FORTRA

Robot Space 3.51

User Guide

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About Robot Space

Robot Space collects disk usage statistics, monitors your IBM i (OS/400, i5/OS) running on IBM Power Systems (System i, iSeries, AS/400) for objects that waste disk space, warns you when there's a problem, and can actually fix problems for you.

With Robot Space, you no longer have to worry about critical storage conditions creeping up on you and upsetting your smooth-running department. It's on the watch so you don't have to be.

To do a good job of controlling disk storage, you must monitor and control the objects that grow and grow—and ignore the rest. Robot Space watches what needs to be watched. If you want to monitor every object in every library and directory, Robot Space can accommodate that, too.

You can set up Robot Space quickly using Robot Guide, which gives you step-by-step instructions for setting up ASP monitors, storage audits, active job storage monitors, and collection groups.

About this Guide

This Guide is a reference for Robot Space, the disk storage management software . This guide describes Robot Space and its major components:

- Monitors
- Storage Audits
- Storage Collections
- Graphs/Trends
- Robot Query

This User Guide is designed for both administrators and users of networked IBM i servers, who are responsible for managing and using these networks while ensuring that they run effectively. We assume that the audience is familiar with and knowledgeable about the technical details of IBM i servers and has the necessary security privileges to perform the tasks outlined in this guide (usually security officer clearance—QSECOFR).

Accessing this Guide From the Robot Space Explorer

The User Guide is meant to be used as a reference while you work. Therefore, the User Guide is organized so the sections match the options in the product. The topics within each section basically follow the order of the Robot Space options in the Explorer's Tree view. Press the **F1** key from most windows for topic-specific help.

How to Use This Guide

This User Guide is not meant to be read topic for topic. Instead, you should become familiar with the introductory material to get a feel for the product and to think about how you plan to use it. When you are setting up Robot Space (or for more detailed information anytime), refer to the appropriate section of the guide for reference.

Getting Started with Robot Space

Operations Schedule

Collections are CPU- and disk-intensive. Therefore, we recommend that you schedule this processing for off hours if possible. If you have a larger IBM i, the effect may be minimal.

For error-free, automatic operation of Robot Space, we suggest that you schedule all the daily, weekly, and monthly procedures on Robot Schedule. Keep in mind that these are general frequency recommendations that you can tailor to your operations. Weekly and monthly procedures can be done more or less often, as required. If your IBM i has plenty of disk drive space, you may want to do these procedures less often. There are also procedures that you can run on an as-needed basis.

Daily Operations

Each day:

- Run the collection groups that include your critical objects and any fast-growing objects (you can run these hourly, if needed).
- After the collections run, print these reports: Good Morning, Total DASD and/or Utilization by ASP, Library Growth, IFS Growth, and System Health. If you schedule the collections in Robot Schedule, you can set up a reactive job to print them automatically after the collections have run.

- Run your Daily storage audit. Use the following recommendations for daily tasks. You can tailor the tasks to suit your needs:
  - Delete spooled files that are at least 7 days old from output queues.
  - List old library objects.
  - List old IFS objects.
  - Delete network files that are at least 7 days old and have not been received.
  - List the objects created or restored within the previous 24 hours.

Weekly Operations

About once a week:

- Run the Detail or Summary collection groups for all objects on your system.
- Purge history for current collections; keep the last 60–90 days.
- Purge storage audit history for current storage audits; keep the last 7 days.
- Purge event threshold history; keep the last 60–90 days.
- Run your Weekly storage audit. Use the following recommendations for weekly tasks. You can tailor the tasks to suit your needs:
  - Delete old history files (*QHST) if unused for 7 days or more.
  - Delete saved journal receivers that have not been used for 5 days or more.

  Note: Run this task after you run your saves. Make sure that you exclude libraries that have journal receivers you want to keep.

Bi-Weekly Operations

Every few weeks:

- Run a long-term collection for long-term trending. Note: This reduces the amount of collection data stored on your system.
- Purge collection history, keeping the last 20 months for trending.
- Run your bi-weekly storage audit. The following are recommendations for bi-weekly tasks. You can tailor the tasks to suit your needs:
  - Compress *PGM, *SRVPGM, and *MODULE objects unused for 90 days (default value).
  - Delete old save files that have not been used for 30 days or more. Make sure that you exclude libraries that have save files you want to keep.

- Clear message queues larger than 50 KB.
- Remove observability from programming objects created 30 days ago or more.

As-Needed Operations

On an as-needed basis:

- Run a storage audit to reorganize file data (bi-weekly, or as needed).
- Run a storage audit to list objects overflowing their assigned ASP.
- Run a storage audit to list large IFS directories.

Explorer Overview

You use the Robot Space Explorer to set up and control all aspects of disk space management. Using the Explorer, you can:

- Connect to or disconnect from a system
- Define ASP and IASP utilization
- Define, start, and stop job storage monitors
- Define and maintain storage audits
- Create collection groups, classes, and events
- Create collection statistic summary graphs
- Create and run queries
- Set up and run reports
- Set user preferences and purge collection statistics, threshold statuses, and storage audit history.

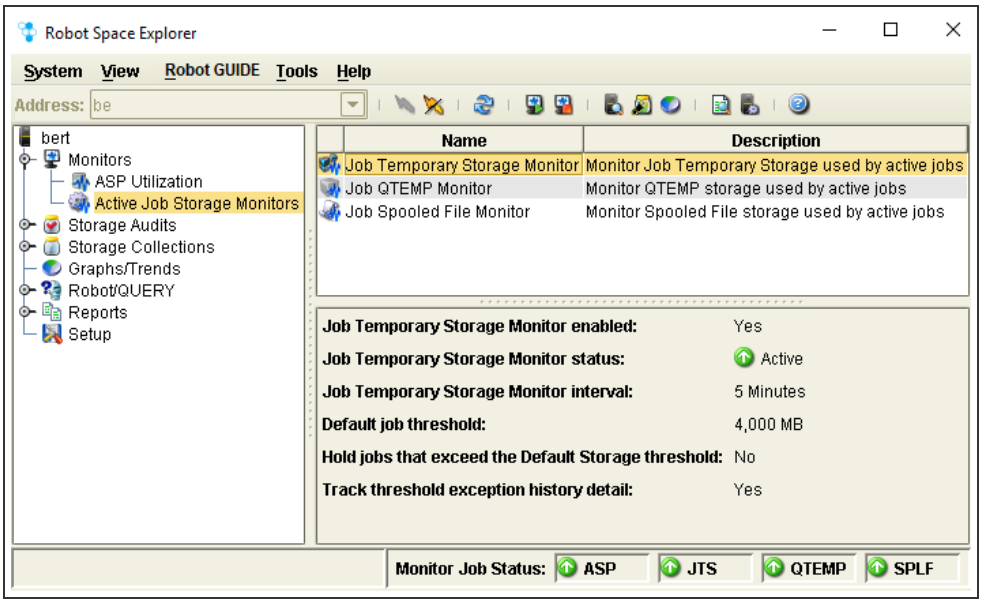
Related Topics

- Explorer Views
- Explorer Menus
- Explorer Toolbar
- Preferences
- Accessing Product Information

Explorer Views

Robot Space Explorer uses a top-down hierarchical structure lets to display your network configuration graphically.

When you select an item in the Tree view, the List view displays details about that item. Similarly, when you select an item in the List view, the QuickView provides details.



Explorer Menus

Menu Bar

The Robot Space Explorer menu bar contains five menus: System, View, Robot Guide, Tools, and Help.

Menu	Function
System	Use the System menu to display, add, edit, or remove connection profiles and to exit Robot Space, or to enter license information.
View	Use to change the appearance of the Robot Space Explorer and to refresh the display.
Robot Guide	Use the Robot Guide menu to launch the ASP Monitor Guide, the Job Monitor Guide, the Storage Audit Guide, or the Collection Group Guide. Each guide provides step-by-step basic setup instructions for these functions.
Tools	Use to set your Robot Network preferences.
Help	Use to display information about Robot Space, access Robot Space online help, specify your level of log detail, and display diagnostic information about Robot Space.

Other Explorer Menus

Throughout Robot Space Explorer, you can display other menus. To determine whether there is a menu on a particular window, or tab, select an object and right-click. If a menu displays, the active menu options are black; inactive menu options are disabled (grayed out).

System Options

Use the System menu to view, edit, or create connection profiles you use to connect to IBM i Hosts, or enter your Robot Space license.

Select **Connection Properties** to create and maintain the connection profiles you use to connect to systems. You can add or remove a Host profile from the network interface, change its alias, IP address or domain name, connection port number, as well as the user name and password used to sign on to the Host.

Select **License** to access the Product License entry window.

Select **Exit** to close the Robot Network Explorer.

Explorer Toolbar

The Explorer Toolbar provides quick access to common areas or functions of Robot Space.

Click the connection buttons to connect ( ) or disconnect ( ) from a system.

Click the refresh button ( ) to refresh information displayed on the Robot Space Explorer.

Click the Monitor Job buttons to start ( ) or stop ( ) monitor jobs.

Click the CSI button ( ) to launch the Critical Storage Investigator tool.

Click the Collection Explorer button ( ) to display storage statistics collected by the collection groups you define

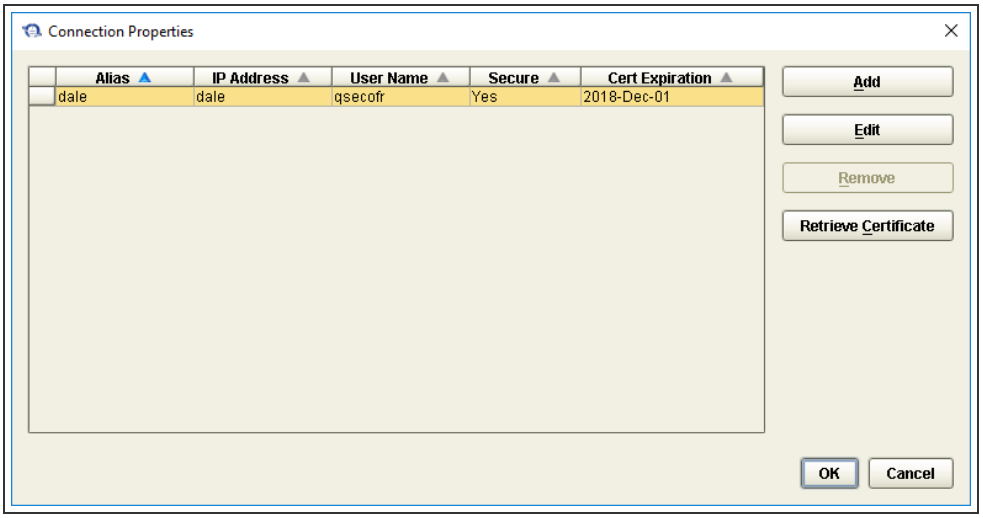
Click the graphs and trends button ( ) to display growth history graphs and trend diagrams.

Click the spooled file button ( ) to open the Work with Spooled Files window.

Click the active jobs button ( ) to open the Work with Active jobs window.

Connection Properties

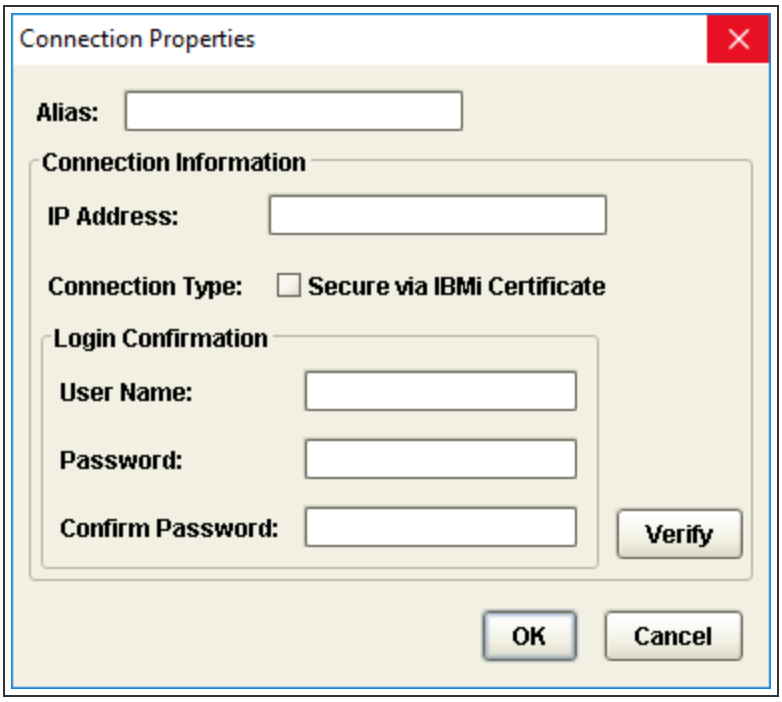
Use the Connection Properties window to edit current and create new connection profiles for the system.



- Click the **Add** button to add a new connection profile. The Connection Properties dialog displays.
- Select a connection profile and click the **Edit** button to modify it. The Connection Properties dialog displays.
- Select a connection profile and click the **Remove** button to remove it from the Connection Properties window.
- Click **Retrieve Certificate** to retrieve certificates for systems which may have had their certificates updated. Multiple systems can be selected at once. See Secure Connection for more information.

Connection Properties Dialog

Use the Connection Properties dialog to add or edit a connection profile.



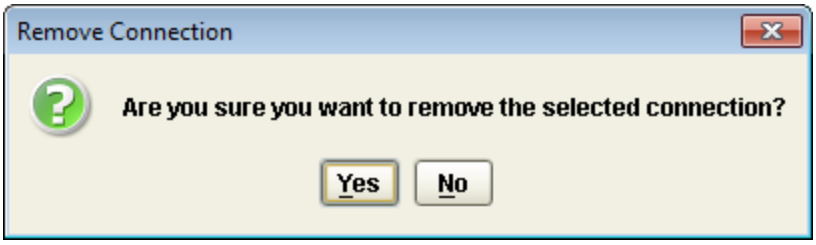
Complete the following fields:

- Alias: Enter the alias for the server.
- IP Address: Enter the IP address for the server. Or, enter the alias name if the IP address is unknown.
- Connection Type: is where you assign whether or not a standalone connection will be secure. When the Secure via IBMi Certificate option is checked and you click **Verify** or **OK**, an attempt is made to retrieve a certificate from the standalone system specified. See Secure Connection for more information.
- Port: The default port number displays. You can enter a different port number for the connection.
- Login Confirmation: Enter the user name and password for the system; enter the password again to confirm it. Click the **Verify** button to verify that the user name and password are valid on the system.

When you save the connection profile it displays in the Connection Properties window. Click **OK** to save the connection profile and return to the Connection Properties window.

Removing Connection Profiles

To remove a connection profile, select it and click **Remove**. A dialog displays to verify the removal.



Notes:

- Removing a connection profile only removes the connection from the Robot Schedule graphical interface.
- You cannot remove a connection profile for a Host to which you are currently connected.

Secure Connection

When you add or edit a standalone connection, you have the option of making the GUI connection secure. This type of connection requires that there is a valid certificate on the standalone system.

To add a new secure connection:

1. Click **Add** from the Connection Properties window.
2. Fill out the fields as shown in the Connection Properties Dialog section. Be sure to select the **Secure via IBM i Certificate** checkbox.
3. Click **OK**. If retrieval of the certificate from the IBM i unsuccessful, an error message will display.

