</tbody>
</table>

**Control statements**

The Extractor supports the following control statements, entered via the SYSIN statement in EXTRACTR job.

The following is a list of control statements with description.

**CSINAME=CSIname**

The name of a cataloged data set or pattern containing an SMP/E CSI. The CSINAME can be specified using the both character (%) and string (*) wildcards. If not specified, all cataloged VSAM clusters ending in .CSI are used. For example:

CSINAME=P0500.OS390.GLOBAL.CSI
CSINAME=P0500.DB2.GLOBAL.CSI
CSINAME=P0500.CICS.GLOBAL.*

**ZONE=ZONEname**

A zone within a global CSI. Multiple ZONE statements can be used. A CSINAME statement must precede each group of ZONE statements. All zones are assumed if not specified. For example:

CSINAME=P0500.OS390.GLOBAL.CSI
ZONE=M430B2T
CSINAME=P0500.DB2.GLOBAL.CSI
ZONE=M430B2T
ZONE=M430C3T

**DELZONE**

Deletes a zone (and all related destination library information) recorded in the Extractor Output file. A zone statement is required and must precede the DELZONE statement. For example:

ZONE=M430B2T
DELZONE
SYSLIB=syslibname

The name of a target system library where SMP/E installed the load modules for a product within a zone. A zone statement is required and must precede the SYSLIB statement. For example:

CSINAME=P0500.OS390.GLOBAL.CSI
ZONE=M430B2T
SYSLIB=SAMPRUN3

ADDDEST=<LIBdsname>[,VOL=<volser>]

Associates a product-version with its destination library name. A SYSLIB statement must precede the ADDDEST statement. For example:

SYSLIB=SAMPRUN3
ADDDEST=PROD.SAMPRUN3

Several ADDDEST statements can be specified as a group. A SYSLIB statement must precede the group of ADDDEST statements.

SYSLIB=SAMPRUN3
ADDDEST=PROD.SAMPRUN1
ADDDEST=PROD.SAMPRUN2
ADDDEST=PROD.SAMPRUN3

Optionally, you can use the VOL parameter to specify a volser for a destination library.

SYSLIB=SAMPRUN3
ADDDEST=PROD.SCBDHENU,VOL=PRD10

DELDEST=<LIBdsname>[,VOL=<volser>]

Disassociates a destination library name and optional volume from a product-version (syslibname) in the Extractor Output File. A SYSLIB statement is required and must precede the DELDEST statement. The VOL parameter must be coded exactly as it was coded when the destination library was added using the ADDDEST statement.

DELDEST=PROD.SAMPRUN3
DELDEST=PROD.SCBDHENU,VOL=PRD101

Several DELDEST statements can be specified as a group. A SYSLIB statement must precede the group of DELDEST statements.

SYSLIB=SAMPRUN3
DELDEST=PROD.SAMPRUN1
DELDEST=PROD.SAMPRUN2
DELDEST=PROD.SAMPRUN3

If the VOL parameter was used on the ADDDEST statement, the DELDEST statement must also include the VOL parameter.

SYSLIB=SAMPRUN3
DELDEST=PROD.SCBDHENU,VOL=PRD101
Example

The following example shows the control statements to specify the name of a CSI, Zone, SYSLIB and destination libraries. These statements may be required to supply data set and volume information for product installation libraries.

```
//EXTRACTOR JOB ...
.
. (YOUR EXTRACTOR JCL)
.
//SYSIN DD *
CSINAME=P0500.IBM.GLOBAL.CSI
ZONE=M430B2T
SYSLIB=SAMPRUN3
ADDEDEST=PROD.SAMPRUN3
ADDEDEST=PROD.SCBDHENU,VOL=PRD101
/*
```

**EXTRACTR execution JCL**

The following displays the EXTRACTR execution JCL.

```
//EXTRACTR JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
/**
/** +----------------------------------------------------------+ **
/** | LICENSED MATERIALS - PROPERTY OF IBM |                     **
/** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 |              **
/** | ALL RIGHTS RESERVED. |                                     **
/** | |                                                          **
/** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
/** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
/** | WITH IBM CORP. |                                           **
/** +----------------------------------------------------------+ **
/**
/* THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER
/* FOR Z/OS EXTRACTOR.
/*
/* THIS JOB USES EITHER ONE OR TWO EXTRACTOR OUTPUT FILE (XOF) DATA SETS. IF ONE IS USED FOR INPUT IT MUST ALREADY EXIST.
/* I F ONE IS USED FOR OUTPUT IT MAY ALREADY EXIST AND BE OVER-Written, OR IT MAY BE CREATED AT THE TIME THE EXTRACTOR RUNS.
/*
/* THE FIRST TIME THE EXTRACTOR IS USED TO EXTRACT SMP DATA,
/* THE EXTRACTED DATA IS STORED IN &UPDATXOF AND &XOFDATA
/* SHOULD BE NULLFILE (DEFAULT).
/*
/* EACH SUBSEQUENT TIME THE EXTRACTOR IS USED TO EXTRACT SMP DATA,
/* THE CONTENTS OF &XOFDATA IS USED AS THE BASE TO WHICH DATA IS
/* ADDED OR DELETED. THE COMBINED DATA FROM SMP AND &XOFDATA IS
/* STORED IN THE &UPDATXOF FILE. &XOFDATA IS NEVER CHANGED.
/*
/* WHEN &XOFDATA IS SPECIFIED AS NULLFILE (DEFAULT), ONLY SMP
/* DATA FROM THE CURRENT EXTRACTOR RUN IS STORED IN &UPDATXOF.
/*
/* WHEN THE "NOSMP" PARAMETER IS SPECIFIED, NO SMP DATA IS EXTRACTED
/* AND THE CONTENTS OF &XOFDATA IS USED AS THE BASE FOR PROCESSING,
/* BUT THE DATA FROM &XOFDATA MAY BE REVISED (USING DELZONE,
ADDEDEST,
```
OR DELDEST CONTROL STATEMENTS), STORED IN &UPDATXOF, AND REPORTED.

&UPDATXOF MUST BE SPECIFIED ONLY IF UPDATES ARE BEING MADE.

WHEN &UPDATXOF IS NULLFILE, ONLY REPORTING IS ALLOWED.

NOTE: WHEN SPECIFYING A VALUE FOR "XOFDATA" OR "UPDATXOF"

ON THE CALLING EXEC STATEMENT, REMEMBER TO SPECIFY THE

FULL DATA SET NAME IN SINGLE QUOTES.

&UPDATXOF BLOCKSIZE 0 LETS SYSTEM PICK THE BEST FIT.

THE SPACE REQUIRED, IN 80-BYTE RECORDS, FOR &UPDATXOF IS

25 + 2 + T + C + M + H

WHERE Z = 2 * NUMBER OF TARGET ZONES

T = NUMBER OF SYSLIBS

C = NUMBER OF DESTINATION LIBRARIES

M = NUMBER OF LOAD MODULES IN ALL SYSLIBS

H = 3 * NUMBER OF TIMES THE EXTRACTOR IS RUN

THE SPACE ESTIMATE IS SUFFICIENT ONLY FOR THE FIRST EXTRACT.

AN UPDATE OF THE SAME DATA TO THE SAME &UPDATXOF FILE WILL

REQUIRED TWICE AS MUCH SPACE UNLESS THE DATA SET IS EMPTIED AND

COMPRESSED BEFORE THE UPDATE.

--------------------------------------------------

EXTRACTR PROC IDX=AUDITLCM,

PARAM=, - EXTRACTOR PARM FIELD

EXTTIME=, - EXTRACTOR TIME FIELD

EXTREG=0M, - EXTRACTOR REGION FIELD

XOFDATA=NULLFILE, - XOF INPUT FILE DATA SET NAME

UPDATXOF=NULLFILE, - EXTRACTOR OUTPUT FILE DATA SET NAME

XOFDISP=OLD, - EXTRACTOR OUTPUT FILE DISPOSITION

XOFVOL=, - VOLUME WHERE DATA SET SHOULD RESIDE

XOFUNIT=, - UNIT WHERE DATA SET SHOULD RESIDE

XOFSPAC=20, - EXTRACTOR OUTPUT FILE PRIMARY SPACE

XOFSEC=10, - EXTRACTOR OUTPUT FILE 2NDARY SPACE

XOFSAU=CYL, - EXTRACTOR OUTPUT FILE SPC ALLOC UNIT

XOFBLKS=0, - EXTRACTOR OUTPUT FILE BLOCK SIZE

SRTSPAC=20, - PRI/SEC SPACE FOR SORT WORK FILES

SRTUNIT=SYSALLDA - UNIT FOR SORT WORK DATA SETS

--------------------------------------------------

EXTRACT EXEC

PGM=AUDXTRCT,REGION=&EXTREG,PARM='&PARAM',TIME=&EXTTIME

STEPLIB DD DISP=SHR,DSN=&IDX..&VER..LOADLIB

AUDITXOF DD DISP=SHR,DSN=&XOFDATA INPUT TO EXTRACTOR

UPDATXOF DD DISP=&XOFDISP,DSN=&UPDATXOF, OUTPUT FROM EXTRACTOR

UNIT=&XOFUNIT,VOL=SER=&XOFVOL,

DCB=(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=&XOFBLKS),

SPACE=(&XOFSPAC,(&XOFSEC,3))

PASSDATA DD DISP=SHR,DSN=&IDX..&VER..PASSWORD

SORTWK01 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))

SORTWK02 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))

SORTWK03 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))

SORTWK04 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))

SORTWK05 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))

SORTWK06 DD UNIT=&SRTUNIT,SPACE=(CYL,(&SRTSPAC,&SRTSPAC))
To run the Selector, use the member SELECTOR in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data sets (DD statements)

The following are data sets (DD statements) used by the Selector.

<table>
<thead>
<tr>
<th>Data Sets (DD Statements)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTERnn (FILTDS)</td>
<td>Required. Specifies the data sets containing the filter statements used to write output file OUTPUTnn, where nn=00–99. The value in parenthesis can be specified in the SELECTOR PROC EXEC statement.</td>
</tr>
<tr>
<td>MONDETL (MONDETL)</td>
<td>Monitor data set. The value in parenthesis can be specified in the SELECTOR PROC EXEC statement.</td>
</tr>
<tr>
<td>OUTPUTnn (OUTDS)</td>
<td>Required. The output files corresponding to FILTERnn. The value in parenthesis can be specified in the SELECTOR PROC EXEC statement.</td>
</tr>
</tbody>
</table>

Filters

The following filters can be specified using the SELECTOR job.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTINCL/ACCTEXCL</td>
<td>Job accounting fields</td>
</tr>
</tbody>
</table>
Table 20. Selector Filters

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or excludes data by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATEINCL/DATEEXCL</td>
<td>Date job was started</td>
</tr>
<tr>
<td>JOBINCL/JOBEXCL</td>
<td>Job name</td>
</tr>
<tr>
<td>LIBINCL/LIBEXCL</td>
<td>Name of library</td>
</tr>
<tr>
<td>MODINCL/MODEXCL</td>
<td>Name of module</td>
</tr>
<tr>
<td>SYSINCL/SYSEXCL</td>
<td>System name</td>
</tr>
<tr>
<td>TIMEINCL/TIMEEXCL</td>
<td>Time job was started</td>
</tr>
<tr>
<td>UIDINCL/UIDEXCL</td>
<td>User ID</td>
</tr>
<tr>
<td>V0LINCL/V0LEXCL</td>
<td>Name of volume</td>
</tr>
</tbody>
</table>

Special filter conditions for the Selector are:

- To include or exclude modules in the Link Pack Area, specify the keyword LINKPACKAREA (or /LPA) in the library filter statement.
- To include or exclude modules in Link List concatenations, specify the keyword SYSTEMLINKLIST (or /LNKLST) in the library filter statement.
- To include or exclude modules in both the LPA and Link List, specify the keyword SYSTEMLIBS in the library filter statement.

Examples

In the following example, a run of the Selector is used to create a usage file for January, 2003 that excludes certain operating system modules.

//SELECTION EXEC
  .
  (SELECTION JCL)
  .
  //** JAN 2003
  //FILTER01 DD *
  DATEINCL=01/01/03-01/31/03
  MODEXCL=IEB*
  MODEXCL=IEH*
  //*
  //OUTPUT01 DSN=AUDITLCM.V4R1.OUTPUT.JAN03

In the following example, a run of the Selector is used to create usage files for the first three months of 2003 that exclude certain operating system modules. At the same time, a quarterly files is created that includes usage for these modules.

//SELECTION EXEC
  .
  (SELECTION JCL)
  .
  //** JAN 2003
  //FILTER01 DD *
  DATEINCL=01/01/03-01/31/03
  MODEXCL=IEB*
  MODEXCL=IEH*
  //*
  /**< FEB 2003
Note: All IBM Tivoli License Compliance Manager for z/OS components support multiple date formats.

SELECTOR execution JCL

The following displays the SELECTOR execution JCL.

//SELECTOR JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>

//**
/** | LICENSED MATERIALS - PROPERTY OF IBM |
/** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 |
/** | ALL RIGHTS RESERVED. |
/** | |
/** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION |
/** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT |
/** | WITH IBM CORP. |
/** +-----------------------------------------------------------------
/** */
/** */
/** */ THIS JOB EXECUTES THE SELECTOR IN ORDER TO CREATE ONE OR
/** */ MORE EXTRACT DATA FILES BY APPLYING FILTERING CRITERIA TO
/** */ A GIVEN COLLECTION OF USAGE DATA FILES.
/** */
/** /* NOTE: UP TO A MAXIMUM OF 100 DIFFERENT EXTRACTED FILES
/** */ CAN BE CREATED BY A SINGLE SELECTOR RUN.
/** */
/** */ NOTE: EACH "FILTERXX" DD CARD (XX RANGES FROM 00 TO 99),
/** */ DEFINES A FILE CONTAINING A COLLECTION OF FILTER
/** */ STATEMENTS. USAGE DATA IS PLACED ON AN OUTPUT FILE
/** */ FOR A CORRESPONDING DD CARD "OUTPUTXX".
/** */
/** */ NOTE: THE OUTPUT FILES SHOULD BE PREALLOCATED WITH THE SAME
/** */ ATTRIBUTES AS THE MONITOR DETAIL DATA SETS.
/** */
/** +----------------------------------------------------------------

//FILTER02 DD *
DATEINCL=02/01/03-02/28/03
MODEXCL=IEB*
MODEXCL=IEH*
/*
/* MARCH 2003
//FILTER03 DD *
DATEINCL=03/01/03-03/31/03
MODEXCL=IEB*
MODEXCL=IEH*
/* SPILL FILE -INCLUDES MODULES EXCLUDED FOR THE MONTHS OF JAN-FEB. 2003
//FILTER1Q DD *
DATEINCL=01/00/01-03/31/01
MODINCL=IEB*
MODINCL=IEH*
/*
//OUTPUT01 DSN=AUDITLCM.V4R1.OUTPUT.JAN03
//OUTPUT02 DSN=AUDITLCM.V4R1.OUTPUT.FEB03
//OUTPUT03 DSN=AUDITLCM.V4R1.OUTPUT.MARCH03
//OUTPUT1Q DSN=AUDITLCM.V4R1.OUTPUT.Q0103
//SELECTOR PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
// VER=V4R1M0, - CURRENTLY INSTALLED VERSION
// MONDETL=, - MONITOR DETAIL DATA SET NAME
// FILTDS=, - FILTER STATEMENTS DATA SET NAME
// OUTDS=, - EXTRACTED USAGE DATA SET NAME
// PARAM= - SELECTOR PARM FIELD
// *----------------------------------------------------------------
// *========= EXECUTE THE SELECTOR ===============================
// *----------------------------------------------------------------
//SELECT EXEC PGM=AUDSLCTR,REGION=OM,
// PARM='&PARAM'
//STEPLIB DD DISP=SHR,DSN=&IDX..&VER..LOADLIB
//SYSPRINT DD SYSOUT=* 
//SYSABEND DD SYSOUT=* 
//MONDETL DD DISP=SHR,DSN=&MONDETL 
//REPORT DD SYSOUT=* 
//FILTER00 DD DISP=SHR,DSN=&FILTDS
//OUTPUT00 DD DISP=OLD,DSN=&OUTDS
// *
// PEND
// *----------------------------------------------------------------
//SELECTOR EXEC SELECTOR,
// MONDETL='XXX', <== SPECIFY DATA SET NAME IN QUOTES
// FILTDS='XXX', <== SPECIFY DATA SET NAME IN QUOTES

SPINOFF

To manually initiate the Monitor spin-off process, use the member SPINOFF in the IBM Tivoli License Compliance Manager for z/OS JCL library.

SPINOFF execution JCL

The following displays the SPINOFF execution JCL.

//SPINOFF JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
//**
//** +----------------------------------------------------------------------
//** | LICENSED MATERIALS - PROPERTY OF IBM | **
//** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 | **
//** | ALL RIGHTS RESERVED. | **
//** | | **
//** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
//** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
//** | WITH IBM CORP. | **
//** +----------------------------------------------------------------------
//**
//**
//**
//** THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER
//** FOR Z/OS SPINOFF JOB.
//**
//** THIS JOB WILL CAUSE THE MONITOR TO CLOSE THE CURRENT MONDTLXX
//** DATA SET AND START USING THE NEXT EMPTY ONE.
//**
//** AS PART OF THE SPINOFF PROCESSING, THE MONITOR MAY START A JOB
/* TO COPY THE JUST USED DATA SET TO AN ARCHIVAL DATA SET. IF THE
/* MONITOR HASN'T BEEN SET UP TO DO THIS, THEN YOU MUST DO THIS
/* MANUALLY, SO THAT THE MONITOR MAY LATER REUSE THE DATA SET.
/*
/*---------------------------------------------
//SPINOFF PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
// VER=V4R1M0 - CURRENTLY INSTALLED VERSION
/*---------------------------------------------
/
//SPINOFF EXEC PGM=AUDCNTL,REGION=4M
//STEPLIB DD DISP=SHR,DSN=&IDX..&VER..LOADLIB
//SYSPRINT DD SYSOUT=* 
//SYSABEND DD SYSOUT=* 
//PEND
/*----------------------------------------------------------------
//SPINOFF EXEC SPINOFF
Chapter 4. Facilities for data management

Filters and user product data statements are used for data management. This chapter describes these facilities.

**Filters**

Filters allow you to limit the data collected, analyzed, and reviewed.

**Inventory filters by component**

The following table lists inventory filters statements, the type of data they include or exclude, and the components that can use them.

*Table 1. Inventory filters by component*

<table>
<thead>
<tr>
<th>Filter</th>
<th>Include/Exclude by...</th>
<th>Used by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLINCL/VOLEXCL</td>
<td>Volume</td>
<td>Surveyor, Selector, Identifier, Reporter, Exporter, Selector, Distiller</td>
</tr>
<tr>
<td></td>
<td>Filter by catalog or filter by VOLSER (if not cataloged).</td>
<td>Identifier, Reporter, Exporter, Selector, Distiller</td>
</tr>
<tr>
<td>LIBINCL/LIBEXCL</td>
<td>Load library name</td>
<td>Surveyor, Identifier, Reporter, Exporter, Selector, Distiller</td>
</tr>
<tr>
<td>VENDINCL/VENDEXCL</td>
<td>Vendor</td>
<td>Identifier, Reporter, Exporter, Distiller, Reference Identification Utility</td>
</tr>
<tr>
<td>PRODINCL/PRODEXCL</td>
<td>Product</td>
<td>Identifier, Reporter, Exporter, Distiller, Reference Identification Utility</td>
</tr>
<tr>
<td>MODINCL/MODEXCL</td>
<td>Load module</td>
<td>Surveyor, Identifier, Reporter, Exporter, Selector</td>
</tr>
</tbody>
</table>

**Usage filters**

The following are usage filter statements and the type of usage data that they include or exclude. The Selector, Distiller, Reporter, and Exporter components use these usage filters.

*Table 2. Usage filter statements*

<table>
<thead>
<tr>
<th>Filter</th>
<th>Include/Exclude by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSINCL/SYSEXCL</td>
<td>System name. Multi-system data is not combined for the Reporter and Exporter.</td>
</tr>
</tbody>
</table>
The following are filtering guidelines:

- Each filter data set must contain at least one filter statement of any type.
- Inventory and usage filter statements can be intermixed.
- Most filter statements can use both character (%) and string (*) wildcards. Date and time filter statements can only use string (*) wildcards.
- The format for date filters must be the same as the format specified or implied by the DATEFORMAT EXEC parameter.

**Filter statements**

The following sections provide the syntax for each filter statement and examples. Additional conditions are also noted.

**Accounting data filters**

Accounting filters can be used by the Selector, Reporter, Exporter, and Distiller.

**Statement**

<table>
<thead>
<tr>
<th>Filter</th>
<th>Include/Exclude by...</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATEINCL/DATETIME</td>
<td>Date job was started</td>
</tr>
<tr>
<td>TIMEINCL/TIMETIME</td>
<td>Time job was started</td>
</tr>
<tr>
<td>JOBINCL/JOBEXCL</td>
<td>Job name</td>
</tr>
<tr>
<td>UIDINCL/UIDEXCL</td>
<td>User ID</td>
</tr>
<tr>
<td>ACCTINCL/ACCTEXCL</td>
<td>Job accounting fields</td>
</tr>
</tbody>
</table>

Table 2. Usage filter statements

The following are filtering guidelines:
- Each filter data set must contain at least one filter statement of any type.
- Inventory and usage filter statements can be intermixed.
- Most filter statements can use both character (%) and string (*) wildcards. Date and time filter statements can only use string (*) wildcards.
- The format for date filters must be the same as the format specified or implied by the DATEFORMAT EXEC parameter.
Examples

**ACCTINCL=1/ABCD**
Includes all jobs whose accounting data contains a field number 1, the text of which consists of ABCD.

**ACCTEXCL=9/WXYZ**
Excludes all jobs whose accounting data contains a field number 9, the text of which consists of WXYZ.

**ACCTINCL=2/%%%**
Includes all jobs whose accounting data contains a field number 2, the text of which consists of exactly 3 characters.

**ACCTINCL=2/INTT**
Includes all jobs whose accounting data contains a field number 2, the text of which begins INTT.

**ACCTINCL=3/*ABC**
This statement includes all jobs whose accounting data contains a field number 3, the text of which contains the string ABC anywhere.

**Date filters**

Date filters can be used by the Selector, Reporter, Exporter, and Distiller.

**Statement**

**DATEINCL=DATE[-DATE]**
**DATEEXCL=DATE[-DATE]**

When specifying a date, the * (asterisk) wildcard character means “from the earliest” or “to the latest” subject to formatting as specified by DATEFORMAT parameter (default is mm/dd/ccyy). See Print and data space parameters on page 18.

**Examples**

**DATEINCL=1/1/2005-1/31/2005.**
Includes all jobs started during the month of January 2005.

**DATEEXCL=*-12/31/2005.**
Excludes all jobs started on or before 31 December 2005.

**Job name filters**

Job filters can be used by the Selector, Reporter, Exporter, and Distiller.

**Statement**

**JOBINCL=JOBNAME**
**JOBEXCL=JOBNAME**

**Examples**

**JOBINCL=ABCD**
Includes usage data about all jobs submitted under any name beginning with ABCD or ending with WXYZ.

**JOBEXCL=ABCD**
Excludes usage data about all jobs submitted under any name beginning with ABCD.

**Library filters**

Library filters can be used by the Surveyor, Identifier, Selector, Reporter, Exporter, and Distiller.
Statement
LIBINCL=LIBRARY_NAME[VOLUME]
LIBEXCL=LIBRARY_NAME[VOLUME]

The volume keyword is optional and allows for filtering on specific uncataloged libraries on a volume.

Examples
LIBINCL=SYS1.*
LIBINCL=SYS1.*
LIBEXCL=SYS2.*
LIBINCL=SYS2.USR*
LIBINCL=SYS1.LINKLIB/SYSRES

This statement includes only libraries that have a first level qualifier of SYS1.
This series of statement includes all libraries that a first level qualifier of SYS1 and all libraries with a first level qualifier of SYS2 except those starting with SYS2.USR.
This statement includes the library SYS1.LINKLIB only on the volume SYSRES.

Module filters

Module filters can be used by the Surveyor, Identifier, Selector, Reporter, and Exporter components.

Statement
MODINCL=MODULE
MODEXCL=MODULE

Examples
MODINCL=ABC*  This statement includes only load modules beginning with ABC.
MODEXCL=TEMP*  This statement excludes all load modules beginning with TEMP.

Product filters

Product filters can be used by the Identifier, Reporter, Exporter, and Distiller.

Statement
PRODINCL=PRODUCT
PRODEXCL=PRODUCT

The product is a product ID in the identified inventory. Product IDs are displayed on inventory reports and in Spotlight+. The product ID –UNRECOG can be used to filter unattributed load modules. An unattributed load module is a load module that the Identifier process did not associate with a product.
Examples

PRODINCL=CAASM2
PRODINCL=DB2IBM
PRODEXCL=DB2IBM
PRODEXCL=CAASM2

These statements include only the products DB2 and CA-ASM2.

SYSINCL=PRODSYS1
SYSEXCL=PRODSYS2

These statements include all products except DB2 and CA-ASM2.

System filters

System filters can be used by the Selector, Reporter, Exporter, and Distiller.

Statement

SYSINCL=SYSTEM NAME
SYSEXCL=SYSTEM NAME

The system name is retrieved from the CVT when running the Surveyor or Monitor job.

Examples

SYSINCL=PRODSYS1
SYSEXCL=PRODSYS2

Includes the system PRODSYS1.
Excludes the system PRODSYS2.

Time filters

Time filters can be used by the Selector, Reporter, Exporter, and Distiller.

Statement

TIMEINCL=TIME[-TIME]
TIMEEXCL=TIME[-TIME]

A time is given as a 4-digit string, in hh:mm format. A time is given using a 24-hour clock. Use the* (asterisk) wildcard character, which means “from any time” or “to any time.”

Examples

TIMEINCL=7:00-17:30
TIMEEXCL=00:00-07:00

Includes all jobs started between 7:00 AM and 5:30 PM.
Excludes all jobs started between midnight and 7:00 AM.

User ID filters

User ID filters can be used by the Selector, Reporter, Exporter, and Distiller

Statement

UIDINCL=USER_ID
UIDEXCL=USER_ID
Examples

Vendor filters

Vendor filters can be used by the Identifier, Reporter, Exporter, and Distiller.

Statement

VENDINCL=VENDOR
VENDEXCL=VENDOR

The vendor is a vendor ID in the identified inventory. Vendor IDs are displayed on inventory reports and in Spotlight+. The vendor code –UNIDENT can be used to filter unidentified load modules. An unidentified load module is a load module that the Identifier process is able to associate with a vendor, but not a product.

Examples

VENDINCL=BMC
VENDINCL=CA
VENDEXCL=IBM
VENDEXCL=CA

Includes only products from vendors BMC and Computer Associates
Excludes all products from vendors IBM and Computer Associates

Volume filters

Volume filters can be used by all components, except the Extractor and the Monitor.

Statement

VOLINCL=volume|–CTLG–
VOLEXCL=volume|–CTLG–

The -CTLG- keyword is optional and is not permitted during a Surveyor run.

Examples

VOLINCL=SYS1
VOLEXCL=SYS1
VOLINCL=SYS*
VOLEXCL=SYS1%

Includes only the volume named SYS1.
Excludes the volume named SYS1.
Includes all volumes with a name beginning SYS, but exclude volumes that begin with SYS1, have any value as the fifth character and the sixth character is blank

Combine filter statements

The following are some examples of combining filters statements.

Filter by date and time

These statements include only the jobs that started between 9:00 PM and midnight on January 31, 2006.

DATEINCL=01/31/2006
Filter by vendor and product

These statements would include all CA products except CA-7.
PRODEXCL=CA7
VENDINCL=CA

These statements would include all IBM products except ISPF.
PRODEXCL=ISPF
VENDINCL=IBM

Filter by library and vendor

These statements include only products from CA or IBM, which are in libraries whose first-level qualifier is USR or SYS3:
LIBEXCL=USR.*
LIBEXCL=SYS3.*
VENDINCL=CA
VENDINCL=IBM

User Product Data Statements

The following statements are used by the User Product Data (USRPDATA) file to supplement or override information in the Knowledge Base without modifying the Knowledge Base directly. The syntax for each statement and examples are provided in the following sections. Additional conditions are also noted.

The User Product Data File stream is a simple fixed or fixed blocked sequential data set or a member of a library with a logical record length of 80. These statements provide the ability to add new products and vendors, make changes to products and vendors already in the Knowledge Base, and associate modules with a product.

Statement format

The fields of each statement are in fixed format. The format for each customization statement is as follows:

• A command statement beginning in column 1
• The value beginning in column 10
• An optional comment beginning in column 70

The following example shows a customization statement to add a new vendor. The ADDVEND statement defines a new vendor. The VENDID statement provides an ID for the vendor
ADDVEND ACME WORLD ENTERPRISES
VENDID ACME

For additional information about statement formats, see Add and delete modules on page 65.
Statement groups

Performing product and vendor operations requires a group of statements. Groups of statements can occur in your customization input in any order. A group is opened by the customization statement that performs the appropriate action and implicitly closed by starting a new group, or by the end of the file. In the following example, the statement to add a vendor (ADDVEND) opens the first group. The second group is opened by the statement to add a product (ADDPROD). The PRODID provides an ID to identify the product.

ADDVEND ACME WORLD ENTERPRISES
VENDID ACME
ADDPROD INTERNAL APPLICATION
PRODID INTAPP
VENDID ACME

The following are guidelines for vendor and product IDs:

- For commands that refer to a product ID or vendor ID, the IDs must be defined in the Knowledge Base or have been defined in USRPDATA prior to use.
- Vendor IDs can be used in VENDINCL and VENDEXCL filter statements.
- Product IDs can be used in PRODINCL and PRODEXCL filter statements.

Add and modify vendors

This section describes how to add and modify vendors. The following is a list of statements with description.

**ADDVEND vendor name and description**

Defines a new vendor. Must be followed by a VENDID statement. The vendor name can be up to 40 characters long.

**CHGVEND vendor name and description**

Changes the name of a vendor. The vendor name can be up to 40 characters long. Must be followed by a VENDID statement.

**VENDID vendor id**

Provides a vendor ID for the vendor. For the vendor, it provides a vendor ID when following a ADDVEND or CHGVEND statement. For the product, it provides a vendor ID when following a PRODID statement, for the specified product. Except when used with an ADDVEND statement, the VENDID statement must already exist. The vendor ID can be up to eight characters with no embedded blanks.

Examples

This example adds a vendor named Program Master International that has the vendor ID of PMC.

ADDVEND PROGRAM MASTER INTERNATIONAL
VENDID PMC

This statement changes the name of vendor with the vendor ID PMC.

CHGVEND PROGRAM INTERNATIONAL COMPANY
VENDID PMC
Add and modify products

This section describes how to add and modify products. The following is a list of statements with description.

**ADDPROD product name and description**

Defines a new product. The product name and description can be up to 50 characters long. Must be followed by a PROID statement that is not a generated PROID.

**CHGPROD product name and description**

Changes the name of a product. The product name and description can be up to 50 characters long. Must be followed by a PROID statement.

**PRODID prodid**

Provides a product ID. The PRODID can be up to eight characters with no embedded blanks.
- Provides a PRODID following an ADDPROD or CHGPROD statement.
- Precedes one or more ADDMOD, DELMOD, and LIBMOD statements to change, add and delete modules in a new or existing product definition.
- When used with a CHGPROD, ADDMOD, DELMOD, or LIBMOD statement, the PRODID must already exist.

**Examples**

The following example will add the product named Program Master Plus that has the Product ID PROGMSTR.

```
ADDPROD PROGRAM MASTER PLUS
PRODID PROGMSTR
```

This example changes the name of the product with the product ID of PROGMSTR.

```
CHGPROD PROG-MASTER PLUS
PRODID PROGMSTR
```

**Note:** The vendor associated with the added product comes from the last entered VENDID statement.

Add and delete modules

This section describes how to add and delete modules. The following is a list of statements with description.