To update certificates for existing connections:

1. From the Connection Properties window, select one or more system connections and click Retrieve Certificate.
2. If the retrieval is successful, the Certificate Expiration field in the connections grid will update with the new date. If retrieval of the certificate from the system is unsuccessful, an error message will display.

Product License Entry

The top of the Product License Entry window displays information about your system.

1. Enter your product license code in the License Code field.
2. For most product license files, you can toggle between two views. Select **View 1** to display the License Code field in data entry mode. Select **View 2** to display the field in copy-and-paste mode, which allows you to paste your permanent security code into the field.
3. Click the **Display License Agreement** button to display detailed license agreement information, which you can copy to the clipboard.

Using Robot Guide

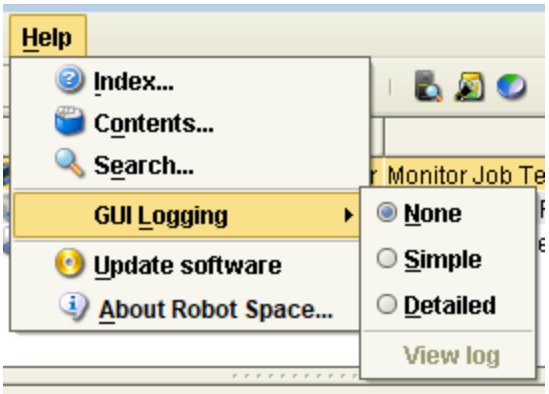
Robot Guide is a group of setup options in the Robot Space Explorer that provide step-by-step instructions for setting up basic storage monitors, storage audits, and collection groups:

- Use the ASP Monitor Guide to set up ASP monitors for Robot Space.
- Use the Job Monitor Guide to set up job monitors for Robot Space.
- Use the Storage Audit Guide to set up storage audits for Robot Space.
- Use the Collection Group Guide to set up collection groups for Robot Space.

Click the Robot Guide menu on the Explorer to access its options.

Accessing Product Information

Use the Help menu to display Robot Space online help. The Help menu also allows you to start GUI logging, check for GUI updates, and display the About Robot Space information.



Select **Robot Space Help** to launch this help system. You can also press **F1** from most windows or dialogs for help.

Select **GUI Logging** to write troubleshooting information to a log file on your system and specify the level of detail—None, Simple, Detailed.

Note: You only need this information if requested by Technical Support.

Select **Update Software** to have Robot Space check to see if there is a more current version of Robot Space Explorer software available. Robot Space compares the version currently on the Host to the one you are currently using.

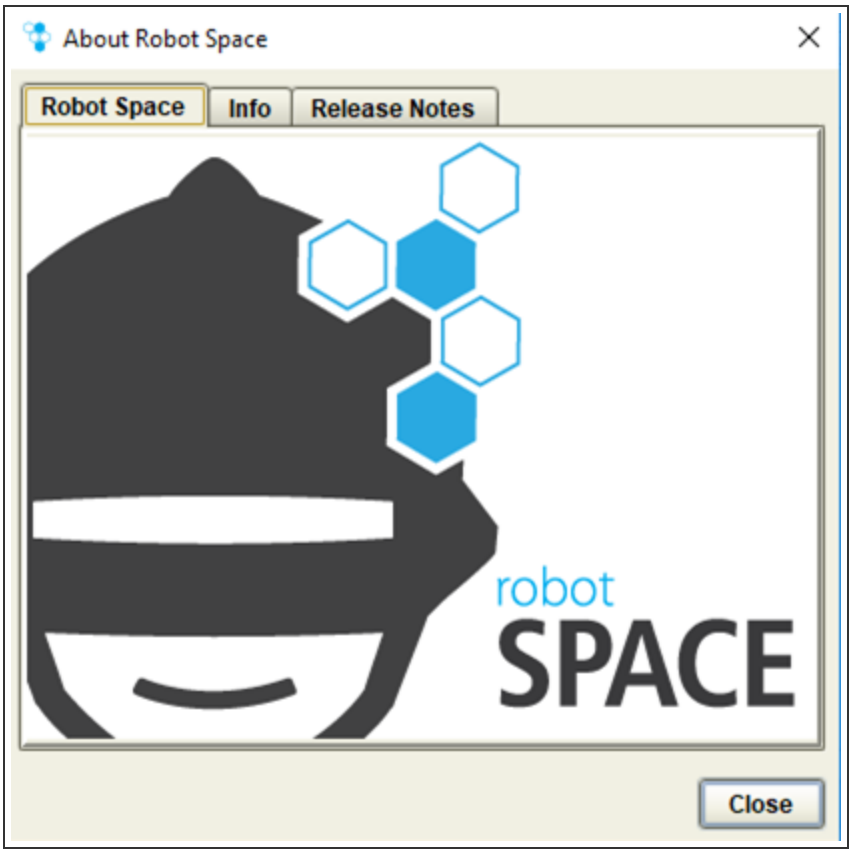
Note: You can have Robot Space automatically check for later versions of Robot Space Explorer software at startup time. You select this automatic update option (the default) using Robot Space Tools preferences.

After Robot Space checks the Host, the Update available window displays if you do not have the latest version of the Robot Space Explorer software on your PC.

Before you can load the latest Robot Space Explorer software, you must close any other Fortra products that are currently running on the PC.

- To load the latest version of Robot Space Explorer and update your PC software, click **Yes** and follow the prompts that display.
- To skip this process, click **No**.

Select **About Robot Space** to display technical details about Robot Space.

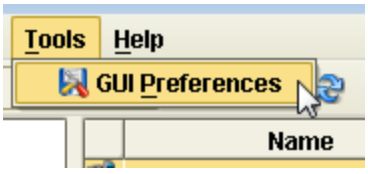


Click the Info tab on the About Robot Space window to see Robot Space and PC system information. You can copy and paste the information into a file or the clipboard for troubleshooting and product support.

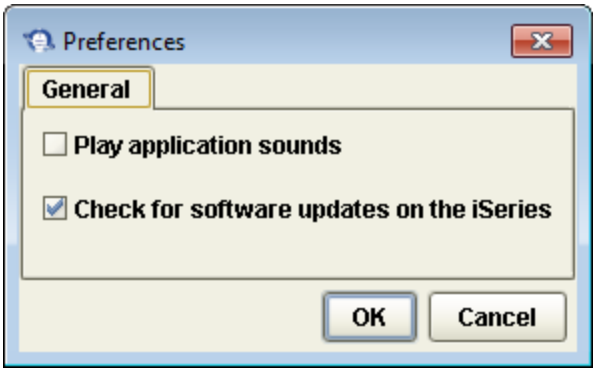
Define Robot Space Settings

Use the Tools menu to specify what Robot Space does at startup time and while it is running.

From the Tools menu, select **GUI Preferences** to set Robot Space Preferences.

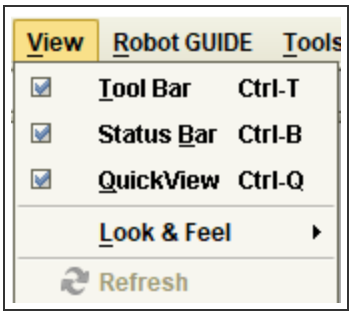


Select options to play application sounds or to check for updates on the IBM i server.



Changing the Explorer Appearance

Use the View menu to change the way Robot Space Explorer displays. Using this menu, you can reveal or hide the Toolbar, the Status Bar, and the QuickViews, change the look and feel of the Robot Space Explorer window, and refresh the display.



Select **Toolbar** to display or hide the toolbar.

Select **Status Bar** to display or hide the status bar.

Select **QuickView** to activate or deactivate the QuickView display.

Select **Look & Feel** to change how Robot Space Explorer looks. Selecting a new Look & Feel changes the color and font scheme, as well as how the buttons display on the window.

Note: The default look and feel for Robot Space Explorer is Alloy.

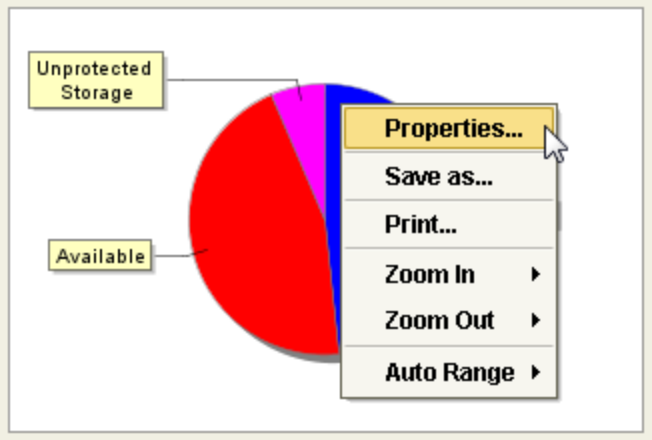
Select **Refresh** to update Robot Space Explorer with your changes.

Working with Graphs

Robot Space allows you to display your ASP utilization statistics, collection summaries, and object growth history and growth trend statistics graphically. You can right-click on any Robot Space graph to display a menu of options, which allow you to print or save the graph to your PC and change the graph's display properties. For line graphs, the right-click menu allows you to zoom in or out to display more or less detail (and time); and reset the display.

When you zoom in on a graph, you display less time on the graph's horizontal axis. For example, if you display a graph for a one-month time period and select Zoom In, the time period displayed on the horizontal axis shrinks to approximately one week. Conversely, if your select Zoom Out, the time period expands.

Note: The descriptions of the Zoom In and Zoom Out menu options on this page describe the ASP utilization graph from the CSI used in this example. Other graphs work in a similar manner. The Zoom In, Zoom Out, and Auto Range options are not available for pie graphs.



Right-click Option	Description
Properties	Displays the Chart Properties window, which you use to customize graphs.
Save As	Use this option to save the graph to your PC.
Print	Use this option to print the graph.
Zoom In	Both Axes: Zoom in and display less %Used and Monitor Time information. Horizontal Axis: Zoom in and display less Monitor Time. Vertical Axis: Zoom in and display less %Used.
Zoom Out	Both Axes: Zoom out and display more %Used and Monitor Time information. Horizontal Axis: Zoom out and display more Monitor Time. Vertical Axis: Zoom out and display more % Used.

Auto Range	Both Axes: Reset %Used and Monitor Time information. Horizontal Axis: Reset Monitor Time. Vertical Axis: Reset % Used.

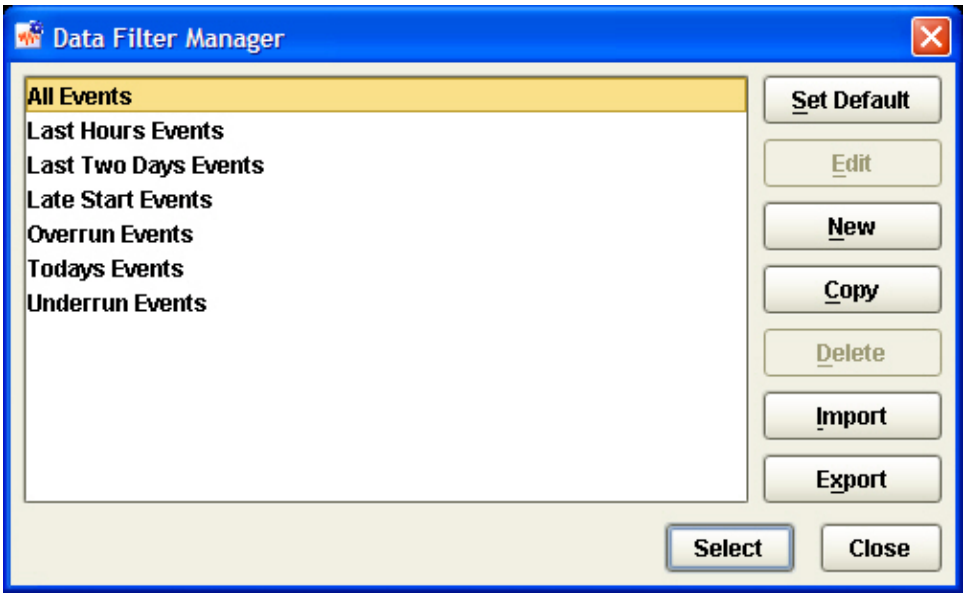
Filtering Data and Displays

In various parts of the Robot Space Explorer you have the option to filter data and displays using the Data Filter Manager and standard filters supplied with Robot Space or filters that you create. You can also sort information using column headings.

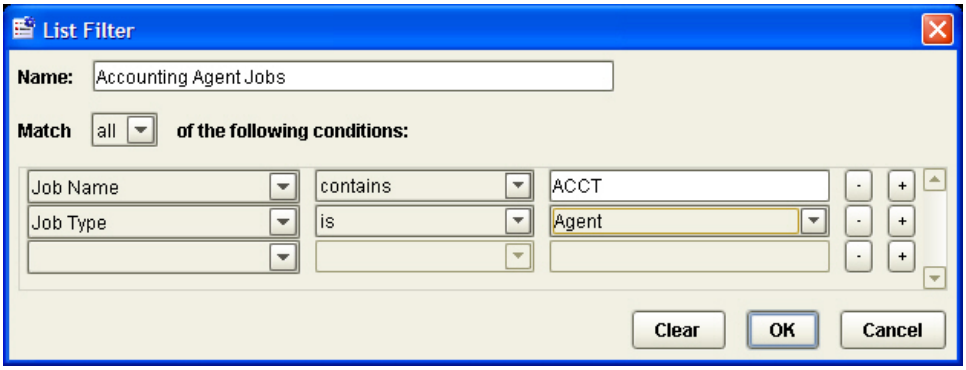
Data Filter Manager

The Data Filter Manager allows you to work with data filters for certain Robot Space displays that can be filtered, such as the Status Center. You can use the Data Filter Manager to copy existing filters, to rename and edit filters, to create new filters from scratch, to set a particular filter as the default for a display, and to export/import filters to/from other locations.

1. To display the Data Filter Manager, click the data filter button from any window that allows filtering.
2. When you select a filter from the list, the options you can use with that filter become active. You can edit or delete only the filters that you have created.



3. There are two ways to create a new data filter: Select a filter and click **Copy** to display a copy of the filter in the List Filter dialog that you can use as a template to create a new filter. Select **New** to display a blank List Filter dialog.



4. Name the filter and specify which conditions the new filter should match using the menu options (All or Any).
5. In the first column, click to display the drop-down and select the attribute you want to compare.
6. In the second column, select the comparison condition.
7. In the third column, enter a value to compare to the criteria you have selected; the value determines what is displayed in the list. You can enter a second or third restriction, as needed.
8. Click the **Clear** button to clear the List Filter window.
9. Click a minus (-) button to remove a conditional row; click a plus button (+) to add a conditional row.
10. Click **OK** when you are finished to return to the Data Filter Manager.

When you are finished, the filter appears in the Data Filter drop-down menu for future use.

Sorting Information

If a column heading on a Robot Space Explorer tab contains up and down arrowheads, you can use them to sort the information in the column based on the type of information.