**ADDMOD module-name1,module-name2,module-name3,...,module-name**

Specifies the names of the module(s) to associated with a product.

**DELMOD module-name1,module-name2,module-name3,...,module-name**

Specifies the names of the module(s) to be removed from the list of modules associated with a product.

When the last character of a module name in a DELMOD statement is an "\*", then the effect is to remove any generic module name definition that is an exact match.
For DELMOD, the "*" as a last character does not indicate “match any zero or more characters starting in this position.”

**LIBMOD library-name [volume]**

Indicates that all load module names found in the specified library are to be associated with the product, regardless of which load library they are found in.

The library name must be unique; generic characters (\% and * ) are not acceptable. If the data set isn’t cataloged, you must specify the volume in column 55. All LIBMOD statements are processed before DELMOD statements, so you can use DELMOD to adjust the results of LIBMOD statements.

**Guidelines**

The following are guidelines for adding and deleting modules:

- LIBMOD statements accept a second keyword beginning in column 55. Null statements (consisting entirely of blanks) and comment lines (indicated by an asterisk in column 1) can be freely intermixed.

- You can specify as many module names or generics (*) that can fit in the input record (columns 10 through 68). Column 69 must be blank. There must be at least one blank following the last module name.

- For ADDMOD, the module name can have an asterisk ("*" ) as the last character to indicate “match any zero or more characters starting in this position.” The asterisk cannot be used before the fourth position. The percent sign ["%"] cannot be used.

**Example**

This example associates modules to the PRODID ABCACCT, including all modules that begin with ABCWXYZ.

```
PRODID ABCACCT
ADDMOD ABCWXYZ*
ADDMOD ABCDEFZ1,ABCDEFZ2
```
Chapter 5. ISPF panels for components and facilities

You can use ISPF to modify JCL and run all of the IBM Tivoli License Compliance Manager for z/OS components (except the Monitor). For jobs submitted using the ISPF interface, working sets are used to save options, parameters, and data set names for a component or that are common across all the IBM Tivoli License Compliance Manager for z/OS jobs. The IBM Tivoli License Compliance Manager for z/OS ISPF can be invoked from ISPF Option 6 by issuing the command:

AUDITLCM.V4R1M0.CLIB(AUDITLCM)

ISPF main menu

The following are the IBM Tivoli License Compliance Manager for z/OS components and functions that can be accessed from the ISPF main menu.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Working Sets - Define/Modify/Select parameters, data set names</td>
</tr>
<tr>
<td>1</td>
<td>KB Customization - Update Knowledge Base, Global/Local</td>
</tr>
<tr>
<td>2</td>
<td>Software Inventory - Survey load libraries/modules in your system</td>
</tr>
<tr>
<td>3</td>
<td>Identify Products - Identify products in an inventory</td>
</tr>
<tr>
<td>6</td>
<td>Report Generation - Generate inventory, product, and usage reports</td>
</tr>
<tr>
<td>7</td>
<td>Export Data - Export inventory and usage data</td>
</tr>
<tr>
<td>8</td>
<td>Distill Data - Distill information to download to Desktop</td>
</tr>
<tr>
<td>10</td>
<td>Extract SMP/E Data - Extract SMP/E target zone data from CSI</td>
</tr>
<tr>
<td>11</td>
<td>Select Usage Data - Select usage data from Monitor output</td>
</tr>
<tr>
<td>12</td>
<td>Consolidate RIFs - Consolidate multiple RIF files into one RIF</td>
</tr>
<tr>
<td>X</td>
<td>Exit - Leave LCMz, return to previous screen</td>
</tr>
</tbody>
</table>

Working Sets

Create working sets.

KB Customization

Customize the Knowledge Base with additional information about vendors, products, and associated load modules.

Software Inventory

Examine the volumes on your system and find load libraries and load modules.

Identify Products

Determine the product from the modules found by the Surveyor.

Report Generation

Produce easy-to-read reports about the inventory and usage information for your system.

Data

Produce flat files containing information about product inventory and usage on your system.

Distill Data

Produce inventory and usage information in a file that can be imported into Spotlight+.

Extract SMP/E Data

Extract SMP/E information about the IBM products installed on your system.
Using the ISPF interface

Perform the following steps to specify the name of a data set and select parameters. This example is for the Surveyor.

```
LCM: (DEFAULT)-------------- Software Inventory ------------------------------
COMMAND ===>
Inventory DSN . . . AUDITLCM.V4R1M0.SURVEY
Maximum number of volumes to scan concurrently . . . .
Minimum number of days before a volume is rescanned . . .
Run Time Options (Enter '/' to select option):
  Stop on access error
  / Specify Permanent Filters
  Specify Temporary Filters

(Press ENTER to proceed or END to cancel)
```

- To specify the name of a data set, type the name and press Enter. In this example, the name of the Inventory DSN is AUDITLCM.V4R1M0.SURVEY.
- To select an option, type ‘/’ and press Enter. In this example, a new inventory will be created.
- For other options, type ‘/’ and press Enter. In this example, the Specify Permanent Filters option is selected.

Follow the screen prompts to continue. In this example, press Enter.
Specifying filters

The ISPF panels for IBM Tivoli License Compliance Manager for z/OS components that support filters contain a Specify Filters option. If you select this option, a panel is displayed that allows you to specify filters. In the following example, a filter statement is specified that will include all volumes that begin with SYS1 when running the Surveyor. To specify filter statement using the ISPF Interface:

1. Type the abbreviated statement for the item to be filtered on at the option line. Press Enter.

   LCMz-(DEFAULT)----------- Permanent Inventory Filter Selection ---------------
   OPTION ===> vi                                               Scroll ===> CSR
   Select a filter followed by I (include) or E (exclude)
   (Examples: "VI" is Volume Include, "BE" is Library Exclude)
   Volume  liBrary   Module
   You may use A(fter) or B(efore) line commands to specify placement.
   Press END to process or enter CANCEL to cancel.
   ---------------------------------------------------------------
   ******** ************ Top of Data ************* Bottom of Data ************

2. Type the item to be included and press Enter.

   LCMz-(DEFAULT)----------- Permanent Inventory Filter Selection ---------------
   Essssssssssssssssssssssssssssss Include Volume sssssssssssssssssssssssssssssN
   e Command ===>                                                               e
   e Volume to be included sys1*                                               e
   e (Press ENTER to continue; END to cancel)                                   e
   e                                                                            e
   DssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssM

You can also enter the filter statement directly. By using either option, as shown in the following, the specified filter statement is now added.

   LCMz-(DEFAULT)----------- Permanent Inventory Filter Selection ---------------
   OPTION ===>                                                   Scroll ===> CSR
   Select a filter followed by I (include) or E (exclude)
   (Examples: "VI" is Volume Include, "BE" is Library Exclude)
   Volume  liBrary   Module
   You may use A(fter) or B(efore) line commands to specify placement.
   Press END to process or enter CANCEL to cancel.
   ---------------------------------------------------------------
   ******** ************ Top of Data ************* Bottom of Data ************
   000001 VOLINCL=SYS1*
   ******** ************ Top of Data ************* Bottom of Data ************

At this point, you can add new filter statements by continuing the above process. Additionally, the existing statements can be moved or changed by using ISPF edit commands. For more information, see Filters on page 57.
Set job options panel

After you have specified the required options and data sets for components, the Set Job Options panel is displayed. Use this panel to set print, date, and data space options. The following is a list of ISPF actions and description for this screen.

The following is a list of ISPF actions and description for this screen.

**Print options**

- **Print in Upper Case Only**
  - Output is printed in all upper case characters.

- **Print in Bold**
  - Some lines of output are printed in bold type by overprinting the same line several times.

- **Date Format**
  - Date format on reports and for processing (for example, in filter statements). An 8-character or 10-character string consisting of the letters DD, MM, and either YY or CCYY, separated by an arbitrary character. The default is MM/DD/CCYY. All IBM Tivoli License Compliance Manager for z/OS components support multiple date formats. Date filters are assumed to be in the same format as the one specified using DATEFORMAT.

- **Lines per Page**
  - Number of lines to be printed per page of all printed output produced. This is a number from 30 to 999, or 0. The default is 60.
Data space usage

**ALL**
All IBM Tivoli License Compliance Manager for z/OS processing tables are in data spaces in storage.

**SELECTED**
IBM Tivoli License Compliance Manager for z/OS determines which processing tables use data spaces. This is the default.

**NONE**
Data space support is disabled. DASD workfiles are used instead.

You can also specify these options by creating a Working Set.

**Note:** After the generated JCL for the component appears, follow prompts to submit the job.

**Working sets**

Working Sets can be created, updated, selected, or deleted by selecting Option 0 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.

From the Define Working Sets panel, enter:
- **A** beside the name of an existing working set to add a new working set.
- **U** beside the name of the working set to be updated.
- **S** beside the name of the working set to be selected.
- **D** beside the name of the working set to be deleted. The currently selected working set cannot be deleted.

In this example, a new working set called ACME is being added, based on the DEFAULT working set that uses the IBM Tivoli License Compliance Manager for z/OS default parameters and data set naming convention.

<table>
<thead>
<tr>
<th>Working Set Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFAULT</td>
<td>Default Working Set</td>
</tr>
</tbody>
</table>

From the Update Working Set panel you can edit job card information, print options or the options and data sets names for the components.
Job cards

The Job Cards panel is used to specify any job accounting information for all jobs.

For more information see Set job options panel on page 70.

Task settings

The Task Settings panel allows you to specify data sets and options for IBM Tivoli License Compliance Manager for z/OS components.

For information on any component, see the section on that component.
Running the Surveyor

To modify and execute the Surveyor, select Option 2 on the IBM Tivoli License
Compliance Manager for z/OS ISPF interface main menu.

Software inventory

The Software Inventory panel can be used to create and update a Surveyor data set
and to specify parameters and filters.

| Inventory DSN | Required. Surveyor output. This job requires that
<table>
<thead>
<tr>
<th></th>
<th>the output data set is pre-allocated.</th>
</tr>
</thead>
</table>
| Maximum number of volumes to scan concurrently | Optional. Specifies the number of volumes to
| scan concurrently. If you do not specify a number, the default value (3) is used. |
| Minimum number of days before a volume is rescanned | Optional. Specifies the minimum number of days
| that must pass before a volume is rescanned. If you do not specify a number, the default value (7) is used. |

Run time options

Stop on access error Stops the Surveyor the first time it fails to access a
| data set. |
| Specify Permanent Filters | Optional. Permanent filter statements. |
| Specify Temporary Filters | Optional. Temporary filter statements. |

Create options

Select “Create a new load library inventory.” The CREATE Options panel appears:
The following is the ISPF action and description for this screen.

**Cataloged Libraries Only** Survey only cataloged libraries. By default all load library data sets are surveyed.

**Running the Identifier**

To modify and execute the Identifier, select Option 3 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.

**Identify Products**

Use the **Identify Products** panel to specify the data sets (for example, the Surveyor output) that are input to the Identifier. You can also specify filters and parameters.

<table>
<thead>
<tr>
<th>LCMTz-(DEFAULT)</th>
<th>Define Working Sets</th>
<th>Row 1 to 1 of 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Set Name:</td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td>Description...:</td>
<td>Default Working Set</td>
<td></td>
</tr>
<tr>
<td>Minimum modules to identify:</td>
<td>Minimum number of modules needed to identify a product</td>
<td></td>
</tr>
<tr>
<td>Products (Identifier) DSN:</td>
<td>AUDITLCM.V4R1M0.IDENTIFY</td>
<td></td>
</tr>
<tr>
<td>Volume Serial...:</td>
<td>XXXXXX</td>
<td></td>
</tr>
<tr>
<td>Space in cylinders:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USRPDATA DSN:</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Specify fully qualified data set names without quotes.</td>
<td>Press END to save changes, CANCEL to cancel.</td>
<td></td>
</tr>
<tr>
<td>Minimum modules to identify:</td>
<td>The minimum number of modules that must be found in a library before the identification of a product is made. Valid values are 1 through 10. The default value is 2.</td>
<td></td>
</tr>
</tbody>
</table>

The following is a list of ISPF actions and description for this screen.

**Products DSN** Required. Identifier output

**Volume Serial** Optional. Specify a specific volume as the destination of the file specified in Products (Identifier) DSN.

**Space in cylinders** Optional. Space the number of DASD cylinders to allocate for the file specified in Products (Identifier) DSN.

**USRPDATA DSN** Optional. User Product Data File

**Minimum modules to identify**

**Running the Distiller**

To modify and execute the Distiller, select Option 8 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.
Distill Data

Use the Distill Data panel to specify input and output data set names and specify filters for the Distiller.

The following is the ISPF action and description for this screen

**Transfer DSN** Required. Distiller output.

Distill data description

After you complete the Distill Data panel, the Distill Data Description panel appears. As shown in the following example, this panel allows you to specify the system, location, and enterprise displayed in Spotlight+.

Running the Reporter

To modify and execute the Reporter, select Option 6 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.
Generate reports

Use the Generate Reports panel to specify data sets and filters and select a report category.

<table>
<thead>
<tr>
<th>LCMz-(DEFAULT)</th>
<th>Generate Reports</th>
<th>COMMAND ====&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products DSN</td>
<td>AUDITLCM.V4R1M0.IDENTIFY</td>
<td></td>
</tr>
<tr>
<td>Monitor Detail DSN</td>
<td>AUDITLCM.V4R1M0.MONDETL</td>
<td></td>
</tr>
</tbody>
</table>

Run Time Options (Enter "/" to select option):
- Specify Filters
- Include unsurveyed modules
- Specify Report Header
- Select report category
  1. Inventory
  2. Usage
  3. Inventory/Usage
  4. All

LCMz-(DEFAULT)------------------ Generate Reports ------------------

For a list of reports and their descriptions, see Reports on page 39.

The following is a list of ISPF actions and description for this screen.

Products DSN Required. Identifier output.

Monitor Detail DSN Optional. Monitor output. Required for usage reports.

Run time options
- Specify filters Optional. Filter statements.
- Include unsurveyed modules Activates the reporting of modules that have usage reported by the Monitor, but are in a library that was not surveyed.
- Specify Report Header Completes the Report Title panel to add a header that will appear on the specified report.
- Select Report Category Selects the report category to bring up a list of reports for that category.

Report Title

To add a report header, use the Report Title panel.
Inventory reports

This panel is displayed if Inventory is selected from the Generate Reports panel.

Usage reports

This panel is displayed if Usage is selected from the Generate Reports panel.

Inventory/usage reports

This panel is displayed if Inventory/Usage is selected from the Generate Reports panel.
Report parameters

This panel is displayed if a report parameter is changed for a usage report.

The following is a list of ISPF actions and description for this screen.

Value to ignore, or blank  
A usage count above or below which items at the highest level of the report are excluded.

Exclude data  
Specify whether to exclude data above or below the value.

See Reporter on page 35 for more information on these parameters.

Running the Extractor

To modify and execute the Extractor, select Option 10 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.

Extract SMP/E data

Use the Extract SMP/E Data panel to specify input and output files and specify parameters.

The following is a list of ISPF actions and description for this screen.

Extractor Input DSN  
Optional. Data set created during a previous run of the Extractor job.

Extractor Output DSN  
Optional. Extractor output. For Extractor reporting only, do not specify this value.
Select processing mode
Create
  Creates a new Extractor output.
Update
  Updates existing Extractor output with new or changed CSIs.
Report only
  Generates a report only.

Report options
No report
  No report is printed.
Summary report
  Lists only the libraries and other information extracted from SMP/E data.
Detail report
  Results in a report showing a detailed list of all items extracted from within the SMP/E data set, including modules.

Run time options
Bypass SMP/E data extracting
  Supports maintenance of destination libraries within the Extractor Output file without accessing SMP/E data.
Do not extract DDDEF data
  Notifies the Extractor not to automatically process data found in SMP/E for the defined CSI.

Enter control statements when the JCL appears. See Extractor on page 47 for more information.

Running the Selector

To modify and execute the Selector, select Option 11 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.

Select Usage Data

Use the Select Usage Data panel to specify input and output files.

| LCMz-(DEFAULT).--------------- Select Usage Data ---------------------------- |
| COMMAND =>                    |
| Monitor Detail DSN... AUDITLCM.V4R1M0.MONDETL |
| Selector Output DSN... AUDITLCM.V4R1M0.SELECT00 |

(Press ENTER to proceed or END to cancel)

Note: To create multiple Selector output files, manually edit the generated JCL using the IBM Tivoli License Compliance Manager for z/OS ISPF interface.

The following is a list of ISPF actions and description for this screen:

Monitor Detail DSN
  Monitor data set.
Selector Output DSN
  Required. The output files corresponding to FILTERnn; this file contains filtered Monitor usage file. This job assumes that the output data set has been preallocated. (It can, however, be overwritten).
Customizing the Knowledge Base

To customizing the Knowledge Base, select Option 1 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu.

**USRPDATA**

To specify USRPDATA, enter a Product Definition DSN (data set name, which must be preallocated) and select option 2.

The following is the ISPF action and description for this screen.

**Product Definition DSN** User Product Data File

The Product Definition file opens in a standard ISPF editing session. Add, change, or delete customization statements in the Product Definition file. For more information, see *User Product Data Statements* on page 63 and *Advanced USRPDATA statements* on page 81.
Chapter 6. Special topics

This chapter focuses on some features of IBM Tivoli License Compliance Manager for z/OS that may be required to meet a technical or business need within your organization.

Advanced USRPDATA statements

User Product Data statements (USRPDATA) allow you to temporarily supplement or override information in the Knowledge Base. The following statements may be required to ensure that products are identified according to your needs. For example, some statements are used to enhance the identification of version and release information.

The User Product Data file statements are a simple fixed or fixed blocked sequential data sets or a members of a library with a logical record length of 80.

Statement format

The format in the following example covers the statements ADDVGRP, CHGVGRP, ASSIGN and DONTHAVE.

CHGVGRP ID=ACF2,NAME=‘ACCESS CONTROL FACILITY 2’,SHORTPID=ACF2,ACF2 CHANGE MAXVER=8

- The first keyword value pair following the verb must begin in column 10 or after.
- Statement is continued by a comma and (space) following a keyword value pair, and starting the continuation in column 2 or later.
- Any text following the space following the last keyword value pair in a line is considered a comment. In the example above “ACF2 change” is a comment in line 1.

Version groups

The following section describes USRPDATA version groups.

ADDVGRP

Adds a new version group.

ADDVGRP

ID=<GRPID>,VENDOR=<VENDID>[,NAME=<DESCRIPTION>]{,PRDTAG=<PROD_STRING>}
{,SHORTPID=<NAME_PREFIX>}{,PRDPREF=<PRODID_STRING>}{,MAXVER=<VER_NO>|OFF}[,MODPREFIX=|YES|NO]

CHGVGRP

Changes version group parameters.
CHGVGRP ID=〈GRPID〉, VENDOR=〈VENDID〉[ , NAME=〈DESCRIPTION〉]
[ , PRDTAG=〈PROD_STRING〉]
[ , SHORTPID=〈NAME_PREFIX〉] [ , PRDPREF=〈PRODID_STRING〉] [ , MAXVER=〈VER_NO〉|OFF] [ , MODPREFIX=YES|NO]

where:

<grpid>
The Version Group ID; a PRODID with the same id must be defined, and is the mnemonic PRODID associated with the version group. Required.

<vendid>
The vendor ID of the vendor associated with the version group. Required.

<description>
The version group name (up to 50 characters) It is enclosed in single quotation marks (’); A pair of single quotes must surround a description with embedded quotes. Required when defining a version group.

PRDTAG
Specifies the character string that when detected in a data set name is an indication that the product is present, e.g., DB2 within SYS2.DB2.V5R1.LOAD. Code as a 1-8 character string; the first character must be alphabetic.

If omitted, the default is the version group name.

SHORTPID
Specifies the character string representing the “short form” of the version group name to be used to detect concatenated version/release numbers (as in CICS41). Code as a 1-6 character string; the first character must be alphabetic. If omitted, the default is the version group name, if 6 characters or less; otherwise, none.

PRDPREF
Specifies the PRODID prefix to be used when generating product identifiers. Default is the version group name if it is five or less characters; otherwise, code as a 1-5 character string; the first character must be alphabetic.

Required when PRODID is longer than 5.

MAXVER=〈ver_no〉| OFF
Specifies the maximum version number for this product and is used to determine the separation between version and release numbers when no marker is present; the default value is 9, maximum value is 35 (1 <= MAXVER <= 35).

MODPREFIX
Specifies that modules can be attributed to a product in this Version Group by matching the module prefix of other modules in the same library that have been identified as belonging to that Version Group (YES).
A value of NO specifies that the module prefix cannot be used to attribute any module to any product in the version group.

**Note:** If a keyword is unspecified, the parameter’s default value is used.

### ADDVGRP ID=<GRPID>, VENDOR=<VENDID>, MAXVER=OFF

Disables product versioning for a new version group.

### CHGGRP ID=<GRPID>, MAXVER=OFF

Disables product versioning for an existing version group.

<grpid>

Is the Version Group ID; a PRODID with the same id must be defined, and is the ‘mnemonic’ PRODID associated with the version group. Required.

**MAXVER=OFF**

Disables Product Versioning for specific version groups.

**VERGRPID id**

Associates a user-defined product to a Version Group id. The PRODID statement for the product to which the VERGRPID statement applies must precede the VERGRPID statement.

### Other USRPDATA statements

The following section describes other USRPDATA statements.

**ASSIGN prodid [libname [volser]]**

Forces assignment of modules residing in particular libraries to specified products.

or

### ASSIGN ID=<PRODID>

[,DSN=<LIBNAME>[,VOL=<VOLSER>[,VER=<VV>[,REL=<RR>]]]]

Forces assignment of modules residing in particular libraries to the specific version and release information of a product.

where:

**prodid**

Is the mnemonic or IPNI product id to be assigned; dynamically created PRODIDs, cannot be specified.

**libname**

Is the library name or pattern.

**volser**

Is the volume serial number; if not specified, the library is assumed to be cataloged.
vv

Is the version number (0 through 35). VER=vv can only be specified with a mnemonic PRODID and, only when a library name is present. For IBM products, if a mnemonic is specified, the IBM Product Number (if known) is substituted for the PRODID.

rr

Is the release number (0 through 15). Requires the vv parameter.

REL=rr can only be specified with a mnemonic PRODID and, only when a library name is present. For IBM products, if a mnemonic is specified, then the IBM Product Number (if known) is substituted for the PRODID.

Guidelines for ASSIGN

The ASSIGN statement can be used in conjunction with the ADDMOD statement. If the library name is omitted, ADDMOD statements are required. The following table describes the assignment made based on the use of library names and ADDMOD statements.

*Table 1. Guidelines for ASSIGN*

<table>
<thead>
<tr>
<th>Library Names Specified?</th>
<th>ADDMODS Specified?</th>
<th>Assignment Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Specified modules within the library.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>All modules within the library.</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>Specified modules in all libraries.</td>
</tr>
</tbody>
</table>

The same product in a specific library cannot be assigned to more than one version/release. This includes the assignment to a product with no version/release.

ASSIGN statements are processed in the order of appearance in the input data set. ASSIGN statements for the same library (or libraries) for different products must specify unique sets of module names.

DONTHAVE prodid [libname [volser]]

Indicates that a particular product doesn't exist in your installation or a particular library.

or

DONTHAVE ID=<PRODID> [,DSN=<LIBNAME>[,VOL=<VOLSER>] ] [,VER=<VV> [,REL=<RR>]]

Indicates that a particular product version/release does not exist in your installation or a particular library.

where:

prodid

The mnemonic or IPNI ProdID to be eliminated from the identification process.
If a mnemonic ProdID is specified without VER/REL, all products in the
associated version group are eliminated. To eliminate a particular version/release of a product, do not code the dynamic ProdID, code the mnemonic with VER/REL keywords. If the ID parameter is not used, ProdID starts in column 10.

**libname**

Is the library name or pattern. If the ID parameter in not used libname starts in column 19.

**volser**

Is the volume serial number; if not specified, the library is assumed to be cataloged. If the ID parameter in not used volser starts in column 64.

**vv**

Is the version number (0 through 35); code as 1 or 2 digits; may only be specified with a mnemonic ProdID or version group id.

**rr**

Is the release number (0 through 15); code as 1 or 2 digits; may only be specified with a mnemonic ProdID or version group id. Requires the vv parameter.

**Guidelines for DONTHAVE**

If a libname/volser is present, the specified product cannot be assigned to modules in the specified library (or libraries--both 'libname' and 'volser' may contain generic characters), but may be assigned to modules in other libraries.

DONTHAVE statement supercedes any other product identification.

**Note:** Do not reuse a product ID (PRODID) of a product you have specified on a DONTHAVE statement

**DONTHAVE and ASSIGN**

If a DONTHAVE and a ASSIGN statement specify the same library (or set of libraries) and product ID, processing is terminated.

---

**Knowledge Base Customization Tool**

The Knowledge Base Customization Tool (KBCUT) makes permanent changes to the Knowledge Base installed at your site.

**Important:** Use of the Knowledge Base Customization Tool is not generally recommended and will not be supported in future release of IBM Tivoli License Compliance Manager for z/OS.

The Customization Tool Input statements are a simple fixed or fixed blocked sequential data set or a member of a library with a logical record length of 80.
Knowledge Base Customization Tool Statements

Knowledge Base Customization Tool statements include making changes to the product ID associated with a product, the vendor ID associated with a vendor, and deleting a product from the Knowledge Base.

**ADDPNUM productnumber**

Adds an 8-character IBM product number to the product number list for the specified product. A maximum of 20 product numbers per product are allowed. The ADDPNUM statement must be preceded by a PRODID statement.

**CHGPID newprodid**

Changes the product ID. The CHGPID statement can be used simultaneously with a CHGPROD statement. Must be followed by a PRODID statement. The new product ID must not already exist in the Knowledge Base.

**CHGVID newvendorid**

Changes the vendor ID. Must be followed by a VENDID statement. All new vendor IDs must be new (unique). All instances of the vendor ID in the Knowledge Base are changed. The CHGVID statement can be used simultaneously with a CHGVEND statement.

**COPYPID prodid1[,prodid2[,…[,prodidn]]**

Indicates the product or products whose module definitions are to be copied to the product designated by the associated PRODID statement. One or more product IDs can be specified, separated by commas, up to column 68. Additional COPYPID statements can also be specified. The Copy Product statement sequence consists of the standard PRODID statement, which specifies the ID of the product to which definitions are copied, followed by one or more COPYID statements, which specify the product IDs to be copied. The products and their definitions are not deleted. ProdID1 starts in column 10. Column 69 must be blank. Wildcards are not supported.

COPYID and MOVEID statements can be included in the same statement group.

**DELPNUM product number**

Deletes an IBM product number. The specified product number is deleted from the product number list for the specified product. The DELPNUM statement must be preceded by a PRODID statement.

This statement is valid for the Knowledge Base Customization Tool Input only.

**DELPOLID prodid**

Deletes the product specified by PRODID. Subsequent statements cannot refer to the deleted product or products. However, a new product or products can be defined using the deleted PRODID or IDs.
MOVEPID prodid1[,prodid2[,…[,prodidn]]]

Indicates the product or products whose module definitions are to be moved to the product designated by the associated PRODID statement. One or more product IDs can be specified, separated by commas, up to column 69. Additional MOVEPID statements can also be specified. The moved products (and their definitions) are deleted. ProdID1 starts in column 10. Column 69 must be blank. Wildcards are not supported.

MOVEPID and COPYID statements can be included in the same statement group.

UPDATE update history description

This statement can appear anywhere in the Customization Input. The update history description can be up to 40 characters in length.

Executing KBCUT

To run the Knowledge Base Customization Tool, use the JCL member KBCUSTOM in the IBM Tivoli License Compliance Manager for z/OS JCL library.

Data Sets (DD Statements)

AUDITKB (ORIGKB)

Required. Specifies the input Knowledge Base that will be modified by the Customization Tool. Generally, you should specify different data sets for the Input Knowledge Base DSN and the Output Knowledge Base DSN, so you can retain an unaltered Knowledge Base. The value in parenthesis can be specified in the KBCUSTOM PROC EXEC statement.

KBCUTIN (CUSTINP)

Required. Specifies the User Product Data file that contains the customization statements that you want to incorporate into the Knowledge Base. The data set name must be a fully qualified name and specify either a sequential data set or a member in a PDS. The value in parenthesis can be specified in the KBCUSTOM PROC EXEC statement.

UPDATDB (UPDATKB)

Required. Specifies the data set name of the Knowledge Base that will contain your customization. The value in parenthesis can be specified in the KBCUSTOM PROC EXEC statement.

Parameters

PRINTINPUT

Prints the Customization Input statements. The default is no print.

KBCUSTOM execution JCL

The following displays the KBCUSTOM execution JCL.

//KBCUSTOM JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
THIS JOB EXECUTES THE IBM TIVOLI LICENSE COMPLIANCE MANAGER FOR Z/OS KB CUSTOMIZATION TOOL JOB.

THIS JOB WILL RUN THE KNOWLEDGE BASE CUSTOMIZATION TOOL

CUSTOMIZATION STATEMENTS ARE PROVIDED VIA DDNAME KBCUTIN

NOTE: "UPDATDB" BLOCKSIZE 0 LETS SYSTEM PICK THE BEST FIT.

KBCUSTOM PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
VER=V4R1M0, - CURRENTLY INSTALLED VERSION
ORIGKB=, - ORIGINAL KNOWLEDGE BASE DSNAME
UPDATKB=NULLFILE, - CUSTOMIZED KNOWLEDGE BASE DSNAME
KBDISP=OLD, - CUSTOMIZED K.B. DISPOSITION
KBVOL=, - VOLUME WHERE DATA SET SHOULD RESIDE
KBUNIT=, - UNIT WHERE DATA SET SHOULD RESIDE
KBSPAC=45, - CUSTOMIZED K.B. PRIMARY SPACE
KBSAU=CYL, - CUSTOMIZED K.B. SPC ALLOC UNIT
KBBLKSI=0, - CUSTOMIZED K.B. BLOCK SIZE
VENDOUT=NULLFILE, - OUTPUT VENDOR LIST DSNAME
PRODOUT=NULLFILE, - OUTPUT PRODUCT LIST DSNAME
CUSTINP=NULLFILE, - USER PRODUCT DATA
PARAM=,
WRKUNIT=SYSALLDA,
WRKSPAC=50,
SRTUNIT=SYSALLDA,
SRTSPAC=20

KBCUST EXEC PGM=AUDKBCUT,REGION=0M,PARM='&PARAM'
STEPLIB DD DISP=SHR,DSN=&IDX..&VER..LOADLIB
SYSOUT DD SYSOUT=*  
SYSPRINT DD SYSOUT=*  
REPORT DD SYSOUT=*  
AUDLOG DD SYSOUT=*  
SYSABEND DD SYSOUT=*  
AUDITDB DD DISP=SHR,DSN=&ORIGKB <=== KNOWLEDGE BASE TO UPDATE
UPDATDB DD DISP=&KBDISP,DSN=&UPDATKB, <=== UPDATED KNOWLEDGE BASE
UNIT=&KBUNIT,vol=SER=&KBVOL,
DCB=(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=&KBBLKSI),
SPACE=(&KBSAU,(&KBSPAC,&KBSAU,5),RLSE)
AUDVEND DD DISP=SHR,DSN=&VENDOUT <== OUTPUT VENDOR LIST DSNAME
To customize the Knowledge Base components, select Option 1 on the IBM Tivoli License Compliance Manager for z/OS ISPF interface main menu and select option 1, KBCUT.

Use the KB Customization panel to specify an input and output Knowledge Base.
The Product Definition file opens in a standard ISPF editing session. Add, change, or delete customization statements in the Product Definition file.