When you click on an arrowhead, the column re-displays with the information re-sorted based on the information and the type of arrowhead:

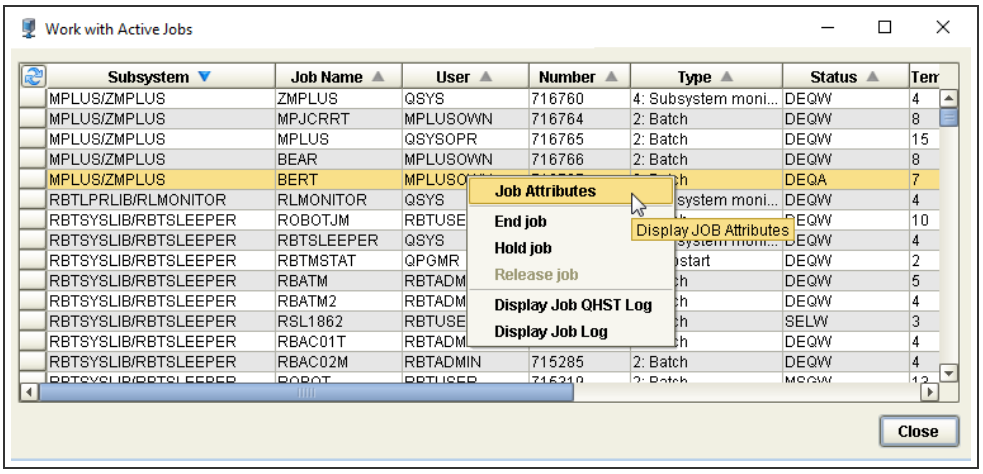
- The up arrowhead sorts from oldest to newest, least to greatest, or in alphabetical order (A-Z).
- The down arrowhead sorts from newest to oldest, greatest to least, or in reverse alphabetical order (Z-A).

Note: The column with the highlighted arrowhead is the column sorted.

Working With Active Jobs

The Work with Active Jobs window contains information about all of the jobs currently active in your IBM i server. To display the Work with Active Jobs window, select a system, right-click, select **Server**, and select **Work with Active Jobs**.

Use the Data Filter to view all jobs, jobs in the RBTSLEEPER Subsystem, or jobs for the current user.



Job Attributes

Use the Job Attributes window to display detailed Status Attribute, Definition Attribute, Run Attribute, and Library List information for a job. Use this information for troubleshooting when job problems occur.

To display a job's attributes, select a job, right-click and select **Job Attributes**. The Display Job Attributes window displays information about the job's attributes organized by status, definition, run, and library list. (For specific information about the information displayed, refer to the appropriate IBM documentation.)

Ending Jobs

If you have the proper authority, you can end any job from the Work with Active Jobs window. To end a job, right-click and select **End Job**. The End Job dialog appears.

Select **Yes** when the confirmation dialog displays. Check the Use *IMMED when ending checkbox to end the job immediately (this is the default setting). If you do not select Use IMMED when ending, the job is ended in a controlled manner (*CNTRLD).

Note: Your IBM i user profile authority determines which functions you can perform on the system. The Robot Network Explorer does not override this authority.

Holding and Releasing Jobs

You can hold or release jobs and their associated spooled files using the Work with Active Jobs window. When you hold or release a job, the window refreshes and the job's new status displays.

Note: If the job is currently held, the Hold Job option is unavailable (greyed out); conversely, if the job is active, the Release Job option is unavailable (greyed out).

1. Select **Hold Job** to hold the job or Release Job to release it. If you select to hold a job, a confirmation dialog displays to verify your choice.
2. Select **Yes** on the confirmation dialog to hold the selected job. You also can select to hold all of the spooled files associated with the job (this is the default setting).

Job QHST Log

Use the Display Job QHST Log option to display the contents of the message history queue (QHST) log for the selected job.

1. Select **Display Job QHST Log** from the menu to display the History Log window. The log shows the contents of the job log associated with the job message history.
2. You can save some or all of the messages displayed to a file or the clipboard.
3. You can display details about a message in the QHST message history log. Select a message, right-click to display the menu, and select **Message details** (this option is unavailable if you have selected multiple messages).
4. You can save some or all of the message detail to a file or the clipboard.

Job Log

Use the Display Job Log option to display the contents of the job log for the job you have selected.

1. Select **Display Job Log** from the menu to display the contents of the job log associated with the job.
2. You can save some or all of the job log to a file or the clipboard.
3. Select a message, right-click to display the menu, and select **Message details** to

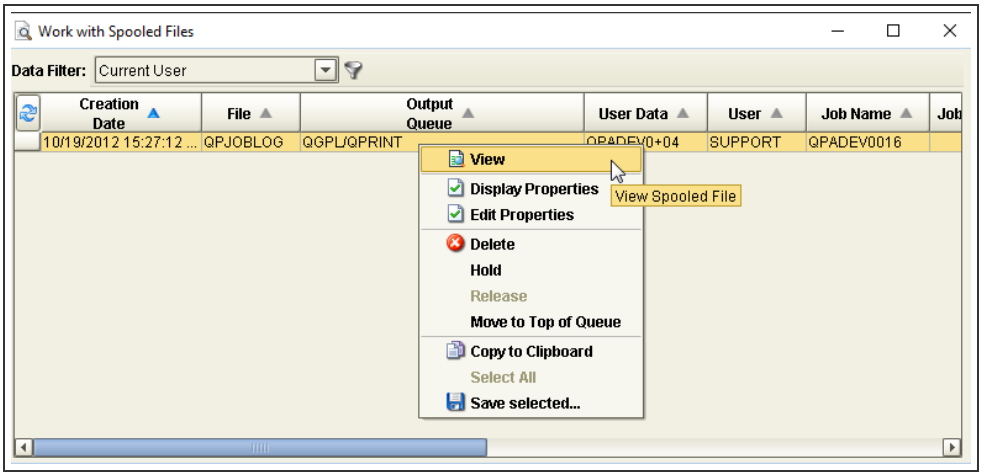
display details.

4. You can save some or all of the message detail to a file or the clipboard.

Working With Spooled Files

You can use the Robot Network Explorer spooled file viewer to view, print, and delete spooled files on your system. You can work with all of the spooled files on the system, just the ones belonging to the user profile that is using the viewer, or create a custom filter to display certain spooled files.

To display the spooled file viewer, select a Host, right-click, select **Server** and select **Work With Spooled Files**. The View Spooled File window displays.



Initially, you can filter the display using the following options:

- All Spooled Files
- Current User (the default setting)

Click the Filter (funnel) button to view or create your own data filters using the Data Filter Manager (for more information, see Filtering Data and Displays).

Right-click on a file and select View to view the file and search for text strings. This option is not available if you select multiple files.

Displaying and Editing Spooled File Properties

You can display and edit the properties of the spooled file you selected.

1. Select **Display Properties** to view the spooled file's properties. For details about these properties, refer to the appropriate IBM documentation. You can save the displayed property information to a file or the clipboard.
2. Select **Edit Properties** to edit the file's properties. Use the Spooled File Edit Properties dialog to change some of the properties of the spooled file you have selected.
3. After you have made your changes, click **OK**.

Deleting Spooled Files

Use the Delete option to delete one or more spooled files from the system.

1. Select the file or files you want to delete and click **Delete**. A confirmation dialog displays asking you to verify the deletion.
2. Click **Yes** to delete; **No** to cancel the deletion.

View Spooled Files

Use the View Spooled File window to display the spooled file. The View window allows you to modify the spooled file display using the following:

Page:

Enter a page number and click the Jump button to change the page displayed.

Search For:

Enter a text string to search for and click the Find Text button. Or, click the Search For drop-down and select a previously entered text string. The results of the search appear highlighted in the viewer. To repeat the search, click the Find Next Text button. Select the Match Case option to perform a case-sensitive text search.

Font Size:

Click the Font Size drop-down to change the size of the font used in the display.

Bar Color:

Click the Bar Color button to change the color of the bars that display in the spooled file. Changing the color can make it easier to locate items in a spooled file. The Bar Color window allows you to select a color for the spooled file from three palettes:

- The Swatches palette allows you to select a color from a color palette. It also displays the recent colors selected.
- The HSB and RGB palettes allow you to create your own colors and gradients manually.

Overview of the Critical Storage Investigator

The Critical Storage Investigator (CSI) is a problem-solving tool designed to help you quickly identify who or what is using up your disk space. The CSI uses a logical progression to find the source of disk space problems. The CSI runs independently of the Robot Space Explorer. It has its own icon in the Explorer task bar allowing you to start the CSI and check it periodically through the day.

You can use the CSI to display ASP threshold history, job monitor threshold history, and the active job status. In addition, you use the CSI to display collection history information for all objects on the system and to set up and run the System Health Report.

The CSI displays your overall ASP utilization levels and any sudden growth in real-time. The CSI allows you to look at job monitor threshold history to see if any out-of-control jobs have been devouring your storage by using large amounts of job temporary storage, QTEMP storage, or spooled file storage, causing ASP usage to spike. In most cases, your search ends here. If not, you can look at your Collection History.

Collection history allows you to look at the most recent collection for the various Collection Groups you have defined. By looking at the most recent detailed collection information, you can see objects that are very large or have grown the most. If your most recent collections are not current enough to help you solve your problem, use the Current Storage option to gather more current information.

The Current Storage option allows you to run a System Health Report or to submit a Collection Group that you have defined. When these are complete, look at their results to see the most recent information about the disk usage on your system.

Accessing the Critical Storage Investigator

Click the CSI button () on the Explorer tool bar to access the CSI.

Related Topics

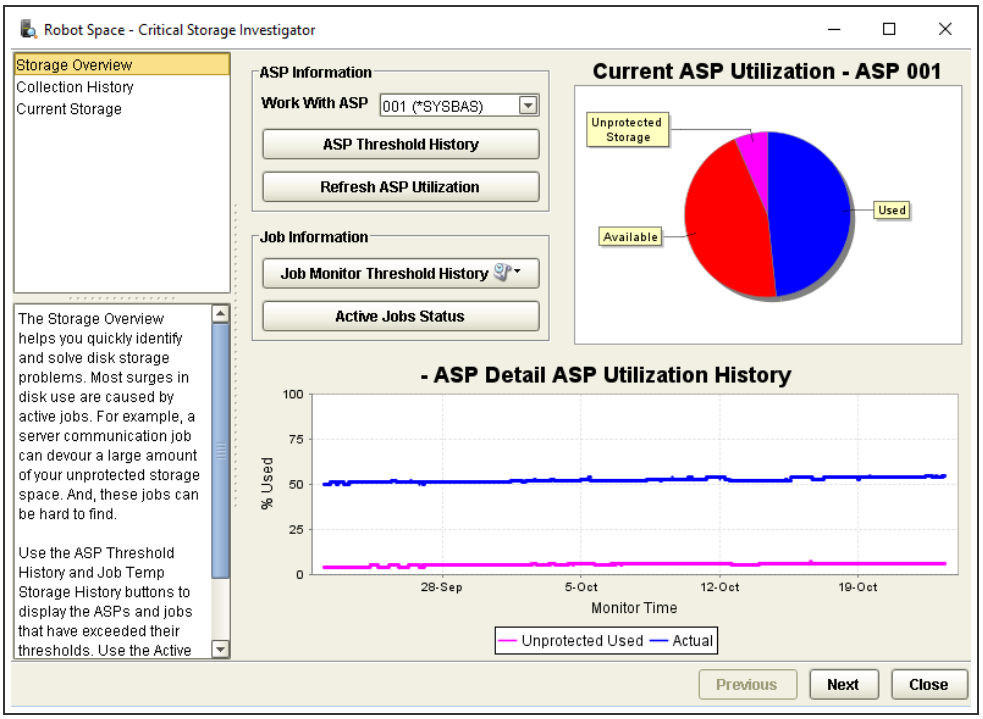
Storage Overview

Collection History

Current Storage

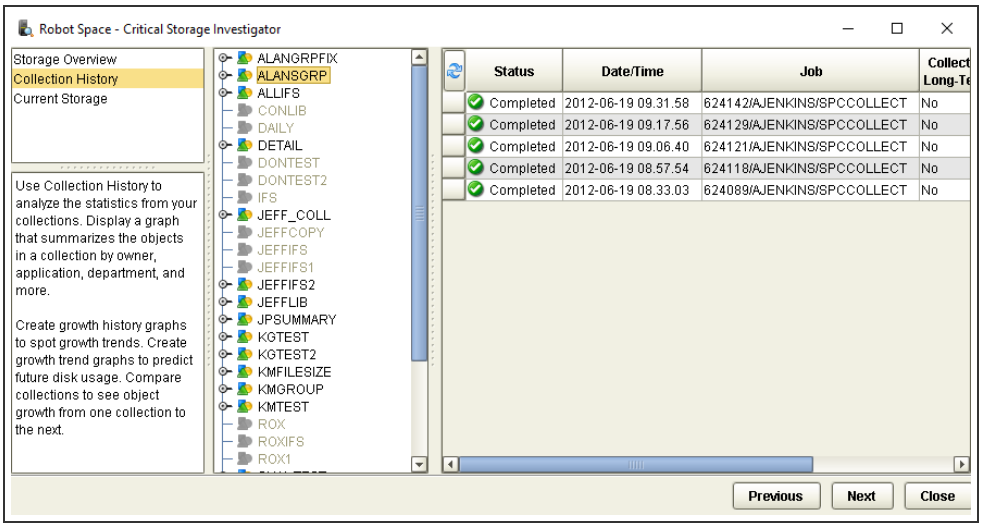
Storage Overview

The CSI defaults to the Storage Overview option with the main system ASP, ASP 001, selected. You see an overview of the *SYSBAS ASP information every time you start the CSI. Select another ASP in the Work With ASP field to display its information.



Collection History

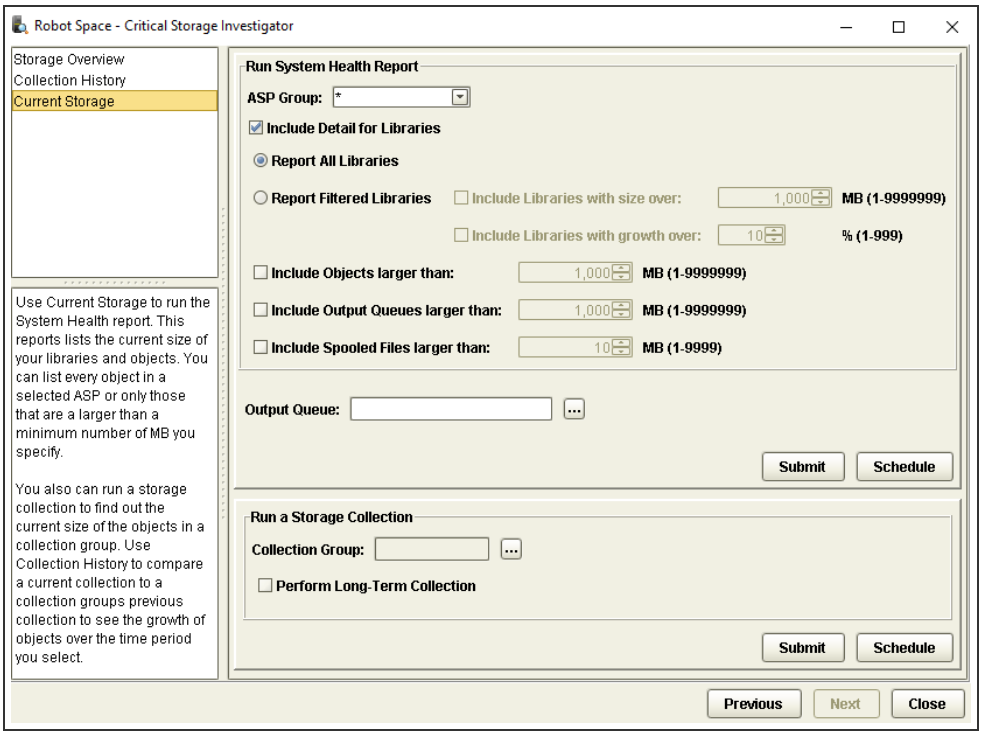
Use the Collection History option to start the Collection Explorer in the CSI display. You also can start the Collection Explorer independently using the toolbar; however, when you display it in the CSI you can use the Previous and Next buttons on the CSI to toggle between the Storage Overview, Collection History, and Current Storage windows.