<table>
<thead>
<tr>
<th>ISPF Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Knowledge Base DSN</td>
<td>Required. Specifies the input Knowledge Base that will be modified by the Customization Tool. Generally, you should specify different data sets for the Input Knowledge Base DSN and the Output Knowledge Base DSN, so you can retain an unaltered Knowledge Base.</td>
</tr>
<tr>
<td>Output Knowledge Base DSN</td>
<td>Required. Specifies the User Product Data file that contains the customization statements that you want to incorporate into the Knowledge Base. The data set name must be a fully qualified name and specify either a sequential data set or a member in a PDS.</td>
</tr>
<tr>
<td>Product Definition File.</td>
<td>Required. Specifies the data set name of the Knowledge Base that will contain your customization statements.</td>
</tr>
<tr>
<td>Print Input Product Definitions</td>
<td>Prints the Customization Input statements. The default is no print.</td>
</tr>
</tbody>
</table>

Version information for ISV products

IBM Tivoli License Compliance Manager for z/OS is designed to automatically identify Independent Software Vendor (ISV) products at the generic level.

IBM Tivoli License Compliance Manager for z/OS can be customized to identify the version and release of ISV products (and IBM products that have not been identified through the Knowledge Base or Extractor) and to ensure that this identification is consistent throughout the Enterprise.

Versioning by library names

The EXEC parameter LIBPVER of the Identifier can be used to activate the identification of version information by scanning library names for abbreviations of the words “version and release” in various combinations. Use of this parameter causes IBM Tivoli License Compliance Manager for z/OS to parse data set names looking for product and version/release indicators (see ADDVGRP statement parameters PRDTAG and SHORTPID). Version/release indicators are of the form: VnnRnn, VnnRnnMnn, and similar.
**Identification by reference**

When the Identifier has identified a set of modules in one library as belonging to a particular product-version-release, that identification is available for reference in the identification of the same set of modules in other libraries. For ISV products, modules are eligible for reference through USRPDATA ASSIGN statements, and versioning by library names.

**Note:** In addition, IBM products are marked eligible for reference through use of the Extractor and information in the Knowledge Base.

To activate this identification process, specify the Identifier output as input to another run of the Identifier via a Reference Identifier File (RIF). It is recommended that the user create the RIF on a system or on several systems where products are installed. These install sites maintain the SMP/E target libraries and the installation libraries for each of a product’s versions and releases. They are likely to use standard library naming conventions, often including version and release information in the name. The RIF can be used as input to the Identifier at all sites throughout the enterprise.

**RIF Consolidation Utility**

Use the RIF Consolidation Utility to make the identification process more efficient by creating a file with only unique references. It can be used to merge multiple references within a single file or the RIF files created on many systems.

To run the RIF Consolidation Utility, use the member RIFUTIL in the IBM Tivoli License Compliance Manager for z/OS JCL library.

**Data Sets (DD Statements)**

The following is a list of DD Statements with description.

**AUDRFOUT**

The consolidated RIF output. Cannot specify the same data set as any AUDRIFnn DD statement.

**AUDRIFnn**

Input RIF files to be consolidated. "nn" may be 01 – 99. If duplicate data sets are found, the lower DDNAME is used. Duplicate DDNAMEs are not allowed.

**FILTERS**

Optional. Filter statements.
Filters

The following is a list of filter statements that can be specified.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Includes or Excludes Data by…</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODINCL/PRODEXCL</td>
<td>Name of product</td>
</tr>
<tr>
<td>VENDINCL/VENDEXCL</td>
<td>Name of vendor</td>
</tr>
</tbody>
</table>

RIFUTIL Execution JCL

The following displays the RIFUTIL execution JCL.

```bash
//RIFUTIL JOB <<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
/**
/** +----------------------------------------------------------+ **
/** | LICENSED MATERIALS - PROPERTY OF IBM | **
/** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 | **
/** | ALL RIGHTS RESERVED. | **
/** | | **
/** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION | **
/** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT | **
/** | WITH IBM CORP. | **
/** +----------------------------------------------------------+ **
/*
/* THIS JOB DELETES THE CURRENT CONSOLIDATED RIF DATA SET AND
/* THEN CREATES A NEW ONE BASED UPON THE CURRENT GROUP OF
/* RIF DATA SETS SUPPLIED VIA AUDRIF.. DD STATEMENTS. UP TO 99
/* RIF DATA SETS CAN BE SUPPLIED VIA AUDRIF.. DD STATEMENTS
/* WITH THE DDNAMES AUDRIF01 THROUGH AUDRIF99.
/*
/* NOTE: WHEN SPECIFYING A VALUE FOR "RIFDATA", REMEMBER TO
/* SPECIFY THE FULL DATA SET NAMES IN SINGLE QUOTES.
/*
/* NOTE: "RIFDATA" BLOCKSIZE 0 LETS SYSTEM PICK THE BEST FIT.
/*
/* NOTE: THE REQUIRED DD-STATEMENTS "AUDRIF.." AS WELL AS THE
/* OPTIONAL DD-STATEMENT "FILTERS" MUST INCLUDE THE
/* STEP-NAME "CONSRIF", AS IN:
/*
/* //CONSRIF.AUDRIF01 DD ....
/* //CONSRIF.FILTERS DD ....
/*
/* RIFUTIL PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
/* VER=V4R1, - CURRENTLY INSTALLED VERSION
/* RIFDATA=NULLFILE, - CONSOLIDATED RIF DATA SET NAME
/* UNIT=SYSALLDA, - UNIT FOR CONSOLIDATED RIF DATA SET
/* RIFVOL=, - VOLSER FOR CONSOLIDATED RIF DATA SET
/* PARAM=, - RIF UTILITY PARM FIELD
/* RIFSPACE=50, - PRI/SEC SPACE FOR CONSOLIDATED RIF
/* RIFBLK=0, - BLOCKSIZE FOR CONSOLIDATED RIF
/* WRKUNIT=SYSALLDA, - UNIT FOR WORK DATA SETS
/* WRKSPAC=50 - PRI/SEC SPACE FOR WORK DATA SETS
/*
/*
```
Distiller grouped usage

Grouped usage allows the Distiller to collect information about grouped usage for a product. For example, a group might be an individual or a collection of individuals (such as a department specified in the job accounting information).

As shown in the following examples, you can use either of two parameters (“USERS” or “USERG”) to create groups based on a field name (such as JOB accounting field ACCT4) and a portion of the value of the field content.

**DISTILLR Parameters**

//DISTILL EXEC DISTILLR ,
// PARAM='USERS=<FIELD>(X:Y)'

or

//DISTILL EXEC DISTILLR ,
// PARAM='USERG=<FIELD>(X:Y)'

where:

**field**

Is the field type to be grouped, selected from one of the following: JOBNAME, USERID, USERNAME, ACCT1, ACCT2, ACCT3, ACCT4, ACCT5, ACCT6, ACCT7, ACCT8, or ACCT9 (where “ACCTn” indicates an SMF accounting field).

**x**

Is a number from 1 to the maximum length allowed for the field, or 50. This represents the position of the first character of the substring to be summarized.
y

Is a number from 1 to the maximum length allowed for the field, or 50. This represents the position of the last character of the substring to be summarized.

Note:

– The length of x and y cannot exceed the maximum field length (x+y-1).
– You can group by only one field at a time.
– x and y must be separated by a colon.

The “USERG” parameter will dynamically create the group based on the content of the field values that you specified. For example, the name of one group found in the Distiller Output might be RD01.

The “USERS” parameter allows you to associate the field values with the name of a group that is meaningful to your Enterprise. RD01, for example, could be associated with the group Research and Development.

The following shows the SYSIN statements for the “USERS” parameter. Add the statement “*=other” to ensure that any data not covered by a defined group is included in a group called “OTHER”. The group definition statements must begin with the keyword DEFINEGROUPS and followed by the keyword ENDDGROUPS.

```plaintext
//SYSIN DD *
DEFINEGROUPS
<TEXT1>=<GROUPNAME1>
<TEXT2>=<GROUPNAME2>
<TEXT3>=<GROUPNAME3>
<TEXT4>=<GROUPNAME4>
<TEXTN>=<GROUPNAMEN>
<*=OTHER>
ENDDGROUPS
/
```

where:

**text1…textn**

Is the substring of the field being grouped. The number of characters of the text fields must match the number of characters in the USERS= statement. Text fields can be a maximum of 50 characters in length. Blanks are allowed. Wildcards are not allowed. Text fields must begin in column 1.

** grouplename1 … grouplamen **

Is the name of the group to which a field is assigned. Group names can be a maximum of 30 characters in length; neither wildcards nor blanks are allowed. Group names can be repeated so that multi text values can be included in the same group.

** *=other **

Specified in the DEFINEGROUPS statement. Only one set of DEFINEGROUPS/ENDDGROUPS keywords are allowed per run and any records that do not fall into one of the defined groups are placed into the group “OTHER”.

Note:

– The length of x and y cannot exceed the maximum field length (x+y-1).
– You can group by only one field at a time.
– x and y must be separated by a colon.
As shown in the following example, the USERS statement summarizes the first four characters of the SMF JOBNAME. If the values are EURO or ASIA, the users are considered part of the Global Services Department.

**Example**

```
//DISTILL EXEC DISTILLR,
// PARAM='USERS=JOBNAME(1:4)'
//DISTILL.SYSIN DD *
ENTERPRISE=SAMPLE WORLD ENTERPRISES
LOCNAME=NEW ORLEANS
SYSLOCNM=PROD G
DEFINEGROUPS
ACCT=ACCOUNTING
RD01=GADGET RESEARCH AND DEVELOPMENT
RD02=GADGET RESEARCH AND DEVELOPMENT
EURO=GLOBAL SERVICES
ASIA=GLOBAL SERVICES
MIS1=MIS
MIS2=MIS
MIS3=MIS
SLNA=NORTH AMERICAN MARKETING
SALE=SALES
SDA=SPACE DIVISION
SDB=SPACE DIVISION
*=OTHER
ENDGROUPS
/*
```

In the next example, USERG=USERNAME(1:4) summarizes using the first four characters of the USERNAME. Each unique combination of the first four characters will be dynamically assigned to a group of that name. The number of groups is limited only by the number of different combinations found in the usage data.

**Example**

```
//DISTILL EXEC DISTILLR,
// PARAM='USERG=USERNAME(1:4)'
//DISTILL.SYSIN DD *
ENTERPRISE=SAMPLE WORLD ENTERPRISES
LOCNAME=NEW ORLEANS
SYSLOCNM=PROD G
/*
```

**Distiller grouped usage exit routine**

For some users, the allowable User Group definitions of the Distiller do not provide sufficient options to generate the desired grouping. For example, there is no way to combine parts of different job information fields (e.g., Job Name and USERID) into a single group name.

To satisfy requirements when performing the Grouped Usage function, the Distiller allows an optional user-written exit routine to supply unique group names for usage.
Activating the grouped usage user exit

For the User Exit to be invoked for grouped usage processing, a new keyword value is introduced to the USERG execution parameter in the PARM field of the Distiller EXEC-PGM statement:

USERG = EXIT [ (UEX_NAME) ]

where:

uex_name is the module name of the Distiller User Exit Routine. Code as a standard module name of 1 to 8 characters. If omitted, the default module name, AUDDSUEX, is used.

For example, if the load module name of your user exit routine is UGEXIT1, code the following in the JCL EXEC statement along with any other required parameters when invoking the Distiller:

```
//DISTILLR EXEC PGM=AUDDIST,PARM='USERG=EXIT(UGEXIT1)'
```

For additional information, see Distiller on page 31.

Exit calling conventions

The user exit should be written in S390 Assembler language, however, a high-level language such as Cobol, PL/1, or C may be used if there is no special environmental setup to be done. The Distiller loads the exit into storage through use of the standard operating system LOAD service. The exit may reside above or below the 16M-line, i.e., RMODE(24) or RMODE(ANY), but must execute in 31-bit addressing mode, i.e., AMODE(31).

IBM Tivoli License Compliance Manager for z/OS uses standard MVS linkage conventions when calling the user exit, invoking it as follows:

```
CALL UEX_NAME,(USER_EXIT_JOB_INFORMATION_AREA,
CONSTRUCTED_GROUP_NAME)
```

Registers at Entry

Reg 0  unspecified
Reg 1  address of User Exit Parameter List
Reg 2-12 unspecified
Reg 13  address of 72-byte save area
Reg 14  return address
Reg 15  entry point address of exit

User Exit Parameter List

Word 1  Address of User Exit Job Information Area
Word 2  Address of Constructed Group Name (50 bytes)

Note: As per standard calling conventions, the high-order bit of Word 2 is turned on to indicate the end of the parameter list.
# User Exit Job Information Area

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Type</th>
<th>Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Exit Job Info Area ID1</td>
<td>char</td>
<td>4</td>
<td>'UJI'</td>
</tr>
<tr>
<td>User Exit Job Info Area Version</td>
<td>char</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>-- reserved</td>
<td>char</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Jobname</td>
<td>char</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>JES Job number</td>
<td>char</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>UserID</td>
<td>char--</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>reserved</td>
<td>binary</td>
<td>2</td>
<td>X'0000'</td>
</tr>
<tr>
<td>Length of User Name</td>
<td>binary</td>
<td>1</td>
<td>X'1E' = 30</td>
</tr>
<tr>
<td>User Name</td>
<td>char</td>
<td>30</td>
<td>Length of Accounting Field 1</td>
</tr>
<tr>
<td>-- reserved</td>
<td>binary</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field1</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 1</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 2</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 2</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 3</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 3</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 4</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 4</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 5</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 5</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 6</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 6</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 7</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 7</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 8</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 8</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Length of Accounting Field 9</td>
<td>binary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Accounting Field 9</td>
<td>char</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>-- reserved</td>
<td>binary</td>
<td>288</td>
<td>X'00'</td>
</tr>
</tbody>
</table>

1. These fields are included to allow the exit to validate the calling parameters.

**Note:** If length(acct_fld) = 0, then no data is present for that accounting field; it will be set to blanks.
Output specifications

Registers on Exit

Reg 0-14 contents at entry
Reg 15 return code: 0 = use record2, group name constructed in output area

Constructed Group Name

Word 2 of the User Exit Parameter List points to a 50-byte area where the group name constructed by the user exit is placed. The constructed group name must consist of alphabetic (upper or lower case), numeric (printable), or National characters and may contain embedded blanks. All other values will be converted to blanks.

A sample Grouped Usage User Exit routine, AUDDSUEX, can be found in the IBM Tivoli License Compliance Manager for z/OS sample library, SAMPLIB.

Exporter

The Exporter uses the software product inventory data produced by the Identifier and the usage data produced by the Monitor to produce sequential data sets used by external data analysis and reporting program (such as SAS).

Exporter output

The data contained in Exporter output is as follows:

Installed Products

This data set contains one record for each product found by the Identifier, subject to your filtering specifications.

Installed Load Modules

This data set contains one record for each module found by the Surveyor, subject to your filtering specifications.

Product Usage

This data set contains one record for each unique product name used by each job (or, if data is gathered on a step basis, each job step), TSO session, or started task.

Load Module Usage

This data set contains one record for each unique module name used by each job (or, if data is gathered on a step basis, each job step), TSO session, or started task.

Creating Exporter files in SMF format

Exporter output files may be produced in SMF format to facilitate processing by other products (for example, TDS for z/OS). The SMF record type may be specified by the user. The default is 255.
Creating spreadsheet files

The IBM Tivoli License Compliance Manager for z/OS SAMPLIB contains four REXX programs (TRNMODS, TRNPRDS, TRNUSGM, and TRNUSGP) that convert the exported data records into a text-only, comma-delimited (CSV) format suitable for importing into most spreadsheet programs.

Combining exported records with SMF data

The exported usage records contain a key that uniquely identifies a specific job (or started task or TSO session). The key consists of job name, job entry time, and job entry date. Because SMF Type 30 records use the same keys, you can combine the exported IBM Tivoli License Compliance Manager for z/OS data with the SMF data. If you collect SMF information at the step level, the records include step name, step start time, and step start date.

Executing the Exporter

The member EXPORTER in the IBM Tivoli License Compliance Manager for z/OS JCL library is used to run the Exporter.

Data Sets (DD Statements)

FILTERS

Optional. Filter statements.

IDNTDATA (IDDATA)

Required. Identifier output. The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

MONDETL (MONDETL)

Optional. Monitor output. Required for usage data sets (see the following). The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

MODULES (MODULES)

Optional. Specifies that the Installed Load Modules file be produced. The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

PRODUCTS (PRODUCT)

Optional. Specifies that the Installed Products file be produced. The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

USAGEM (USAGEM)

Optional. Specifies that the Load Module Usage file is produced. The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

Requires that MONDETL be specified.
**USAGEP (USAGEP)**

Optional. Specifies that the Products Usage file is produced. The value in parenthesis can be specified in the EXPORTER PROC EXEC statement.