Current Storage

Use the Current Storage option to set up and run the System Health report and to run a storage collection. You also can perform these tasks using the Reports and Storage Collections options in the Robot Space Explorer tree; however, when you perform them from the CSI you can use the Previous and Next buttons on the CSI to toggle between the Storage Overview, Collection History, and Current Storage windows.

After you set up the System Health report or select a collection group to run, click **Submit** to submit the report or collection group immediately.


Robot Space - Critical Storage Investigator
Storage Overview
Collection History
Current Storage
Use Current Storage to run the System Health report. This reports lists the current size of your libraries and objects. You can list every object in a selected ASP or only those that are a larger than a minimum number of MB you specify.
You also can run a storage collection to find out the current size of the objects in a collection group. Use Collection History to compare a current collection to a collection groups previous collection to see the growth of objects over the time period you select.
Run System Health Report
ASP Group: *
Include Detail for Libraries
Report All Libraries
Report Filtered Libraries
Include Libraries with size over: 1,000 MB (1-9999999)
Include Libraries with growth over: 10 % (1-999)
Include Objects larger than: 1,000 MB (1-9999999)
Include Output Queues larger than: 1,000 MB (1-9999999)
Include Spooled Files larger than: 10 MB (1-9999)
Output Queue:
Submit
Schedule
Run a Storage Collection
Collection Group:
Perform Long-Term Collection
Submit
Schedule
Previous
Next
Close

Overview of the Collection Explorer

Use the Collection Explorer to display storage statistics collected by the collection groups you define. Use the collected statistics to display graphs and trends and create reports that allow you to closely, but easily, monitor the storage on all your systems. Before you can use the Collection Explorer to analyze your collections, you need to create storage collection groups.

Every collection you have set up displays in the Collection Explorer. If a collection does not have a history or has not been recently collected, it is disabled. Run the collection, then you can display and work with its records.

Related Topics

Working With the Collection Explorer

Displaying Collection Summaries

Displaying Collection Summaries from the Explorer

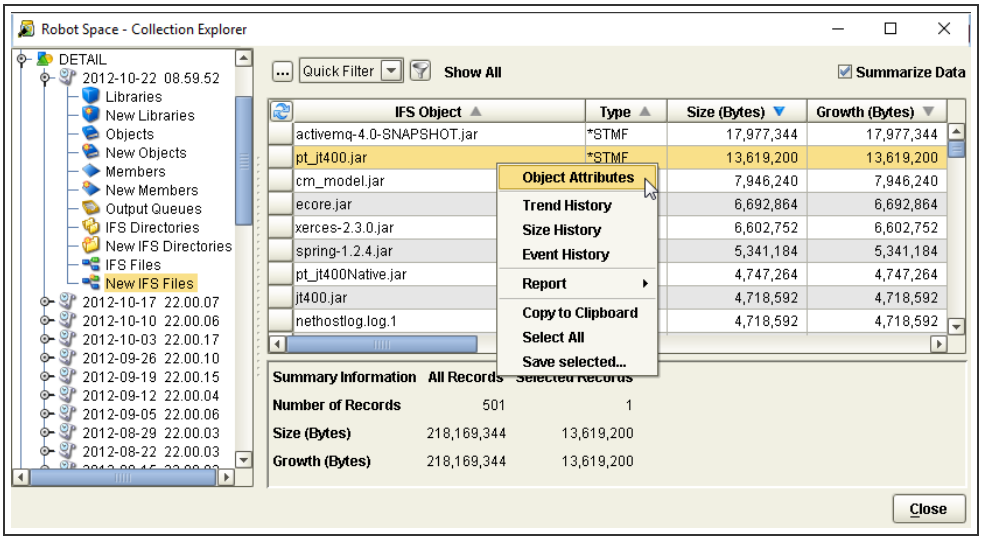
Viewing Summary History

Viewing Summary Trends

Comparing Collections

Working With the Collection Explorer

In the Collection Explorer, click on a collection group name to display its collections. Click on a collection, which displays as the date and time of the collection, for example, 2007-12-30 14:28:51, to display the items in the collection. A collection can contain one or more of the following items: libraries, new libraries, objects, new objects, output queues, IFS directories, new IFS directories, IFS files, new IFS files, members, new members, clients, and threshold events.



Working with Collections (left panel)

- Each collection displays the time and date it ran.
- Select a collection group to display its run status history on the right side of the window.
- Collection groups without history are disabled. A collection group may not have history because it has been purged or because the collection hasn't run.
- Right-click a collection to display the following options:
  - Collection Summary Graph lets you view the Collecty Summary Graph for the selected collection(s). See Displaying Collection Summaries.
  - Display Job lets you view Job Attributes, Job Spooled Files, or the Job Log for the selected collection.
  - Delete lets you remove a collection record.

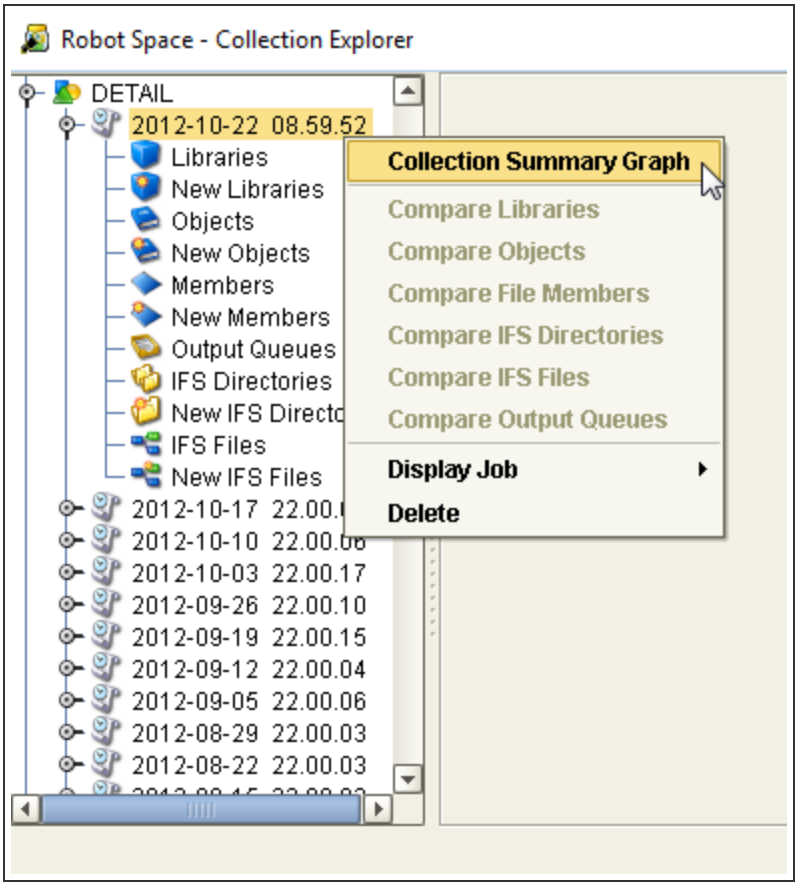
Working with Collection Items (right panel)

- Select the Summarize Data option to display the summary panel below the list of collections.
- Right-click a collection item to display the following options
  - Object attributes displays specific object information
  - Collect Objects displays a list of the objects in a library or IFS files in an IFS directory that have been collected for the selected record. Summarized libraries and IFS directories do not display objects. Only the objects for libraries and IFS files with collection records are listed.
  - Note: This option displays only for libraries and IFS directories.
  - Trend History displays the object's growth trend graph.

- Size History displays the object's size history graph.
- Event History displays the object's event history. Event history is generated by assigning Collection Event Thresholds to be checked when a Collection Group is executed. These thresholds are assigned to check objects using the collection filters for a Collection Group.
- Report lets you create and store a report from the currently display data.

Displaying Collection Summaries

Right-click on a collection and select Collection Summary Graph to display the Collection Summary window.



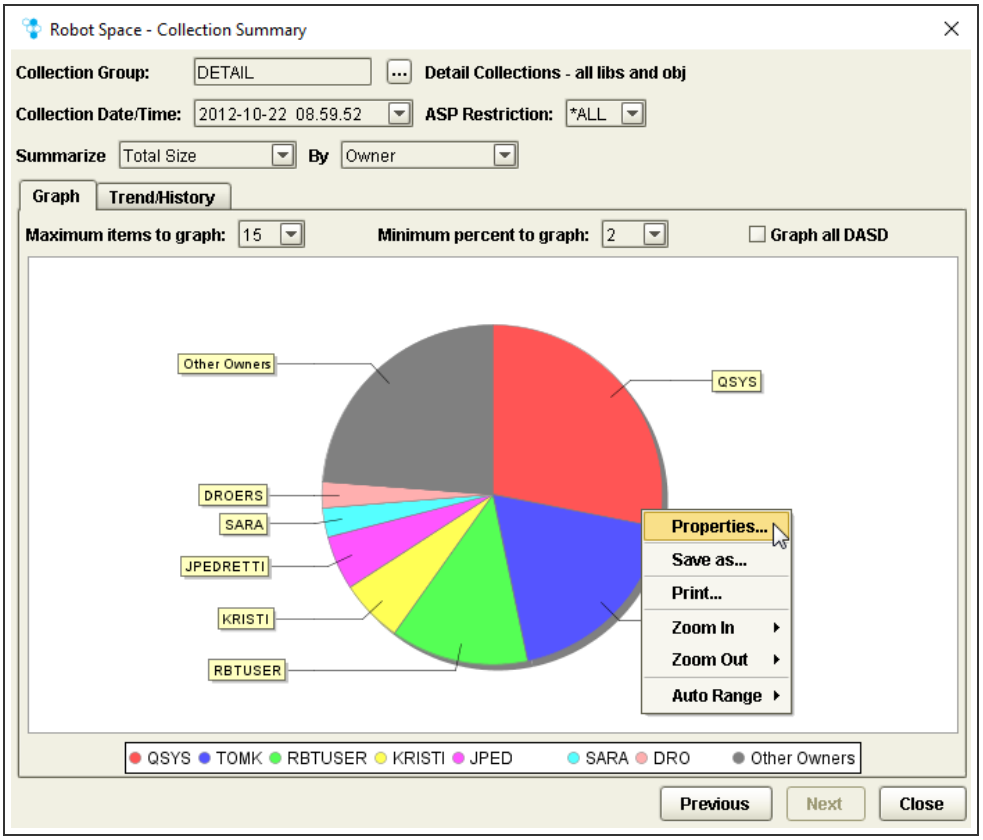
The Collection Summary window displays a graph of the collection you selected. By default, the Graph tab on the Collection Summary window displays a summary graph of the most recent collection statistics for the selected collection group. Using the graph, you can

summarize library size, for example, in relation to a specific ASP (or IASP) or all ASPs (or IASPs).

Graph

Use the top section to select how to summarize the statistics. You can:

- Select the summary graph sort criteria. Click the arrows to select different sort options.
- Select the ASP(s) for which you want to display statistics. *ALL is the default. Click the arrow to select another ASP.
- Select the maximum number of items you want to chart. The default is 15, which displays the 15 largest items (if there are 15) in the collection group.
- Select the minimum percentage size to include in the graph. The default is 2, which displays all items larger than 2 percent of the total ASP or DASD you have selected to graph.
- Select Graph all DASD to graph the total amount of DASD for the selected ASP(s).

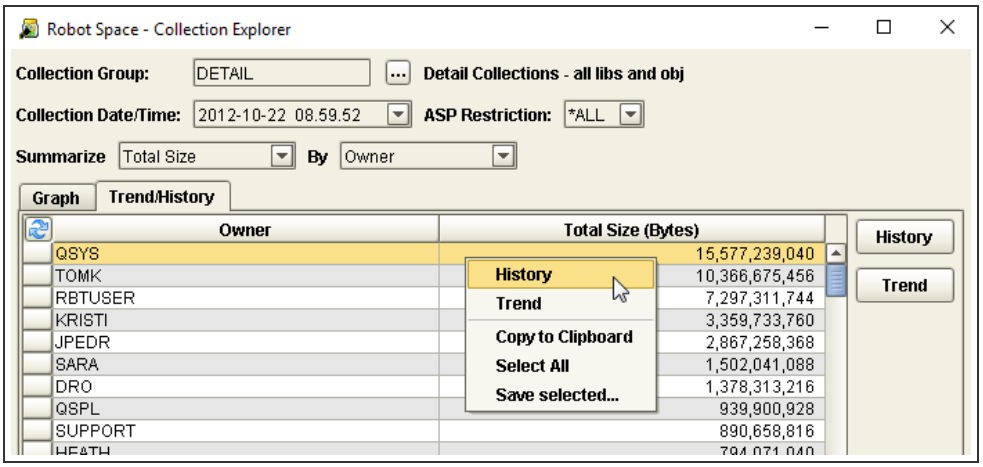


Place your cursor over a segment of the chart to see its total size in bytes. In this graph, RBTUSER objects occupy the greatest amount of space of all objects in the group.

Right-click the graph for a list of available options.

Trend/History

Use the Trend/History tab on the Collection Summary window to display details for the selected collection group and collection statistics. This tab uses the same options used to display a summary graph on the Graph tab.



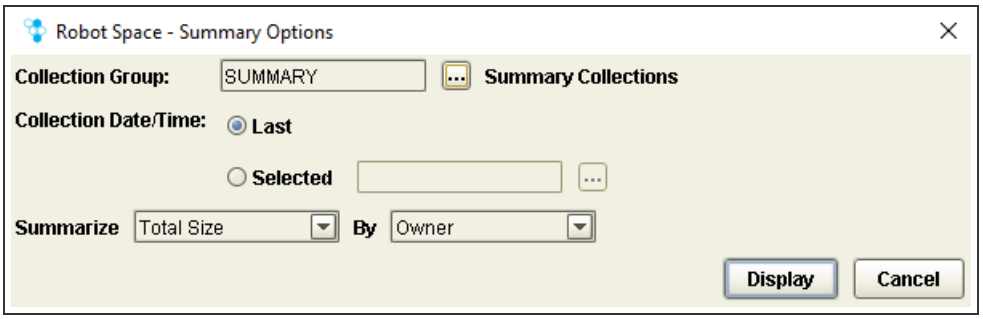
Right-click on an owner or owners to see additional options, including:

- Viewing Summary History
- Viewing Summary Trends

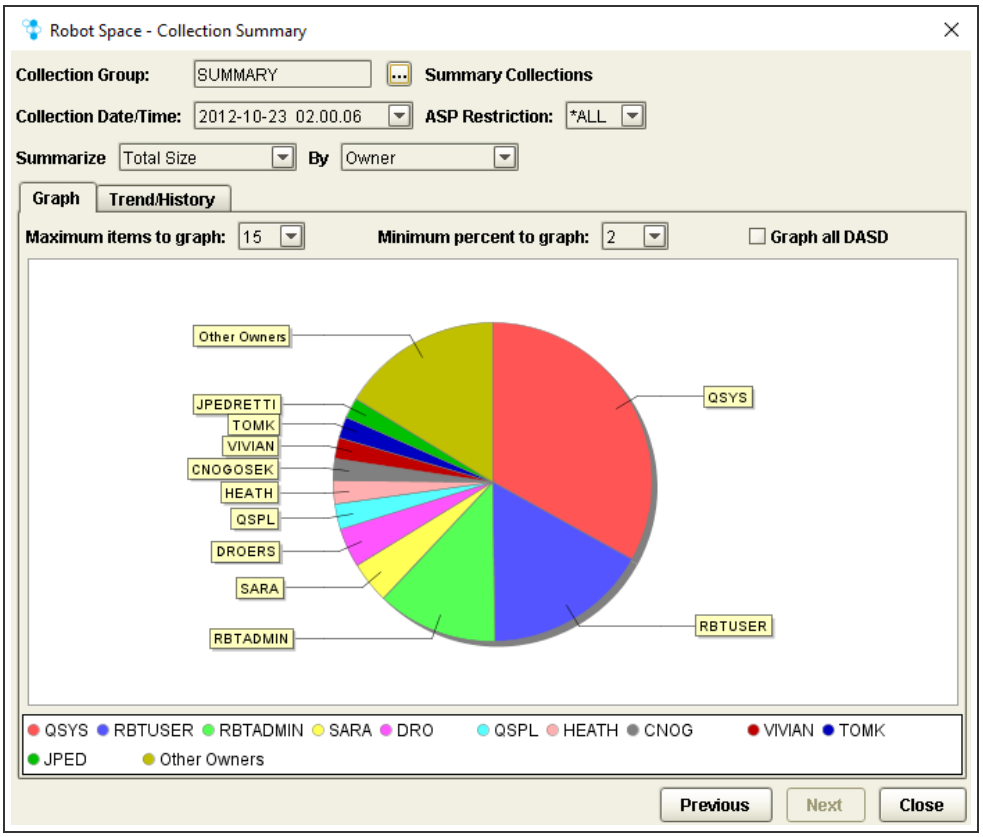
Displaying Collection Summaries from the Explorer

Robot Space allows you to summarize the collection statistics gathered by your collection groups in a summary graph. The graph quickly gives you an idea of the relative size of the items you select to display. You also can display a list of detailed size information for objects in a collected library or IFS directory. The list displays the objects in a collection according to size, largest to smallest. You can select an object from the list and display a growth history or growth trend graph for the object. The history graph displays the object's growth over time. The trend graph predicts potential growth for the object based on its growth history.

1. Click the Collection Summary icon ( ) on the tool bar or right-click the Graph/Trend option to display the Summary Options window.
2. Use the Summary Options window to select the collection group and collection you want to display.



3. Click the Finder button ( ) to select from a list of all collection groups on your system.
4. Select a collection to summarize. The default is Last (most recent). Select Selected, then click the Finder button to display a list of all collections for the group.
5. Select how you want to summarize the size of the objects in the collection, by Total Size (default), Library Size, or IFS Size.
6. Select how you want to organize the collection size, by Owner (default), Application, Department, Location, or Accounting Code.
7. Click **Display** to display the summary graph. The graph displays on the Collection Summary window using the settings you entered.

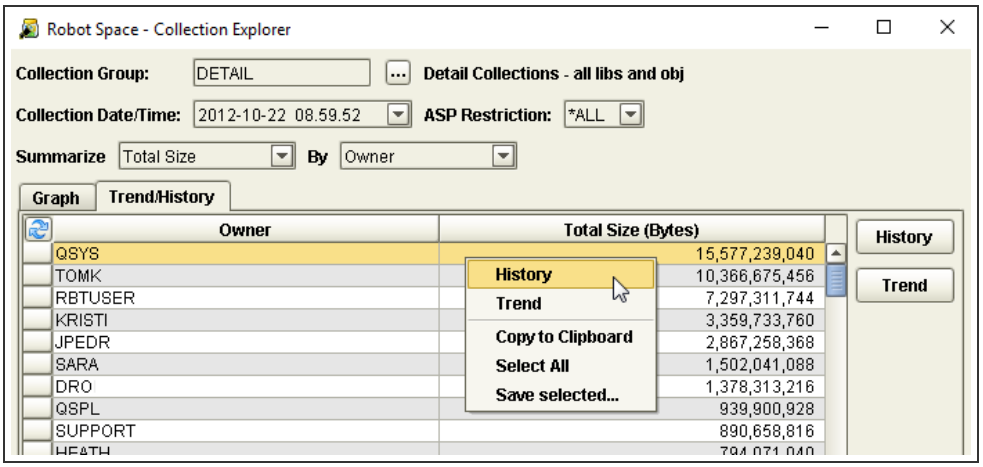


Viewing Summary History

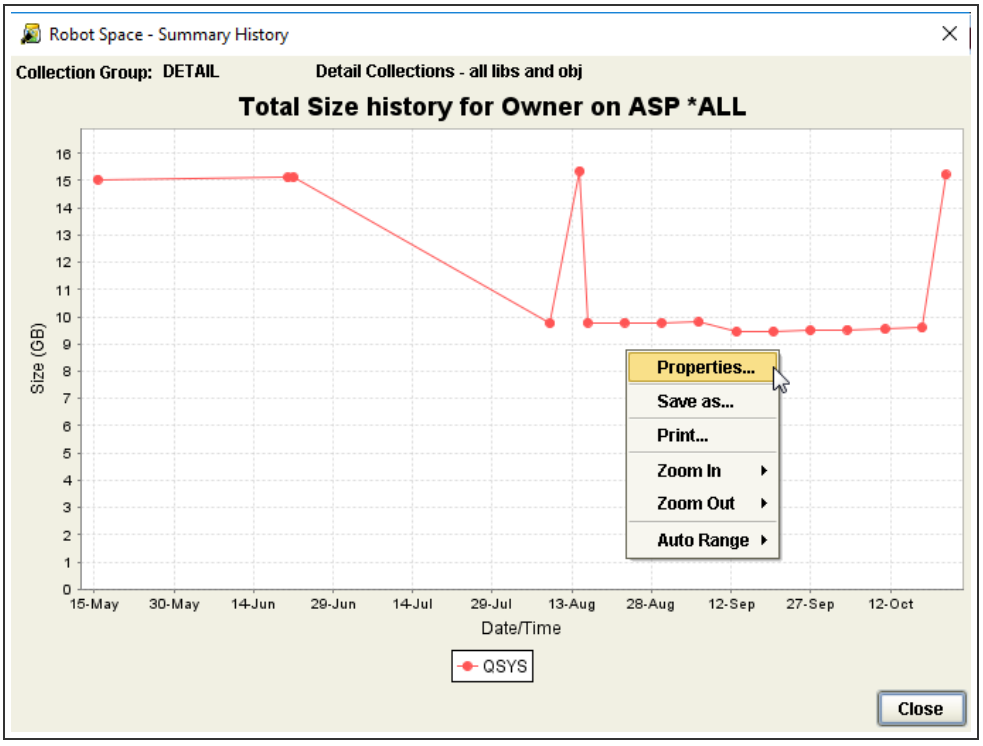
You can view historical growth for an object or multiple objects from the Collection Summary Trend/History tab.

From the Collection Summary Trend/History tab, select an owner (or use the Ctrl key to select multiple owners).

Click the **History** button.



The Summary History window displays.



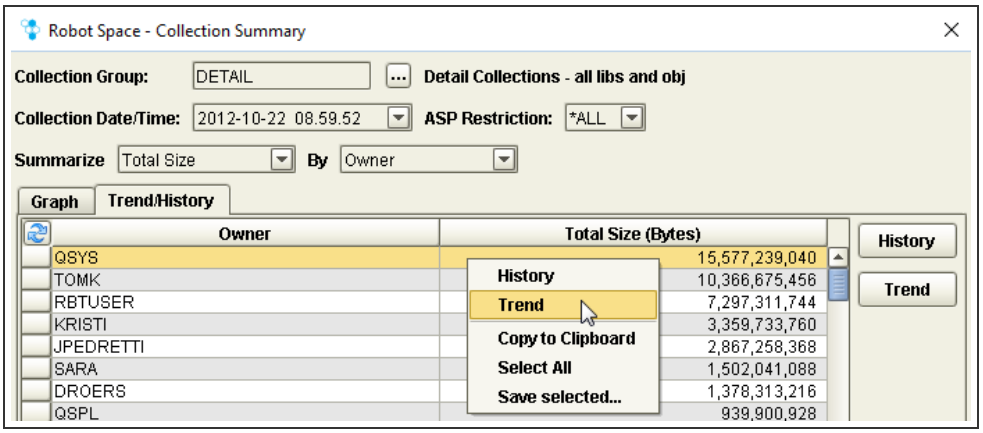
Right-click the graph for a list of available options.

Viewing Summary Trends

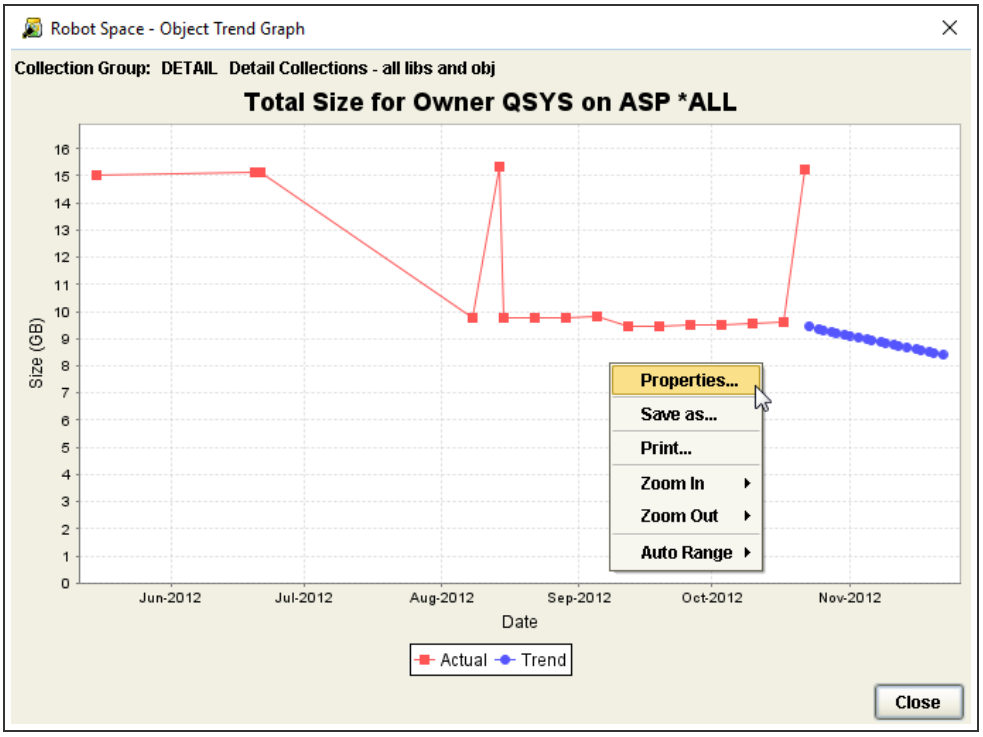
You can display an object's potential future growth. Trending options can be changed on the User Preferences settings

From the Collection Summary Trend/History tab, select an owner.

Click the **Trend** button (or right-click the owner and select **Trend**).



The Object Trend Graph window displays.



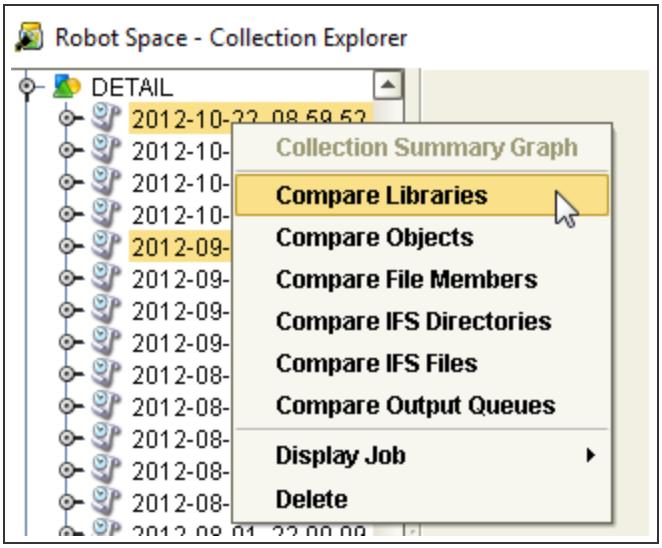
Comparing Collections

You can compare two collections from the same collection group and list the libraries, objects, IFS directories, IFS files, output queues, or file members that have changed from one collection to the other. You can select any two collections for comparison. For example, you can select the two most recent collections or select the most recent and the oldest collection.

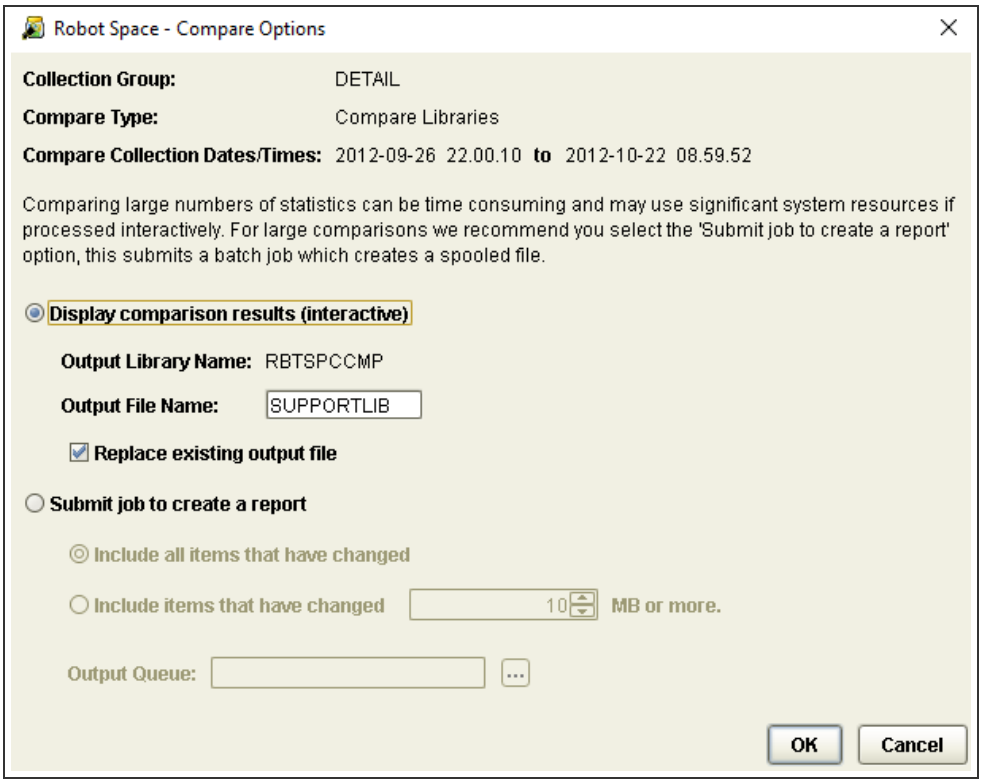
You can choose to create a physical file for the comparison results, which is processed interactively. Keep in mind, large comparisons can be time consuming and can use a large amount of system resources. You also can choose to submit a job for the comparison and create a report (spooled file) for the results. The report option allows you to specify what to include in the report: all items that have changed (grown or reduced in size); or all items that have changed by the number of MBs you specify. The compare options that are available depend on what group of items you select for comparison.