Requires that MONDETL be specified.

**Parameters**

**SMFOUT**

**SMFOUT=*nnn>*

If SMFOUT is specified without a value, SMF record headers with record id 255 are prefixed to the created output files. To create SMF headers with different record id code *nnn*, where *nnn* is a value between 128 and 255. If SMFOUT is not specified, no SMF header is present in any of the exported data sets.

The default is recommended for the following parameters:

**INCLUDEUNSURVEY**

**INCUNSV**

Activates export of modules that have usage reported by the Monitor, but are in a library that was not surveyed.

**SHOWDEL**

Shows the current and deleted inventory. By default, the current inventory only is displayed.

**UNV**

**UNVERSIONED**

Use UNV to identify all modules identified as versioned products to be identified without a version.

**IGNORESYSNAME**

**IGNSYSNM**

Allows usage in the Monitor detail file to be processed even if it does not match the inventory system name.

**NOSA**

**NOSHOWALL SA**

**SHOWALL**

Use NOSHOWALL to exclude those modules that are marked –UNRECOG and those that are marked – from being displayed in output. The default, SHOWALL will display these modules. Use of vendor or product filters with values containing a leading hyphen (for example, PRODEXCL=–UNRECOG) will cause
the SHOWALL parameter to be in effect regardless of the SHOWALL/NOSHOWALL parameter specified.

Filters

The following filters can be specified using the EXPORTER job.

Statement | Includes or Excludes Data by…
--- | ---
ACCTINCL/ACCTEXCL | Job accounting fields
DATEINCL/DATEEXCL | Date job was started
JOBINCL/JOBECL | Job name
LIBINCL/LIBEXCL | Name of library
PRODINCL/PRODEXCL | Name of product
SYSNCL/SYSEXCL | System name
TIMEINCL/TIMEEXCL | Time job was started
UIDINCL/UIDEXCL | User ID
VENDINCL/VENDEXCL | Name of vendor

EXPORTER execution JCL

The following displays the EXPORTER execution JCL.

```plaintext
//EXPORTER JOB <<<< ADD APPROPRIATE JOB STATEMENT PARAMETERS >>>>
/**
**
** | LICENSED MATERIALS - PROPERTY OF IBM |
** | 5698-A86 (C) COPYRIGHT IBM CORP. 1993, 2005 |
** | ALL RIGHTS RESERVED. |
** | |
** | US GOVERNMENT USERS RESTRICTED RIGHTS - USE, DUPLICATION |
** | OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE CONTRACT |
** | WITH IBM CORP. |
**
** +---------------------------------+**
/**
*/
/* THIS JOB DELETES THE CURRENT EXPORTED DATA SETS (ONLY
/* THOSE THAT ARE ABOUT TO BE RECREATED) AND THEN
/* CREATES NEW ONES.
/*
/* NOTE: WHEN SPECIFYING VALUES FOR "IDDATA", "MONDETL",
/* "MODULES", "PRODUCTS", "USAGEM", AND "USAGEP"
/* ON THE CALLING EXEC STATEMENT, REMEMBER TO
/* SPECIFY THE FULL DATA SET NAMES IN SINGLE QUOTES.
/*
/* NOTE: THE OPTIONAL DD-STATEMENTS "FILTERS"
/* MUST INCLUDE THE STEP-NAME "EXPORT", IF ADDED
/* AS AN OVERRIDING STATEMENT, AS IN
/*
/*/ 
/* //EXPORTER.FILTERS DD ....
/*
/**
//EXPORTER PROC IDX=AUDITLCM, - HIGH-LEVEL DATA SET QUALIFIER
//VER=V4R1, -CURRENTLY INSTALLED VERSION
//PARAM=, -EXPORTER PARM FIELD
```
// IDDATA=, -PDS WITH IDENTIFIER DATA
// MONDETL=NULLFILE, -SEQUENTIAL DATA SET WITH DETAIL DATA
// MODULES=NULLFILE, -SEQUENTIAL DATA SET FOR MODULE DATA
// PRODUCT=NULLFILE, -SEQUENTIAL DATA SET FOR PRODUCT DATA
// USAGEM=NULLFILE, -SEQUENTIAL DATA SET FOR MOD. USAGE
// USAGEP=NULLFILE, -SEQUENTIAL DATA SET FOR PROD. USAGE
// OUTUNIT=SYSALLDA, -UNIT FOR OUTPUT DATA SETS
// OUTVOL=, -VOLUME SERIAl FOR OUTPUT DATA SETS
// SRTUNIT=SYSALLDA, -UNIT FOR SORT WORK DATA SETS
// SRTSPAC=10, -PRI/SEC SPACE FOR SORT WORK DATA SETS
// WRKUNIT=SYSALLDA, -UNIT FOR WORK DATA SETS
// WRKSPAC=50 -PRI/SEC SPACE FOR WORK DATA SETS
/*----------------------------------------------------------------
*/
/*============= DELETE OLD DATA SETS ===============================*/
/*----------------------------------------------------------------
*/
// CLEAR EXEC PGM=IEFBR14
// MODULES DD DISP=(MOD,DELETE,DELETE),DSN=&MODULES, UNIT=&OUTUNIT,SPACE=(TRK,0)
// PRODUCTS DD DISP=(MOD,DELETE,DELETE),DSN=&PRODUCT, UNIT=&OUTUNIT,SPACE=(TRK,0)
// USAGEM DD DISP=(MOD,DELETE,DELETE),DSN=&USAGEM, UNIT=&OUTUNIT,SPACE=(TRK,0)
// USAGEP DD DISP=(MOD,DELETE,DELETE),DSN=&USAGEP, UNIT=&OUTUNIT,SPACE=(TRK,0)
/*============= EXECUTE THE EXPORTER ===============================*/
/*----------------------------------------------------------------
*/
// EXPORT EXEC PGM=AUDXPORT,REGION=0M,PARM='&PARAM'
// STEPLIB DD DISP=SHR,DSN=&IDX..&VER..LOADLIB
// PASSDATA DD DISP=SHR,DSN=&IDX..&VER..PASSWORD
// SYSOUT DD SYSOUT=*
// SYSPRINT DD SYSOUT=*
// AUDLOG DD SYSOUT=*
// SYSAESEND DD SYSOUT=*
// IDNTDATA DD DISP=SHR,DSN=&IDDATA
// MONDETL DD DISP=SHR,DSN=&MONDETL
// MODULES DD DISP=(,CATLG,DELETE),DSN=&MODULES, UNIT=&OUTUNIT,Vol=SER=&OUTVOL, SPACE=(TRK,(50,50),RLSE)
// PRODUCTS DD DISP=(,CATLG,DELETE),DSN=&PRODUCT, UNIT=&OUTUNIT,Vol=SER=&OUTVOL, SPACE=(TRK,(50,50),RLSE)
// USAGEM DD DISP=(,CATLG,DELETE),DSN=&USAGEM, UNIT=&OUTUNIT,Vol=SER=&OUTVOL, SPACE=(TRK,(50,50),RLSE)
// USAGEP DD DISP=(,CATLG,DELETE),DSN=&USAGEP, UNIT=&OUTUNIT,Vol=SER=&OUTVOL, SPACE=(TRK,(50,50),RLSE)
// AUDWORK1 DD UNIT=&WRKUNIT,SPACE=(CYL,(&WRKSPAC,&WRKSPAC))
// AUDWORK2 DD UNIT=&WRKUNIT,SPACE=(CYL,(&WRKSPAC,&WRKSPAC))
// AUDWORK3 DD UNIT=&WRKUNIT,SPACE=(TRK,1)
// AUDWORK4 DD UNIT=&WRKUNIT,SPACE=(CYL,(&WRKSPAC,&WRKSPAC))
// AUDWORK5 DD UNIT=&WRKUNIT,SPACE=(CYL,(&WRKSPAC,&WRKSPAC))
// AUDWORK6 DD UNIT=&WRKUNIT,SPACE=(CYL,(&WRKSPAC,&WRKSPAC))
// SYSWORK1 DD UNIT=&WRKUNIT,SPACE=(CYL,(0,&WRKSPAC))
// SYSWORK2 DD UNIT=&WRKUNIT,SPACE=(CYL,(0,&WRKSPAC))
// SYSWORKA DD UNIT=&WRKUNIT,SPACE=(TRK,(0,50))
// SYSWORKB DD UNIT=&WRKUNIT,SPACE=(TRK,(0,50))
ISPF interface

The Exporter is modified and executed by selecting Option 7 on the IBM Tivoli License Compliance Manager for z/OS ISPF Interface Main Menu.

Export Data

The Export Data panel can be used to specify the Identifier and Monitor data sets used to create exported data sets.

This assumes that the output data sets have been pre-allocated.

ISPF Interface

<table>
<thead>
<tr>
<th>Products DSN</th>
<th>Required. Identifier output.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor Detail DSN</td>
<td>Optional. Monitor output. Required for usage data sets.</td>
</tr>
<tr>
<td>Installed Products</td>
<td>Optional/required when Installed Product file is requested. Specifies the file name to contain Installed Load Modules data.</td>
</tr>
</tbody>
</table>
Information to be Exported

<table>
<thead>
<tr>
<th>Installed Products</th>
<th>Optional. Specifies that the Installed Products file be produced.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed Load Modules</td>
<td>Optional. Specifies that the Installed Load Modules file be produced.</td>
</tr>
<tr>
<td>Product Usage</td>
<td>Optional. Specifies that the Products Usage file is produced. Requires that MONDETL be specified.</td>
</tr>
<tr>
<td>Load Module Usage</td>
<td>Optional. Specifies that the Load Module Usage file is produced. Requires that MONDETL be specified.</td>
</tr>
</tbody>
</table>

Filters

<table>
<thead>
<tr>
<th>Specify Filters</th>
<th>Optional. Filter statements.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include unsurveyed modules</td>
<td>Activates export of modules that have usage reported by the Monitor, but are in a library that was not surveyed.</td>
</tr>
<tr>
<td>Output in SMF format</td>
<td>Produce output records in SMF format.</td>
</tr>
<tr>
<td>SMF output record type</td>
<td>Specifies the SMF record type to be used when producing output in SMF format.</td>
</tr>
</tbody>
</table>

Exported files

The following table summarizes the files produced by the Exporter. These files are mapped by Assembler Language DSECTs and COBOL and PL/I copybooks. The language-specific members are included in the IBM Tivoli License Compliance Manager for z/OS SAMPLIB.

The files are variable-length in format.

<table>
<thead>
<tr>
<th>File (DD name)</th>
<th>Mapped by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assembler Language DSECT</td>
</tr>
</tbody>
</table>

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Installed load modules file

There is one record in the Installed Load Modules File for each module found by the Surveyor, subject to your filtering specifications. Records in the Installed Load Modules File have the following format:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Module type flag (X'80' bit is on, for load modules)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Record format code</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Module name (Key field)</td>
</tr>
<tr>
<td>11</td>
<td>44</td>
<td>Library name (Key field)</td>
</tr>
<tr>
<td>55</td>
<td>6</td>
<td>Volume serial number (Key field)</td>
</tr>
<tr>
<td>61</td>
<td>8</td>
<td>Product ID (which can be used as a key to the Installed Products File)</td>
</tr>
<tr>
<td>69</td>
<td>4</td>
<td>Module link-edit date</td>
</tr>
<tr>
<td>73</td>
<td>4</td>
<td>Most recent module ZAP date</td>
</tr>
<tr>
<td>77</td>
<td>4</td>
<td>Module size in bytes</td>
</tr>
<tr>
<td>81</td>
<td>4</td>
<td>Module text-record hash value</td>
</tr>
<tr>
<td>85</td>
<td>1</td>
<td>Module &quot;deleted module&quot; indicator; C'Y' &quot;deleted module&quot; indicator value</td>
</tr>
<tr>
<td>86</td>
<td>1</td>
<td>Module &quot;deleted library&quot; indicator; C'Y' &quot;deleted library&quot; indicator value</td>
</tr>
<tr>
<td>87</td>
<td>1</td>
<td>Module &quot;deleted product&quot; indicator C'Y' &quot;deleted product&quot; indicator value</td>
</tr>
<tr>
<td>88</td>
<td>1</td>
<td>Reserved for future use</td>
</tr>
</tbody>
</table>
Installed products file

There is one record in the Installed Products File for each product found by the Identifier, subject to your filtering specifications. Records in the Installed Products File have the following format:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>Product ID (Key field)</td>
</tr>
<tr>
<td>9</td>
<td>50</td>
<td>Product name in upper and lower case</td>
</tr>
<tr>
<td>59</td>
<td>50</td>
<td>Product name in all upper case (for sorting)</td>
</tr>
<tr>
<td>109</td>
<td>8</td>
<td>Vendor ID</td>
</tr>
<tr>
<td>117</td>
<td>40</td>
<td>Vendor name in upper and lower case</td>
</tr>
<tr>
<td>157</td>
<td>40</td>
<td>Vendor name in all upper case (for sorting)</td>
</tr>
<tr>
<td>197</td>
<td>1</td>
<td>Record format code</td>
</tr>
<tr>
<td>198</td>
<td>8</td>
<td>CPU SYSNAME</td>
</tr>
<tr>
<td>206</td>
<td>5</td>
<td>CPU serial number</td>
</tr>
<tr>
<td>211</td>
<td>4</td>
<td>CPU model number</td>
</tr>
<tr>
<td>215</td>
<td>8</td>
<td>Version Group ID</td>
</tr>
<tr>
<td>223</td>
<td>4</td>
<td>Product Version</td>
</tr>
<tr>
<td>227</td>
<td>4</td>
<td>Product Release</td>
</tr>
<tr>
<td>231</td>
<td>1</td>
<td>Product Enablement Eligibility Flag</td>
</tr>
<tr>
<td>232-244</td>
<td>16</td>
<td>IBM Feature Name (If Applicable)</td>
</tr>
<tr>
<td>248</td>
<td>1</td>
<td>Product &quot;deleted product&quot; indicator: C'Y' &quot;deleted product&quot; indicator value</td>
</tr>
<tr>
<td>249</td>
<td>1</td>
<td>Reserved for future use</td>
</tr>
</tbody>
</table>

Load module usage file

There is one record on the Load Module Usage File for each unique module name used by each job (or, if data is gathered on a step basis, each job step), TSO session, or started task.

Records in the Load Module Usage File have the following format:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Module type flag (X'80' bit is on, for load modules)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>(Reserved)</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Module name (Key field)</td>
</tr>
<tr>
<td>11</td>
<td>44</td>
<td>Library name (Key field)</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
<td>Volume serial number (Key field)</td>
</tr>
</tbody>
</table>
There is one record on the Product Usage File for each unique product used by each job (or, if data is gathered on a step basis, each job step), TSO session, or started task. Records in the Product Usage File have the following format:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>8</td>
<td>Product ID (Key field)</td>
</tr>
<tr>
<td>69</td>
<td>8</td>
<td>Job name (Key field)</td>
</tr>
<tr>
<td>77</td>
<td>8</td>
<td>Job number (in the form JOBnnnnn, TSUnnnnn, or STCnnnnn)</td>
</tr>
<tr>
<td>85</td>
<td>8</td>
<td>System name</td>
</tr>
<tr>
<td>93</td>
<td>1</td>
<td>Binary length of user ID data (in field that follows)</td>
</tr>
<tr>
<td>94</td>
<td>8</td>
<td>User ID</td>
</tr>
<tr>
<td>102</td>
<td>1</td>
<td>Record format code</td>
</tr>
<tr>
<td>103</td>
<td>1</td>
<td>Module “delete module” indicator value</td>
</tr>
<tr>
<td>104</td>
<td></td>
<td>Module “delete product” indicator: C’Y’ “deleted product” indicator value</td>
</tr>
<tr>
<td>105</td>
<td>4</td>
<td>Job entry time (binary, in units of 1/100ths of a second) (Key field)</td>
</tr>
<tr>
<td>109</td>
<td>4</td>
<td>Job entry date (0CYYDDDF) (Key field)</td>
</tr>
<tr>
<td>113</td>
<td>1</td>
<td>Format flag: if X’80’ is on, step information is present</td>
</tr>
<tr>
<td>114</td>
<td>1</td>
<td>(Reserved)</td>
</tr>
<tr>
<td>115</td>
<td>1</td>
<td>Library flag:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X’80’–LIBRARY DELETED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X’04’–CATALOGED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X’02’–LPA LIST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X’01’–LINKLIST</td>
</tr>
</tbody>
</table>

The following fields are present only if the X’80’ bit of byte 113 is on:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>116</td>
<td>8</td>
<td>Step name (Key field)</td>
</tr>
<tr>
<td>124</td>
<td>4</td>
<td>Step start time (binary, in hundredths of a second)</td>
</tr>
<tr>
<td>128</td>
<td>4</td>
<td>Step start date (0CYYDDDF) (Key field)</td>
</tr>
</tbody>
</table>

**Product usage file**

There is one record on the Product Usage File for each unique product used by each job (or, if data is gathered on a step basis, each job step), TSO session, or started task. Records in the Product Usage File have the following format:

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>Product ID (Key field)</td>
</tr>
<tr>
<td>9</td>
<td>44</td>
<td>Name of library containing the product (Key field)</td>
</tr>
<tr>
<td>53</td>
<td>6</td>
<td>Volume serial number (Key field)</td>
</tr>
</tbody>
</table>
All SMF format records are required to have a header section containing the record length, record type, and subtype (if applicable). To “mimic” the output of the SMF DUMP program (which makes SMF records from system data sets available for processing), dump header and trailer records will be written to the output files.