From the Collection Explorer, uses the Ctrl key to select two collections.

Right-click, and select the type of collections you want to compare:



The Compare Options window displays.



There are two options for report output:

- Select to process the comparison interactively and create a physical file for viewing.

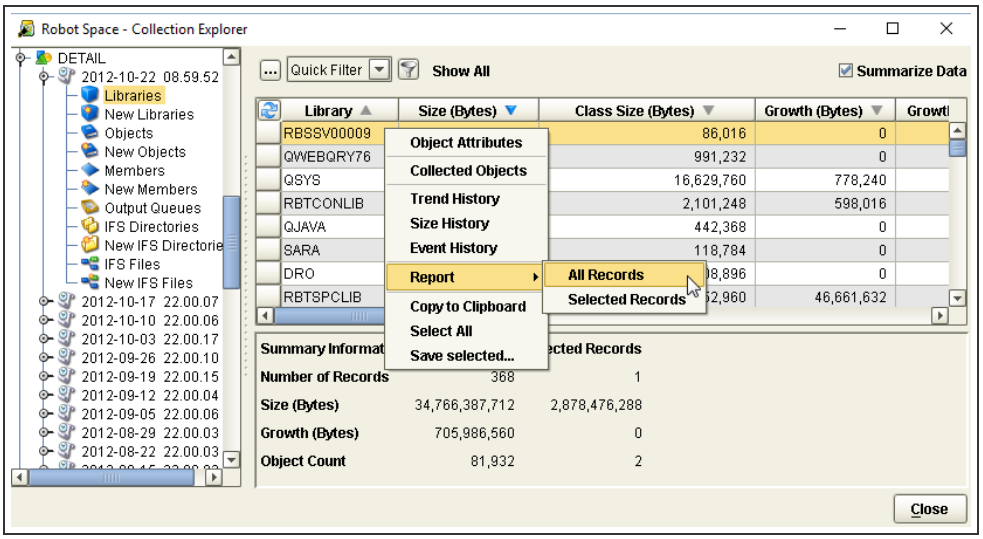
  Note: You must use a unique name for each comparison output file or select the Replace existing output file option.
- Select to submit a job for the comparison and create a spooled file. You can select to include every changed item in the report or only those that have changed (grown or gotten smaller) by the number of MB you specify. Specify an output queue for the report or leave the field blank to have the report sent to the default output queue for your user profile.

We recommend submitting a batch job to create a report for larger comparisons.

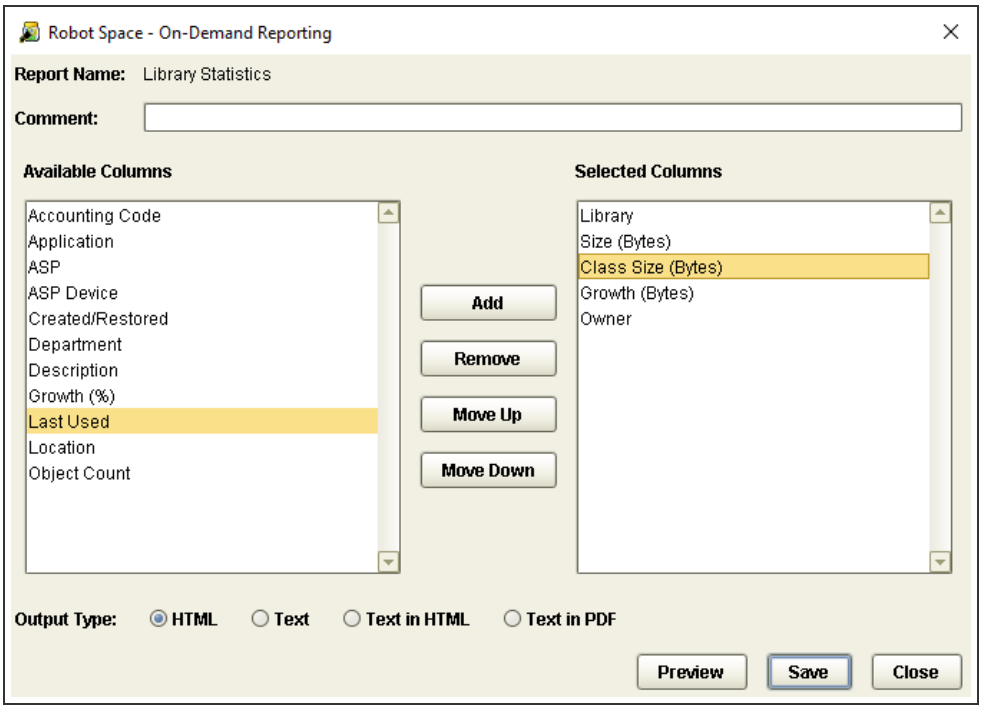
On-Demand Reporting

You can use the Collection Explorer to create reports in PDF, HTML, or text format. The HTML option produces a report that adjusts spacing based on the dimensions of the browser. The text options produce a fixed layout report using monospaced characters that can be viewed as the format selected (plain text, text in HTML, or text in PDF). This is useful for quickly printing and sharing reports.

Right-click a collection item, select **Report**, then select **All Records** or **Selected Records**.



The On-Demand Reporting window displays.



Enter a comment here to describe the report The comment appears at the top of the report.

To include additional information in the report, select it from the "Available Columns" area and click **Add**.

To remove information from the report, select it from the "Selected Columns" area and click **Remove**.

To change the order of columns, select it from the "Selected Columns" area and click **Move Up** or **Move Down**.

Click **Preview** to preview the report before you save it.

Click **Save** to save the file. A Save window displays.

Overview of ASP Monitoring

Robot Space monitors Auxiliary Storage Pool (ASP) and Independent Auxiliary Storage Pool (IASP) utilization. See the Glossary, at the end of this User Guide, for definitions of ASP and IASP.

You can set multiple ASP storage thresholds that trigger Robot Alert pager or e-mail messages, Robot Network status messages, or send messages to a message queue. Or, have Robot Space start a Robot Schedule job to correct the storage problem.

Robot Space gives you critical feedback by collecting detailed ASP utilization history throughout the day. This utilization history allows you to identify your daily average and peak usage. Use the summary history to spot long-term trends and predict future usage.

Active Job Storage Monitoring

You can monitor the amount of storage your active jobs use. In addition, you can set storage thresholds for your jobs and automatically hold any job that exceeds its threshold. Active job storage monitoring is discussed in detail later in this section of the User Guide.

Setting Up ASP and Active Job Monitoring

For fast and easy setup of ASP and active job monitoring, use Robot Guide. Robot Guide walks you through the process of ASP and active job monitoring. See Using Robot Guide for more information.

In addition, once you set up monitoring on one system, you can export the monitor settings to another system, allowing you to set up multiple systems quickly.

Related Topics

ASP Monitor Settings

Creating and Editing ASP Utilization Monitors

Importing and Exporting ASP Monitor Settings

Starting and Stopping the ASP Monitor Job

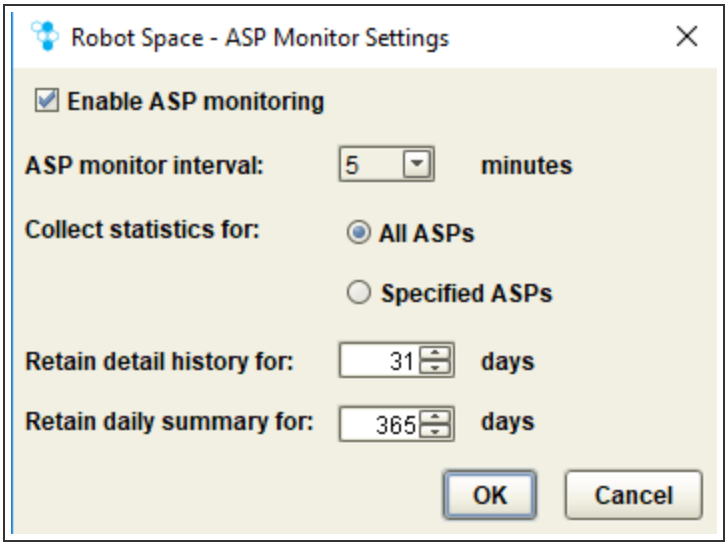
Viewing ASP Threshold History

ASP Monitor Settings

You can monitor and collect disk utilization statistics for each ASP and IASP on your system. The utilization statistics are used to display utilization graphs on the Critical Storage Investigator (CSI) and to create ASP utilization trend graphs. Each ASP or IASP can have its own threshold, which can trigger an event when it is exceeded.

The ASP Monitor Settings window allows you to enable or disable ASP monitoring; change the ASP monitor interval; select to collect statistics for all ASPs or only for specific ASPs; and to change the retention period for detail and daily summary history information. Note: You also can use commands to start and stop the monitor. See IBM i Commands for more information.

To access the ASP Monitor Settings window, right-click **ASP Utilization** from the Tree View and select **Properties**.



Uncheck **Enable ASP Monitoring** to disable ASP monitoring. ASP monitoring is enabled by default.

Note: When you disable the ASP monitor on this window, you cannot start it from the Explorer tool bar or a command line; it first must be enabled on this window. If the ASP monitor is disabled on this window while it is active, right-click ASP Utilization on the tree view and select Stop ASP Monitor.

Select the ASP monitoring interval. Robot Space checks ASP (and IASP) utilization, creates detail statistics, and threshold actions, if any, occur at the interval you select.

Select whether you want to collect statistics for all ASPs or specific ASPs.

Note: If you select All ASPs (default), all ASPs will be monitored as they become available, and will use the settings on this window.

Select the retention period for detail history and daily summary information.

Note: A detail record is written for each monitored ASP at the specified ASP monitor interval (5 minutes, 10 minutes, and so on). Detail records provide short term history information and are automatically purged by the monitor process.

At the end of each day, a summary record for each monitored ASP and IASP is created based on all the detail records collected during the day. The summary records allow long-term retention of ASP history while using a minimal amount of disk space. Summary records are automatically purged by the monitor process.

Creating and Editing ASP Utilization Monitors

Use the ASP Threshold Settings window to set up ASP Utilization Monitors.

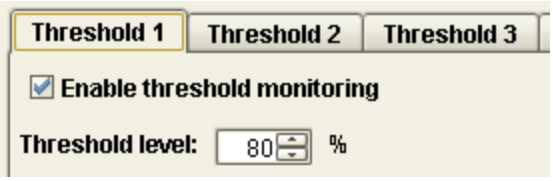
- To create a new ASP Utilization Monitor, right-click ASP Utilization and select **Add ASP**.
- To edit an existing ASP Utilization Monitor, right-click it and select **Properties**.
- To create a new ASP Utilization Monitor based on an existing one, right-click the source monitor and select **Copy**.

Note: If you selected the Monitor all ASPs option in the ASP Monitor Settings window, all ASPs that are being monitored are automatically added using the default values.

The ASP Threshold Settings window lets you create up to three storage thresholds for a monitored ASP. You also can specify a growth rate threshold and set up unprotected storage monitoring.

Enabling Threshold Monitoring

Each threshold can trigger different notification options. The fields on the Threshold 1, Threshold 2, and Threshold 3 tabs on this window are identical. Complete a threshold tab for each threshold you plan to use for the ASP. Ensure that Threshold 2 is set to a higher level than Threshold 1, and so on.

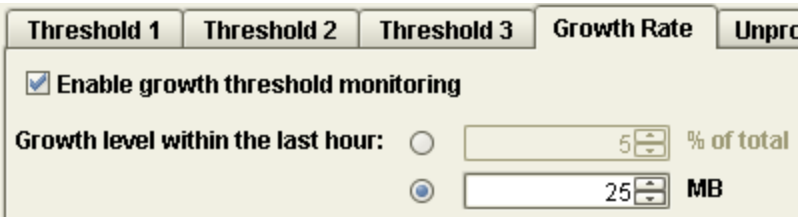


Click **Enable Threshold Monitoring** to enable or disable storage threshold monitoring. ASP detail history is collected whether or not threshold monitoring is disabled.

Set the storage level for the threshold.

Enabling Growth Level Threshold Monitoring

You can specify a growth rate threshold, which can trigger a notification event if an ASP's storage level increases by the amount you specify within one hour. For ASP 001 only, you also can specify an unprotected storage threshold, which can trigger a notification event if your unprotected storage grows to the amount you specify.

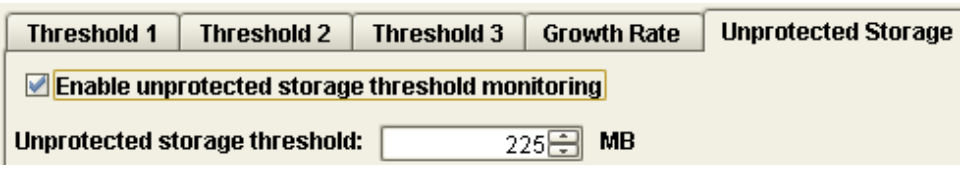


Click **Enable growth threshold monitoring** to enable or disable storage threshold monitoring. ASP detail history is collected whether or not threshold monitoring is disabled.

Specify whether you want to monitor he ASP's hourly growth by a percentage of the ASP's total storage amount or by a set number of megabytes (MB).

Enabling Unprotected Storage Threshold Monitoring

Click the Unprotected Storage tab to set up unprotected storage monitoring. Unprotected storage is the current amount of storage in use for temporary objects and machine data on the system. Robot Space can monitor unprotected storage use and notify you if an unprotected storage threshold level is exceeded. Robot Space monitors unprotected storage for ASP 001 only.



Click **Enable unprotected storage threshold monitoring** to enable unprotected storage threshold monitoring.

Set the unprotected storage threshold (in MBs).

Notification Options

Select when you want an action performed when a threshold is exceeded: Every time, first time, or each time the storage level increases while over the threshold. To ensure you get the maximum benefit from using thresholds, we recommend the following: set Threshold 1 to First Time; set Threshold 2 to While Increasing; set Threshold 3 to Every Time.

Note: When using the First Time option, the status is reset when the storage recedes below the threshold. The next time it exceeds the threshold, it triggers again.

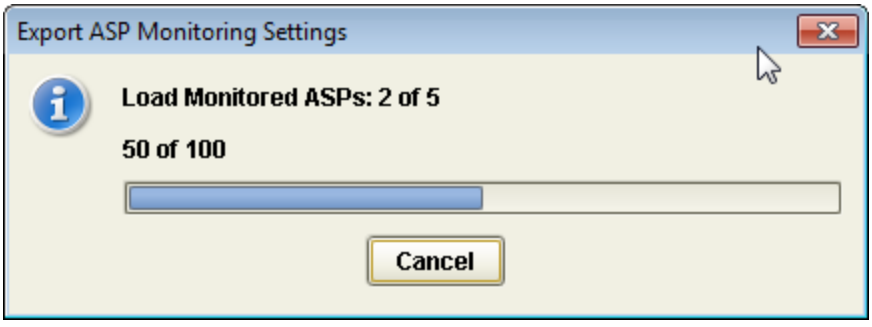
Option	Description
Message Queue	Select this option if you want to send a message to a message queue when the threshold is exceeded. Click the Finder button or enter a library and message queue for the message. **Note:** You can use a Message Queue that is being monitored by Robot Console.

Robot Alert	Select if you want to send a Robot Alert message to a message recipient when the threshold is exceeded. Click the Finder button or enter a recipient name for the message. **Note:** To use this option, Robot Alert must be installed on your system.
Robot Schedule Job	Select to start a Robot Schedule job when the threshold is exceeded. Click the Finder button to select from a list of Robot Schedule jobs. Keep in mind, you also can schedule a Robot Space storage audit to correct the storage problem. The name and number of the job you select displays on this window. Note: To use this option, Robot Schedule must be installed on your system.
Robot Network Status	Select if you want to send a Robot Network status message when the threshold is exceeded. You also can specify the type of message to display in the Robot Network Status Center: Informational, Warning, or Attention. **Note:** To use this option, Robot Network must be installed on your system.

Importing and Exporting ASP Monitor Settings

You can export ASP monitor settings to your PC then import them to all systems where Robot Space is installed. When you export ASP monitor settings, all settings on the ASP Threshold Settings window, as well as the settings on the ASP Monitor Settings window are sent. When monitored ASPs with the same number, for example ASP 001, exist on two systems, the settings on the Import system are replaced with the settings from the Export system. If an ASP is set up for monitoring on the Import system and the ASP doesn't exist on the Export system, its settings are ignored.

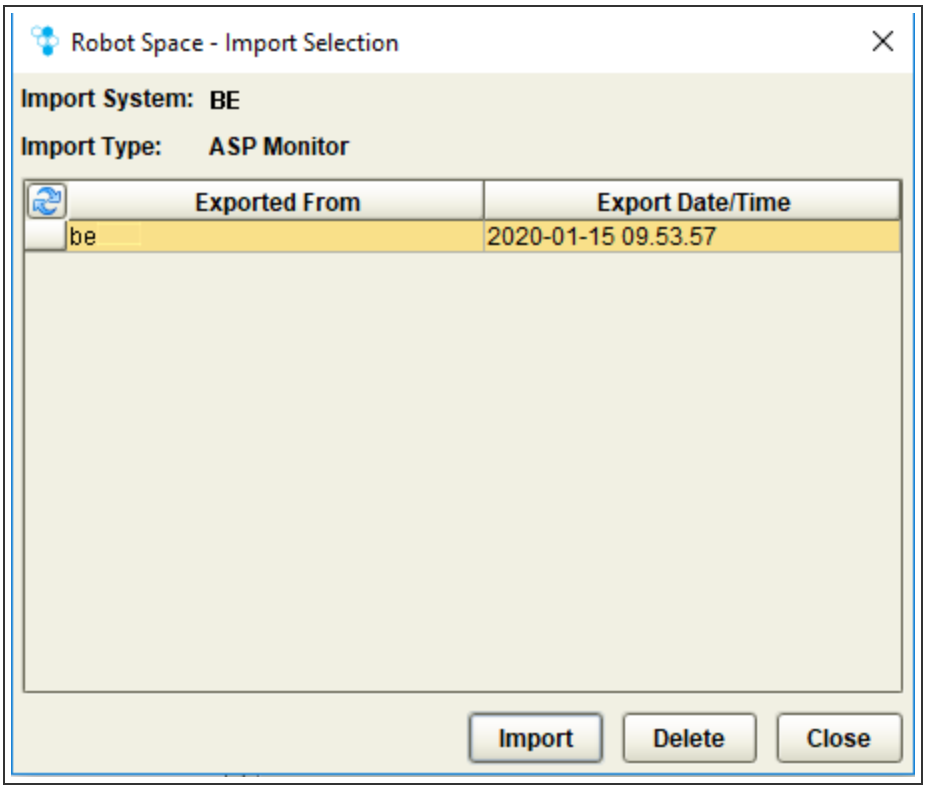
On the system with the ASP monitor settings you want to export, right-click on ASP Utilization and select **Export**. The Export Storage Monitor window displays briefly.



Sign on to a new system, right-click **ASP Utilization**, and select **Import**. The Import Selection window displays.

Click **Import**. The Confirmation window displays the name of the Export system, the time and date when the ASP monitor settings were exported, and the number of ASPs exported with the ASP monitor settings.

Click **Yes** to save the new ASP monitor settings; **No** to cancel the process.



Starting and Stopping the ASP Monitor Job

An autostart job entry is placed in the RBTSLEEPER subsystem when Robot Space is installed. The ASP monitor job starts automatically when the RBTSLEEPER subsystem is started. If the ASP monitor job is stopped, statistics and history information for your ASPs are not collected.

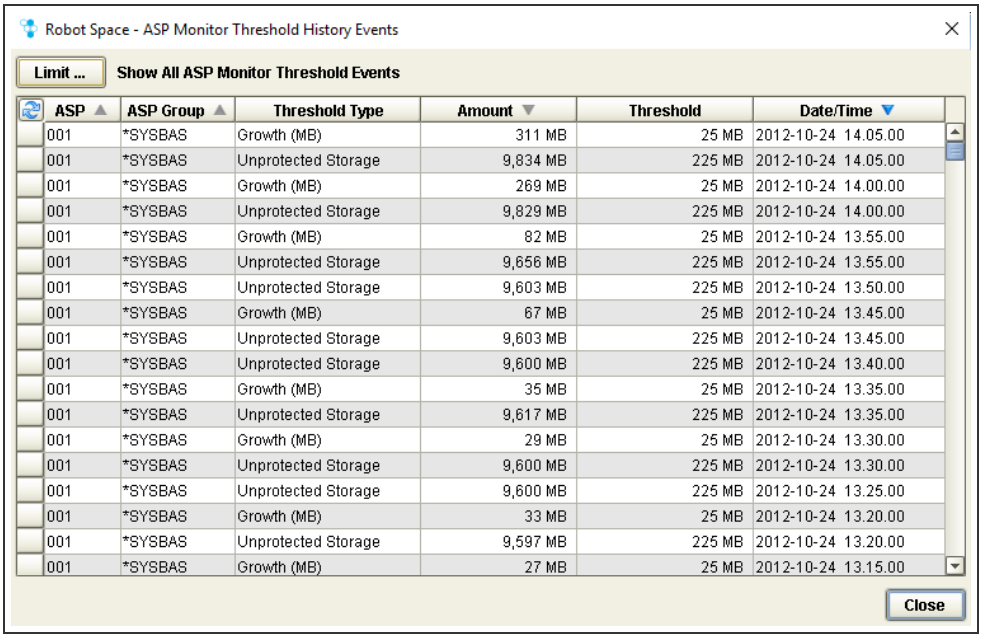
Right-click **ASP Utilization** and select **Start ASP Monitor** or **Stop ASP Monitor**.

Viewing ASP Threshold History

You can display the ASP threshold history for all ASPs on your system or just for a specific ASP. The history displays on the ASP Monitor Threshold History Events window, which displays the ASP group, the threshold type and level, the amount by which the threshold was exceeded, and the date and time.

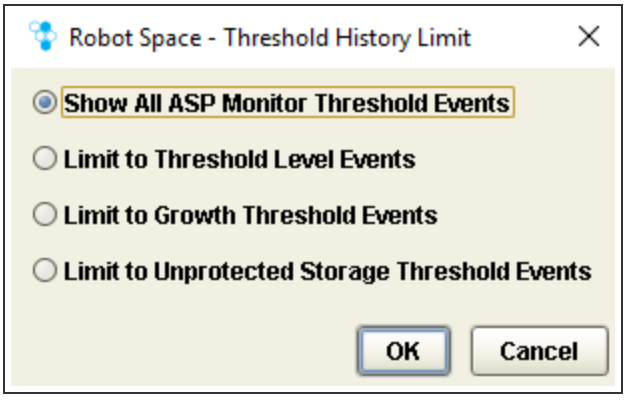
- Right-click ASP Utilization in the Tree view and select **Threshold History** to display the history for all ASPs on the system.
- To display history for a specific ASP, right-click the ASP name in the List view and select **Threshold History**.

The Threshold History Events window displays:



ASP	ASP Group	Threshold Type	Amount	Threshold	Date/Time
001	*SYSBAS	Growth (MB)	311 MB	25 MB	2012-10-24 14.05.00
001	*SYSBAS	Unprotected Storage	9,834 MB	225 MB	2012-10-24 14.05.00
001	*SYSBAS	Growth (MB)	269 MB	25 MB	2012-10-24 14.00.00
001	*SYSBAS	Unprotected Storage	9,829 MB	225 MB	2012-10-24 14.00.00
001	*SYSBAS	Growth (MB)	82 MB	25 MB	2012-10-24 13.55.00
001	*SYSBAS	Unprotected Storage	9,656 MB	225 MB	2012-10-24 13.55.00
001	*SYSBAS	Unprotected Storage	9,603 MB	225 MB	2012-10-24 13.50.00
001	*SYSBAS	Growth (MB)	67 MB	25 MB	2012-10-24 13.45.00
001	*SYSBAS	Unprotected Storage	9,603 MB	225 MB	2012-10-24 13.45.00
001	*SYSBAS	Unprotected Storage	9,600 MB	225 MB	2012-10-24 13.40.00
001	*SYSBAS	Growth (MB)	35 MB	25 MB	2012-10-24 13.35.00
001	*SYSBAS	Unprotected Storage	9,617 MB	225 MB	2012-10-24 13.35.00
001	*SYSBAS	Growth (MB)	29 MB	25 MB	2012-10-24 13.30.00
001	*SYSBAS	Unprotected Storage	9,600 MB	225 MB	2012-10-24 13.30.00
001	*SYSBAS	Unprotected Storage	9,600 MB	225 MB	2012-10-24 13.25.00
001	*SYSBAS	Growth (MB)	33 MB	25 MB	2012-10-24 13.20.00
001	*SYSBAS	Unprotected Storage	9,597 MB	225 MB	2012-10-24 13.20.00
001	*SYSBAS	Growth (MB)	27 MB	25 MB	2012-10-24 13.15.00

Use the Limit button on the ASP Monitor Threshold History Events window to filter the type of threshold events that display. When you select to limit what displays on the window, the label at the top of the window changes accordingly.



Select which threshold events you want to display and click **OK**.

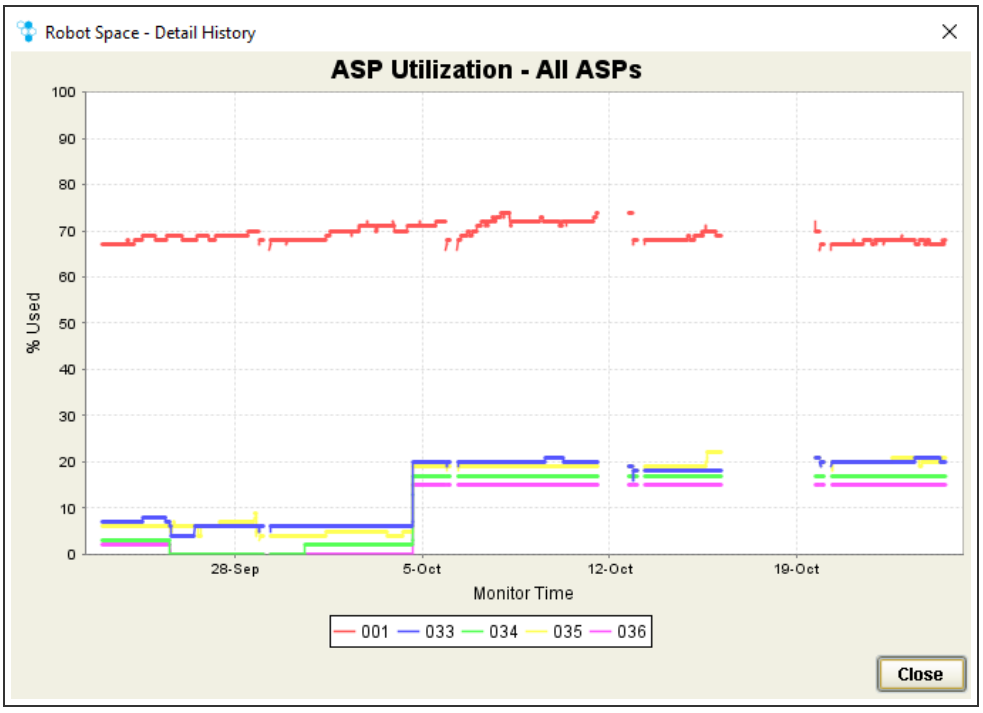
The information on the ASP Monitor Threshold History Events window and the label at the top of the window change accordingly.

Viewing Detailed History for ASPs

Viewing Detailed History for all ASPs

The Detail History window allows you to display a graph based on the detail history of each monitored ASP on your system. The graph shows you each ASP's percentage of used space in a different color. Right-click ASP Utilization in the Tree view and select ASP Detail History to display the detail history for all ASPs.

To view a graph with detailed history for all ASPs, right-click **ASP Utilization** in the Tree view and select **ASP Detail History** to display the detail history window.

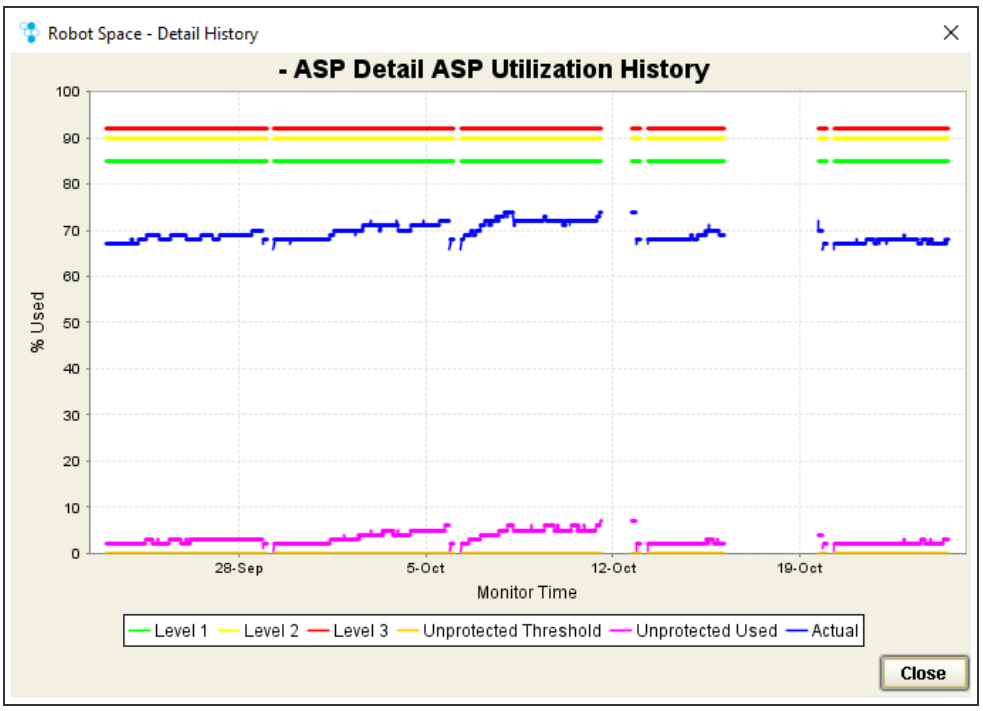


Viewing Detailed History for a Single ASP

The Detail History window allows you to display a graph based on the detail history of a specific monitored ASP on your system. The graph shows you the selected ASP's percentage of used space, any storage and unprotected storage thresholds for the ASP, and the amount of used unprotected storage.