The default SMF Record Type for Exporter output data is **255 (x'FF')**. The SMF Record subtypes for Product Inventory and Product usage will be **1 (x'00F1')** and **2 (x'00F2')** respectively; for Module Inventory and usage the subtypes will be **3 (x'00F3')** and **4 (x'00F4').**

### SMF record formats

<table>
<thead>
<tr>
<th>Starting Byte</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>8</td>
<td>Job name (Key field)</td>
</tr>
<tr>
<td>67</td>
<td>8</td>
<td>Job number (in the form JOBnnnnn, TSUnnnnn, or STCnnnnn)</td>
</tr>
<tr>
<td>75</td>
<td>8</td>
<td>System name</td>
</tr>
<tr>
<td>83</td>
<td>1</td>
<td>Binary length of user ID data (in field that follows)</td>
</tr>
<tr>
<td>84</td>
<td>8</td>
<td>User ID</td>
</tr>
<tr>
<td>92</td>
<td>1</td>
<td>Record format code</td>
</tr>
<tr>
<td>93</td>
<td>4</td>
<td>Job entry time (binary, in units of 1/100ths of a second) (Key field)</td>
</tr>
<tr>
<td>97</td>
<td>4</td>
<td>Job entry date (0CYYDDDF) (Key field)</td>
</tr>
<tr>
<td>101</td>
<td>1</td>
<td>Format flags: X'80' — Step information fields are present X'40' — Accounting field is present</td>
</tr>
<tr>
<td>102</td>
<td>1</td>
<td>Product &quot;deleted product&quot; indicator. C'Y' &quot;deleted product&quot; indicator value</td>
</tr>
<tr>
<td>103</td>
<td>1</td>
<td>Library flag: X'80' Library deleted X'04'—Cataloged X'02'—LPA list X'01'—LINKLIST</td>
</tr>
<tr>
<td>104</td>
<td>5</td>
<td>CPU serial number</td>
</tr>
<tr>
<td>109</td>
<td>4</td>
<td>CPU model number</td>
</tr>
</tbody>
</table>

The following fields are present only if the X'40 bit of byte 101 is on:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>1</td>
<td>Length of accounting data</td>
</tr>
<tr>
<td>114</td>
<td>variable</td>
<td>Accounting data</td>
</tr>
</tbody>
</table>

The following fields are present only if the X'80 bit of byte 101 is on:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>variable</td>
<td>8</td>
<td>Step name (Key field)</td>
</tr>
<tr>
<td>variable</td>
<td>4</td>
<td>Step start time (binary, in hundredths of a second) (Key field)</td>
</tr>
<tr>
<td>Variable</td>
<td>4</td>
<td>Step start date (0CYYDDDF) (Key field)</td>
</tr>
</tbody>
</table>
### SMF record header

The SMF record header format for SMF records with subtypes is as follows.

**Note:** All SMF layouts obtained from z/OS V1R4.0 MVS System Management Facilities (SMF), SA22-7630-05, copyright IBM.

<table>
<thead>
<tr>
<th>Offsets</th>
<th>Name</th>
<th>Length</th>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>SMFxLEN</td>
<td>2</td>
<td>binary</td>
<td>Record length (maximum size of 32,756). This field and the next field (total of four bytes) form the record descriptor word (RDW). The first two bytes (this field) must contain the logical record length including the RDW. The second two bytes (the following field) are used for variable block spanned records. If the record is not spanned, set these two bytes to hexadecimal zeroes. These fields must be filled in before writing the record to the SMF data set.</td>
</tr>
<tr>
<td>02</td>
<td>SMFxSEG</td>
<td>2</td>
<td>binary</td>
<td>Segment descriptor (see record length field).</td>
</tr>
<tr>
<td>04</td>
<td>SMFxFLG</td>
<td>1</td>
<td>binary</td>
<td>System indicator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bit Meaning When Set</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 0 Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 1 Subtypes are valid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 2 Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 3 MVS/SP Version 4 and above. Bits 3, 4, 5, and 6 are on.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 4 MVS/SP Version 3. Bits 4, 5, and 6 are on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 5 MVS/SP Version 2. Bits 5 and 6 are on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 6 VS2. Bit 6 is on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 7 Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IBM recommends that you use record type 30 to obtain the MVS product level.</td>
</tr>
<tr>
<td>05</td>
<td>SMFxRTY</td>
<td>1</td>
<td>binary</td>
<td>Record type (hexadecimal values are 0-FF).</td>
</tr>
</tbody>
</table>
### SMF record header field settings

The fields set in the SMF header and their values are as follows:

- **SMFxLEN** SMF header length + Exporter record length (2 sizes)
- **SMFxSEG** x’00’
- **SMFxFLG** x’5E’ indicates subtype present and MVS/SP V4 and above
- **SMFxRTY** x’FF’ or value from SMFOUT parameter – record type
- **SMFxTME** Time of Exporter run (GMT, units are .01 seconds, binary)
- **SMFxDTE** Date of Exporter run
- **SMFxSID** SMF ID from the surveying or usage generating system (as appropriate)
- **SMFxSSI** Subsystem ID; set to blank (x’40404040’)
- **SMFxSTY** Record subtype (hexadecimal values are 0000-00FF).

<table>
<thead>
<tr>
<th>Field</th>
<th>Length</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFxLEN</td>
<td>4</td>
<td>binary</td>
<td>GMT time since midnight, in hundredths of a second, that the record was moved into the SMF buffer. In record types 2 and 3, this field indicates the time that the record was moved into the dump data set.</td>
</tr>
<tr>
<td>SMFxSEG</td>
<td>4</td>
<td>packed</td>
<td>Date when the record was moved into the SMF buffer, in the form 00yydddf or 0cyydddf (where c is 0 for 19xx and 1 for 20xx, yy is the current year (0-99), ddd is the current day (1-366), and F is the sign). In record types 2 and 3, this field indicates the date that the record was moved to the dump data set.</td>
</tr>
<tr>
<td>SMFxDTE</td>
<td>4</td>
<td>EBCDIC</td>
<td>System identification (from the SID parameter).</td>
</tr>
<tr>
<td>SMFxSID</td>
<td>4</td>
<td>EBCDIC</td>
<td>Subsystem identification. This field is a four byte character value set by the SUBSYS=option specified in the SMF macros.</td>
</tr>
<tr>
<td>SMFxSSI</td>
<td>4</td>
<td>EBCDIC</td>
<td>Record subtype (hexadecimal values are 0000-00FF).</td>
</tr>
</tbody>
</table>

---

**Table 3. SMF record header format**

<table>
<thead>
<tr>
<th>Field</th>
<th>Length</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFxLEN</td>
<td>4</td>
<td>binary</td>
<td>GMT time since midnight, in hundredths of a second, that the record was moved into the SMF buffer. In record types 2 and 3, this field indicates the time that the record was moved into the dump data set.</td>
</tr>
<tr>
<td>SMFxSEG</td>
<td>4</td>
<td>packed</td>
<td>Date when the record was moved into the SMF buffer, in the form 00yydddf or 0cyydddf (where c is 0 for 19xx and 1 for 20xx, yy is the current year (0-99), ddd is the current day (1-366), and F is the sign). In record types 2 and 3, this field indicates the date that the record was moved to the dump data set.</td>
</tr>
<tr>
<td>SMFxDTE</td>
<td>4</td>
<td>EBCDIC</td>
<td>System identification (from the SID parameter).</td>
</tr>
<tr>
<td>SMFxSID</td>
<td>4</td>
<td>EBCDIC</td>
<td>Subsystem identification. This field is a four byte character value set by the SUBSYS=option specified in the SMF macros.</td>
</tr>
<tr>
<td>SMFxSSI</td>
<td>4</td>
<td>EBCDIC</td>
<td>Record subtype (hexadecimal values are 0000-00FF).</td>
</tr>
</tbody>
</table>
Monitor load filtering

The Monitor records all uses of the operating system LOAD, LINK, ATTACH, and XCTL services. There are some programs that use these services to analyze the targeted load modules rather than execute them. In prior releases, the Monitor counted such access as product use when the targeted module(s) were associated with a specific product.

Products that perform this type of module analysis use the operating system LOAD service. The Monitor performs filtering of “LOADed” modules. When execution of any of the filtered modules is detected, the Monitor will not record all LOAD operations performed by that module; all other tracked OS services will be recorded.

Activating/deactivating load filtering

The Monitor accepts the following EXEC parameters:

LOADFILTER
LOADF
Indicates that load filtering be performed.

COUNTALLOADS
CAL
Indicates all LOADs be counted.

Dynamically controlling load filtering

While the Monitor is running, it may be necessary to stop LOAD Filtering or force the Monitor to use a new filtered module list. To perform these functions, the Monitor accepts the following keywords on any operating system MODIFY operator command directed to it:

LOADF
Reactivates LOAD filtering and/or activates a new list of filtered modules.

ALLOADS
Deactivates LOAD filtering.

Use these keywords as parameters in the z/OS MODIFY command. For example:

MODIFY SAZMONTR,LOADF

Note: MODIFY command may be abbreviated with the single character F.
Filtered Load Modules

The following list of filtered load modules is distributed with IBM Tivoli License Compliance Manager for z/OS and contains the module names listed. You cannot change this list. The commands documented in the previous section describe how to activate a new list of filtered load modules without stopping the Monitor. They also describe how to stop the load module filtering facility.

<table>
<thead>
<tr>
<th>Module name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA</td>
<td>Edge Portfolio Analyzer</td>
</tr>
<tr>
<td>AMBLIST</td>
<td>IBM Utility provides formatted diagnostic information</td>
</tr>
<tr>
<td>HMBLIST</td>
<td>Same as AMBLIST</td>
</tr>
<tr>
<td>IMBLIST</td>
<td>Same as AMBLIST</td>
</tr>
</tbody>
</table>
Appendix A. Disk space requirements

This appendix provides guidelines for estimating the sizes of various data sets used during IBM Tivoli License Compliance Manager for z/OS processing.

Surveyor data set (SURVDATA)

Use the following formula to estimate the number of blocks created by the Surveyor on the SURVDATA data set (allocated by the ALOCDATA job that is run during the IBM Tivoli License Compliance Manager for z/OS installation):

\[
\text{BLOCKS} = \frac{(200V + 2L + M)}{250}
\]

where:

V is the estimated number of volumes
L is the estimated number of load libraries
M is the number of modules.

Note that this formula assumes a block size of 27920. IBM Tivoli License Compliance Manager for z/OS uses, where possible, a half-track blocksize (BLKSIZE = 0 or DD statement data set definitions) for its data sets.

Use this formula to estimate the size for SURVDATA. The ALOCDATA job uses a default space allocation assuming the installation has 3,000 load libraries and 120,000 load modules.

Extractor data set (UPDATXOF)

Use the following formula to estimate the number of blocks created by the Extractor on the UPDATXOF data set:

\[
\text{BLOCKS} = \frac{((25 + Z + T + C + M + H) + (\text{BLOCK SIZE}/80) - 1)}{(\text{BLOCK SIZE}/80)}
\]

where:

Z is 2 * the number of target zones;
T is the number of syslibs;
C is the number of destination libraries;
M is the number of load modules in all syslibs;
H is 3 * the number of times the Extractor is run.
Work data sets SYSWORK2 through SYSWORKB

The SYSWORK2 through SYSWORKB work data sets allocated via DD statements of the IDNTFIER, REPORTER, UPGRADEU, KBCUSTO, DISTILLR, and EXPORTER JCL procedures should be created with a space allocation similar to the SURVDATA data set.

Monitor data sets (MONDTLxx)

The MONDTLxx data sets are created with a block size of 6,144 bytes, with DSORG=PS, RECFM=VB, and LRECL=2048.

Note: These characteristics are fixed and cannot be overridden via JCL.

Use the following formula to estimate the number of blocks created each hour:

\[
\text{BLOCKS} = \frac{(J \times 300 + T \times 800)}{6144}
\]

where:

\( J \) is the average number of batch jobs (or, if information is being gathered on a step basis, job steps) per hour;

\( T \) is the average number of TSO sessions started per hour.

Use this formula to estimate the number of data sets to allocate, the size of each, and the amount of space required to hold the data accumulated. The default allocations assume 100,000 batch jobs (or, if data is gathered on a step basis, job steps) and 5,000 TSO sessions. In most cases, the defaults supplied are sufficient.

Sort work data sets

The allocations necessary for the sort work data sets depend on the amount of data to be sorted. In most cases, the defaults supplied are sufficient. However, you may have to provide larger allocations when processing a very large number of job or step records. If necessary, the sort work data sets can be assigned to tape.

Usage work data sets

IBM Tivoli License Compliance Manager for z/OS uses work data sets AUDWORK1 through AUDWORK6 for usage data. The amount of space required for these data sets depends on the number of jobs in the usage data (or steps, if data is being captured at the step level), the average number of unique modules per job (or step), and whether or not you are producing summary or usage reports. The following table gives the formula for estimating the number of bytes required for each data set, where \( J \) is the number of jobs (or, if information is being gathered on a step basis, job steps).

<table>
<thead>
<tr>
<th>Data set</th>
<th>Estimated storage required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDWORK1</td>
<td>( J \times 190 )</td>
</tr>
<tr>
<td>AUDWORK2</td>
<td>( J \times 1200 )</td>
</tr>
<tr>
<td>AUDWORK3</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Distiller data sets (DISTOUT)

The DISTOUT data set is created with a block size of 32760 bytes, with DSORG=PS, RECFM=VB, and LRECL=32756. If you are running with an older version of a DISTOUT data set, delete it and reallocate it. Specifying LRECL and BLKSIZE values in the JCL is not necessary; they will be set by the Distiller.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Estimated storage required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDWORK4</td>
<td>J*266</td>
</tr>
<tr>
<td>AUDWORK5</td>
<td>J*1200</td>
</tr>
<tr>
<td>AUDWORK6</td>
<td>J*1200</td>
</tr>
</tbody>
</table>

Table 1. Usage work data sets
Appendix B. WTO messages

The following Write to Operator messages are issued to the operator console by IBM Tivoli License Compliance Manager for z/OS.

**AUD001E SYSPRINT DD MISSING. component TERMINATING.**
- **Issued by:** All components
- **Explanation:** The SYSPRINT DD statement, which is required, is missing.
- **Response:** Insert a SYSPRINT DD statement and rerun the job.

**AUD0001E SYSPRINT DD MISSING. SELECTOR TERMINATING.**
- **Issued by:** Selector
- **Explanation:** The SYSPRINT DD statement, which is required, is missing.
- **Response:** Insert a SYSPRINT DD statement and rerun the job.

**AUD002E IPITBLH GETMAIN FAILED.**
- **Issued by:** All components
- **Explanation:** Insufficient above-the-line (16M) main storage was specified.
- **Response:** Increase the above-the-line region size and rerun the job.

**AUD101E MONITOR CAN ONLY OPERATE IN z/OS 1.4 or above.**
- **Issued by:** MONITOR
- **Explanation:** You have attempted to run the Monitor on a system below the z/OS 1.4 level. It can only run on an MVS/XA or MVS/ESA system.
- **Response:** Run the Monitor under a supported operating system.

**AUD102I MONITOR RESOURCE MANAGER NOT ESTABLISHED - DO NOT ISSUE FORCE.**
- **Issued by:** MONITOR
- **Explanation:** Monitor’s attempt to establish a Resource Manager has failed. If the operator later issues the MVS FORCE command to terminate the Monitor, unpredictable results may occur.
- **Response:** Do not issue a FORCE command.

**AUD103I MONITOR IS NOW ACTIVE.**
- **Issued by:** MONITOR
- **Explanation:** The Monitor has started and has reinitialized its CSA storage area.
- **Response:** None needed.
AUD104I MONITOR HAS BEEN REINSTATED.
Issued by: MONITOR
Explanation: The Monitor has started and is re-using the CSA storage area.
Response: None.

AUD105I MONITOR TERMINATING.
Issued by: MONITOR
Explanation: The Monitor is terminating.
Response: None.

AUD115I MONITOR ALREADY ACTIVE — START REQUEST IGNORED.
Issued by: MONITOR
Explanation: The Monitor has detected that it is already active. To start a new Monitor, you must stop the previous one.
Response: Stop the previous Monitor and then start the new one.

AUD116E MONITOR UNABLE TO OBTAIN CSA STORAGE
Issued by: MONITOR
Explanation: The Monitor is unable to obtain storage in the MVS CSA.
Response: Make more CSA storage available before restarting the Monitor. An IPL might be necessary to reclaim CSA storage acquired by other software.

AUD118E MONITOR UNABLE TO LOAD MODULE xxxxxxxx.
Issued by: MONITOR
Explanation: The Monitor was unable to load the specified module.
Response: Make sure that the AUDLIB DD points to the library containing the Monitor modules.

AUD121E MONITOR MUST BE IN AN AUTHORIZED LIBRARY.
Issued by: MONITOR
Explanation: The Monitor and associated routines must reside in an APF-authorized library.
Response: Move the appropriate modules into an already authorized library and change the STEPLIB DD in the Monitor JCL, or authorize the IBM Tivoli License Compliance Manager for z/OS load library.

AUD122I MONITOR RELEASING PREVIOUS MONITOR CSA AREAS.
Issued by: MONITOR
Explanation: The Monitor has detected a previous Monitor area in the CSA, and will attempt to free it.
Response: None.
AUD123I MONITOR WRITING OF DETAIL RECORDS HAS BEEN SUSPENDED.
Issued by: MONITOR
Explanation: Detail recording has been terminated. This can occur if all detail data sets are full and have not been emptied.
Response: Empty all detail data sets that have been filled by submitting or starting the appropriate jobs.

AUD130W MONITOR UNABLE TO LOAD MODULE AUDIGNLD. IGNORE-LOAD-LIST NOW DISABLED.
Issued by: MONITOR
Explanation: The Monitor could not load module AUDIGNLD. The Ignore Load List is disabled.
Response: Make sure the module AUDIGNLD is in the steplib.

AUD131W MONITOR LOADED AN EMPTY AUDIGNLD. IGNORE-LOAD-LOAD-LIST NOW DISABLED.
Issued by: MONITOR
Explanation: No ignore load member list specified. The Ignore Load List is disabled.
Response: Specify the proper Ignore Load List.

AUD132W MONITOR LOADED AN INVALID AUDIGNLD MODULE. IGNORE-LOAD-LIST NOW DISABLED.
Issued by: MONITOR
Explanation: The Monitor loaded an invalid AUDIGNLD module.
Response: Specify a properly constructed AUDIGNLD module.

AUD135W MONITOR UNABLE TO LOAD MODULE AUDIGNLD. PRIOR IGNORE-LOAD-LIST REMAINS IN EFFECT.
Issued by: MONITOR
Explanation: The Monitor could not load module AUDIGNLD.
Response: The previously active Load List remains in effect. Make sure the module AUDIGNLD is in the steplib and retry the operation.

AUD136W MONITOR LOADED AN EMPTY AUDIGNLD. PRIOR IGNORE-LOAD-LIST REMAINS IN EFFECT.
Issued by: MONITOR
Explanation: An empty load member list was specified.
Response: The previously active Load List remains in effect. Specify a properly constructed AUDIGNLD module and retry the operation.
AUD137W MONITOR LOADED AN INVALID AUDIGNLD MODULE. PRIOR IGNORE-LOAD-LIST REMAINS IN EFFECT.
Issued by: MONITOR
Explanation: The Monitor loaded an invalid AUDIGNLD module.
Response: The previously active Load List remains in effect. Specify a properly constructed AUDIGNLD module and retry the operation.

AUD150E MONITOR — UNRECOGNIZED MODIFY FUNCTION.
Issued by: MONITOR
Explanation: An invalid function code was specified in an MVS MODIFY command directed to the Monitor.
Response: Correct and reissue the command.

AUD160E LPA LIBRARY SCAN FAILED — TERMINATING — CORRECT OR USE NOLPA TO RESTART.
Issued by: MONITOR
Explanation: While initializing, the Monitor was unable to read the system LPA libraries (possibly because of a security violation).
Response: Correct the security violation or start the Monitor with the NOLPA execution parameter.

AUD201E MONITOR DIDN'T RESPOND TO SPINOFF REQUEST.
Issued by: SPINOFF
Explanation: The Monitor has not responded to the SPINOFF request.
Response: Check for messages from the Monitor to help diagnose the reason for the lack of response.

AUD202E SPINOFF REQUEST REJECTED BY MONITOR.
Issued by: SPINOFF
Explanation: The Monitor has rejected the SPINOFF request.
Response: Check for messages from the Monitor to help diagnose the reason for rejection.

AUD203I SPINOFF COMPLETE.
Issued by: SPINOFF
Explanation: The SPINOFF request has completed successfully.
Response: None.
AUD204E CAN'T SPINOFF — MONITOR ISN'T ACTIVE.
Issued by: SPINOFF
Explanation: A SPINOFF request was made but the Monitor was not active.
Response: Make sure that the Monitor is active before trying to perform a SPINOFF.

AUD206E MONITOR UNABLE TO SPINOFF xxxxxxxx.
Issued by: SPINOFF
Explanation: A SPINOFF request was issued but the Monitor was not able to spin off the data set specified.
Response: Check messages from the Monitor job. Check the MONDTLxx data sets.

AUD207E I/O ERROR READING(WRITING) mmmmmmm.
Issued by: SPINOFF
Explanation: An I/O error was encountered while reading or writing the member specified.
Response: Check messages and space allocations.

AUD701E AUDLIB Cannot be opened.
Issued by: All components
Explanation: AUDLIB DD is not allocated. The product may not have been installed properly.
Response: Contact IBM Support.

AUD702E AUDCP1P has mismatched entry name.
Issued by: All components
Explanation: The contents of load module AUDCP1P is incompatible with the IBM Tivoli License Compliance Manager for z/OS component being executed. The product may not have been installed properly.
Response: Contact IBM Support.

AUD703E AUDCP1P has wrong length.
Issued by: All components
Explanation: The contents of load module AUDCP1P is incompatible with the IBM Tivoli License Compliance Manager for z/OS component being executed. The product may not have been installed properly.
Response: Contact IBM Support.
AUD704E AUDCP1P has incorrect format.
Issued by: All components
Explanation: The contents of load module AUDCP1P is incompatible with the IBM Tivoli License Compliance Manager for z/OS component being executed. The product may not have been installed properly.
Response: Contact IBM Support.

AUD705E Unable to load AUDCP1P.
Issued by: All components
Explanation: Load module AUDCP1P could not be loaded. The product may not have been installed properly.
Response: Contact IBM Support.

AUD801I MONITOR — NO JOB SUBMISSION CAPABILITY — AUTOMATION SYSTEM ASSUMED ACTIVE
Issued by: MONITOR
Explanation: During initialization, the Monitor has determined that either no AUDJOB/AUDINRDR DD statement(s) are present or no members matching the detail data set DD names are present, or no DTLPROC parameter was specified.
Response: If a console automation system is active, make sure that it is detecting the Monitor WTO that indicates that detail data sets are full (AUD811I), or code the appropriate DD statements, members, or DTLPROC.

AUD802I MONITOR — xxxxxxxx JCL MEMBER NOT FOUND
Issued by: MONITOR
Explanation: The specified member was not found in the AUDJOB data set, no job was submitted to empty the corresponding detail data set.
Response: Create a member and add to the AUDJOB PDS and/or submit a job to empty the full detail data set.

AUD810I MONITOR — NOW RECORDING ON dsname ON volser
Issued by: MONITOR
Explanation: Detail records are now being written to the data set specified.
Response: None

AUD811I MONITOR — RECORDING COMPLETE ON dsname ON volser
Issued by: MONITOR
Explanation: Detail record recording in the data set specified is complete.
Response: If no automatic method is implemented for emptying the data set, a job to do so must be submitted.
AUD812I MONITOR — DETAIL FILE dsname ON volser NOT EMPTY
Issued by: MONITOR
Explanation: During initialization, the Monitor has determined that the data set specified is not empty. The Monitor will attempt to empty it.
Response: If automatic emptying fails, submit a job to do so.

AUD815I MONITOR — JOBnnnnn SUBMITTED TO CLEAR dsname
Issued by: MONITOR
Explanation: The Monitor has submitted a job to empty the data set specified.
Response: If automatic emptying fails, submit a job to do so.

AUD816E MONITOR — JOB SUBMISSION FOR dsname FAILED
Issued by: MONITOR
Explanation: The Monitor was unable to submit the job to empty the data set specified.
Response: Correct the problem and submit the job manually.

AUD890E MONITOR — ABORTING DUE TO RESOURCE EXHAUSTION
Issued by: MONITOR
Explanation: This message is issued as the result of a spinoff failure (or stoppage) that results in a failure to empty the Monitor detail data files.
Response: First ensure that all submitted spinoff jobs have successfully completed and then restart the Monitor.

AUD891E MONITOR — INVALID CROSS-MEMORY ENVIRONMENT DETECTED — RECORDING STOPPED
Issued by: MONITOR
Explanation: The Monitor has detected that its cross-memory environment has become invalid and so has stopped recording. The Monitor remains inactive until the environment has reset and checks periodically if the environment has again become valid. If so, it issues AUD892I and resumes normal operations.
Response: If the Monitor does not reactivate in a reasonable time, stop it and restart it.
AUD892I MONITOR — CROSS-MEMORY ENVIRONMENT NOW VALID — 
RECORDING RESTARTED
Issued by: MONITOR
Explanation: This message is issued only after AUD891E has occurred, 
and only if the condition causing that message has been 
corrected. The Monitor has detected that its cross-memory 
environment is again valid and so has restarted recording.
Response: None

AUD893E MONITOR — FILE dsname ON volser IS 1 
TRK—MIN=2—BYPASSED
Issued by: MONITOR
Explanation: During initialization, the Monitor has determined that only 
one track has been allocated to the specified detail data set. 
The minimum is two tracks. The Monitor will not use this 
detail data set.
Response: Reallocate the data set with a larger space allocation. The 
Monitor will use it the next time the Monitor is started.

AUD894E MONITOR — UNABLE TO OPEN INTERNAL READER — JOB 
SUBMISSION NOT ACTIVE
Issued by: MONITOR
Explanation: The Monitor was unable to open the internal reader needed 
to submit the job to empty a detail data set.
Response: Submit the job manually or stop the Monitor, correct the 
problem, and restart it.

AUD895W MONITOR — ALL DETAIL FILES FULL
Issued by: MONITOR
Explanation: As a result of an external spinoff request, the Monitor has 
determined that all detail data sets are full.
Response: Make sure that the detail data sets are emptied. Otherwise, 
stop the Monitor, empty the data sets manually, and restart it.

AUD896W MONITOR — ALL DETAIL FILES FULL — ATTEMPTING TO 
EMPTY
Issued by: MONITOR
Explanation: The Monitor has determined that all detail data sets are full. 
The Monitor will attempt to empty them.
Response: Make sure that the detail data sets are emptied. Otherwise, 
stop the Monitor, empty the data sets manually, and restart.
AUD897E MONITOR — UNABLE TO RECLAIM FILES — TERMINATING
Issued by: MONITOR
Explanation: The Monitor was unable to reclaim any detail data sets. The Monitor terminates.
Response: Make sure that the detail data sets are accessible and empty. Then restart the Monitor.

AUD898E MONITOR — NO ACCESSIBLE DETAIL FILES — TERMINATING
Issued by: MONITOR
Explanation: During initialization, the Monitor was unable to access any detail data sets.
Response: Correct any access problems and restart the Monitor.

AUD899E MONITOR — UNABLE TO CREATE DETAIL FILE TABLE
Issued by: MONITOR
Explanation: During initialization, the Monitor was unable to create a detail data set table. This is normally due to a lack of dynamic storage.
Response: Correct any access problems and restart the Monitor.

AUD900E MONITOR UNABLE TO ACTIVATE — CHECK SYSPRINT FOR MESSAGES
Issued by: MONITOR
Explanation: One or more errors occurred during Monitor activation causing the Monitor not to activate.
Response: Check the message or messages in the SYSPRINT data set and JES log, correct the problem or problems, and restart.

AUD901E MONITOR - FILE dsname ON volser IS 1 TRK-MIN=2-CLOSED
Issued by: MONITOR
Explanation: The Monitor has determined that only one track is currently allocated to the specified detail data set. The minimum is two tracks. The Monitor will not use this detail data set with the current space allocation.
Response: Review detail data set requirements in the installation and maintenance manual and then re-allocate the data set with a larger space allocation. The Monitor will then continue to try to use it in conjunction with other detail data sets.

AUD991E UNABLE TO REMOVE MONITOR CSA STORAGE — COULD NOT LOCATE AREA
Issued by: AUDUTIL
Explanation: The user requested that AUDUTIL remove intercepts and CSA storage but AUDUTIL was unable to locate the area.
Response: If it is necessary to remove the Monitor from the CSA, re-IPL, otherwise, none.
AUD992I UNABLE TO REMOVE INTERCEPTS OR RELEASE CSA STORAGE
Issued by: AUDUTIL
Explanation: The REMOVE function of AUDUTIL could not be performed because the intercept addresses did not match.
Response: If it is necessary to remove the intercepts and/or free CSA storage, an IPL must be performed. Otherwise, no response is required.

AUD993I CURRENT INTERCEPTS REMOVED AND CSA RELEASED
Issued by: AUDUTIL
Explanation: The REMOVE option processing completed successfully.
Response: None

AUD994E AUDUTIL MUST BE AUTHORIZED TO PERFORM THIS FUNCTION
Issued by: AUDUTIL
Explanation: To use the REMOVE option, you must run AUDUTIL from an APF-authorized library
Response: Place the AUDUTIL program in an APF-authorized library and rerun the job.

AUD995E MONITOR MUST BE INACTIVE TO PERFORM THIS FUNCTION
Issued by: AUDUTIL
Explanation: The REMOVE option can only be run when the Monitor is inactive.
Response: Stop the Monitor and rerun the job.

AUD996I VERSION 2 OR BELOW
Issued by: AUDUTIL
Explanation: AUDUTIL cannot be run with Monitor Version 2 or earlier.
Response: Rerun with Monitor Version 3 or above.

AUD997I MONITOR NEVER ACTIVE ON THIS SYSTEM
Issued by: AUDUTIL
Explanation: The Monitor has not been active since IPL.
Response: The Monitor must run before you can issue AUDUTIL with the REMOVE option.

AUD998E INVALID PARM VALUE
Issued by: AUDUTIL
Explanation: An invalid keyword value was specified for PARM. Valid keywords are SNAP, FINDALL, and REMOVE.
Response: Specify a valid keyword and rerun the job.
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