To view a graph with detailed history for a specific ASP, right-click the ASP name in the List view and select Detail History to display the Detail History window.

Note: Gaps that appear in the trend line show when the ASP monitor was shut down.



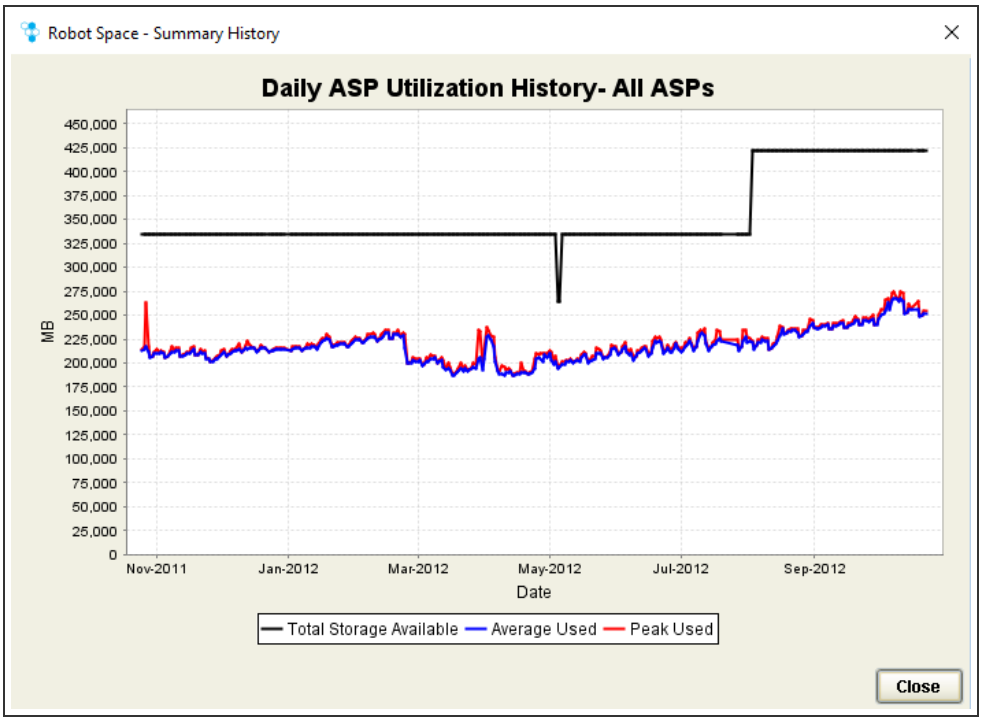
Note: Right-click anywhere in a Robot Space graph to display a menu that allows you to change the graph properties, save the graph to your PC, print the graph, display more or less detail (and time) on the graph, and reset the graph settings. See Working with Graphs for more details.

Viewing ASP Summary History

You can display the summary history for all ASPs on your system or for a specific ASP only. The summary history displays as a graph on the Summary History window. The graph shows the total storage available and the average and peak usage for the selected ASP(s).

Right-click **ASP Utilization** in the Tree view and select **ASP Summary History** to display the summary history for all ASPs on the system.

To display history for a specific ASP, right-click the ASP name in the List view and select **Summary History**.

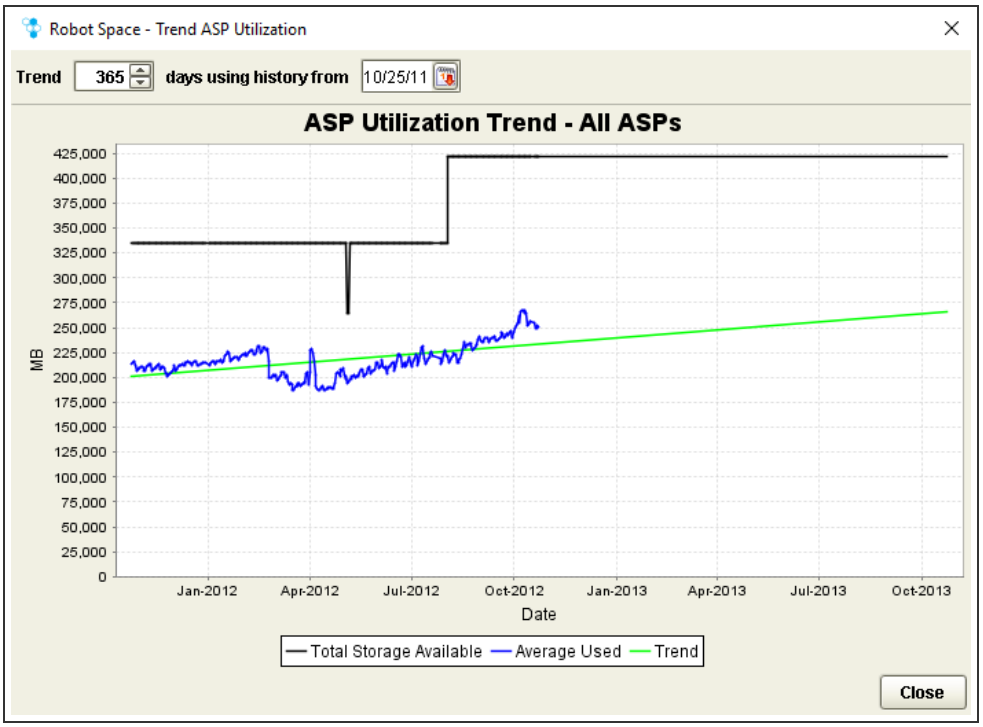


Viewing ASP Utilization Trends

You can display an ASP utilization trend for all ASPs on your system or for a specific ASP only. The trend displays as a graph on the Trend ASP Utilization window. Use this information to identify long-term trends and predict your system's future ASP requirements. Note: The longer you retain ASP daily summary statistics, the more accurate the trending will be.

To display the trend for a specific ASP, right-click the ASP name in the List view and select **Trend**.

The Trend ASP Utilization window displays:



You can select the number of days beyond the last summary record to trend and the starting date of the summary history to use for the trend. The first available starting date is the date of the first summary history record.

Overview of Active Job Storage Monitoring

Robot Space monitors the amount of storage used by active jobs. A looping job or a server communication job can consume a large amount of temporary storage and push your disk storage to its capacity, causing a storage crisis.

You can set a default job threshold that sends a Robot Alert message to any device (including a text message to the cell phone of the on-duty operator), a Robot Network status message, or sends a message to a message queue that can be monitored by Robot Console that can run OPAL to correct the situation. If a job reaches its monitored threshold, you also can hold the job automatically.

Robot Space allows you to define filters for the subsystems you want to monitor and for those you don't. You also can define exceptions for monitored subsystems and jobs that you expect to regularly exceed your default job threshold.

There are three types of active job storage monitors:

- Job Temporary Storage Monitor

  This monitor evaluates the temporary storage that is allocated by jobs. This storage is used by the system for temporary system objects and cached program memory. This storage is reclaimed by the system when the associated job ends. This does not include storage allocated in the QTEMP library of a job.
- Job QTEMP Monitor

  This monitor evaluates the storage allocated by the QTEMP library for active jobs on your system. It notifies you when active jobs are using excessive storage for their QTEMP library. QTEMP libraries are reclaimed automatically by the system when the owning job ends.
- Job Spooled File Monitor

  This monitor evaluates the storage allocated for spooled files by active jobs on your system. It notifies you when active jobs are using excessive storage for spooled files. Spooled file storage used by jobs that have ended can be tracked by collecting output queue information with collection groups or recovered with the "Age Output Queue" Storage Audit task.

Note: The examples in this section display the Job Temporary Storage Monitor windows. The Job QTEMP Monitor and Job Spooled File Monitor are similar.

Related Topics

Active Job Storage Monitor Settings

Importing and Exporting Active Job Storage Monitor Settings

Starting and Stopping Active Job Storage Monitors

Viewing Active Job Storage Threshold History

Active Job Storage Monitor Settings

Use the monitor settings window to enable job storage monitoring, set the monitor interval, and set the default job threshold level for all active job monitors. You also use this window to set the notification options, the subsystem exceptions, and job exception settings.

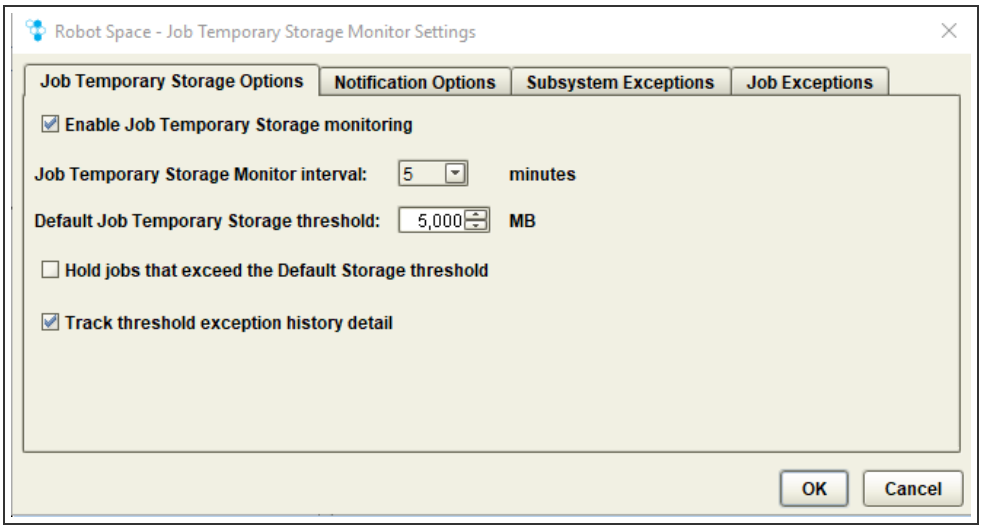
Note: The example on this page shows the Job Temporary Storage Monitor settings. The Job QTEMP and Job Spooled File monitors are similar.

Click **Active Job Storage Monitors** from the Tree view.

Right-click **Job Temporary Storage Monitor** from the List view and select **Properties**. The Job Temporary Storage Monitor Settings window displays.

Job Temporary Storage Options

Use the Job Temporary Storage Options tab to automatically hold jobs that exceed their temporary storage thresholds and to specify how you want to be notified when jobs exceed their threshold. You can use one, or all, of the available notification options.



- Click **Enable Job Temporary Storage monitoring** to disable job monitoring. Job monitoring is enabled by default.

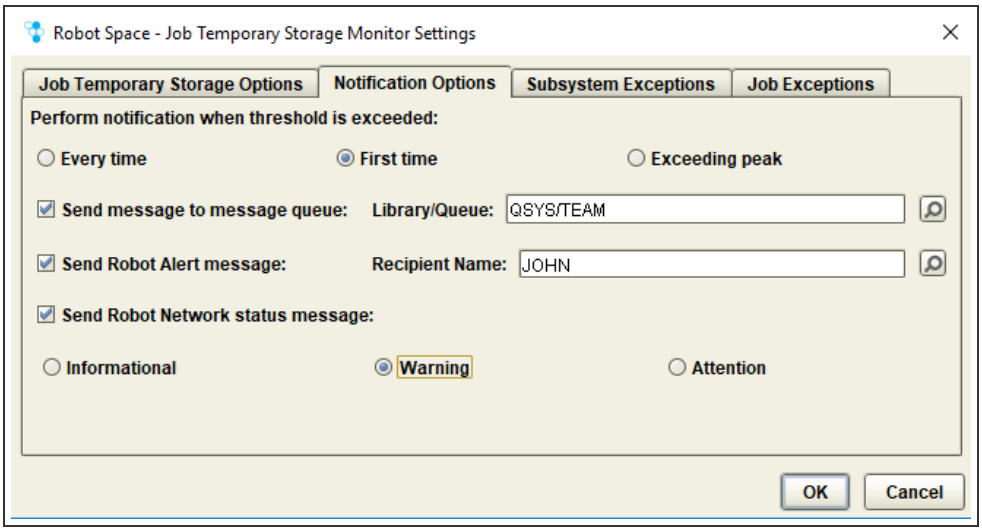
  Note: When you disable the job monitor on this window, you cannot start it from the Explorer tool bar or a command line; it first must be enabled on this window. If the job monitor is disabled on this window while it is active, right-click the job monitor in the list view and select **Stop Job Temporary Storage Monitor**.
- Select the job monitoring interval. Job temporary storage threshold exceptions are checked and threshold actions, if any, occur at the interval you select.
- Set the default job threshold size.

  Note: Only jobs that exceed the value you set can trigger threshold actions.
- Select to automatically hold any monitored job that exceeds its threshold. The job is held only the first encounter.

  Caution: If you release the job, the job will not be held again until the monitor is restarted. Use this option with caution when using low storage thresholds, because many jobs may be held. Jobs that are held should be evaluated as soon as possible to see if they need to be released to complete important functions.
- Select the option to track threshold exception history detail.

Notification Options

Use the Notification Options tab to specify how you want to be notified when jobs exceed their threshold. You can use one or more of the available notification options.



- Select when to perform notification action options when a threshold is exceeded: Every time, only the First time, or Exceeding peak.

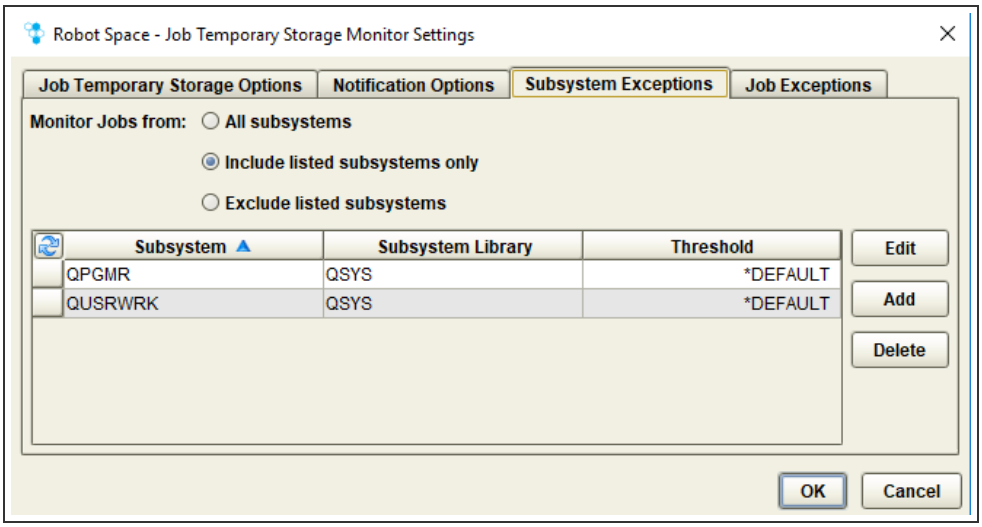
  Note: The Exceeding peak option triggers an event only when a job exceeds its highest size over its threshold. For example, if a job has been at 100 MB and decreased to 50 MB, it will not trigger another event until it exceeds 100 MB. The First Time option only triggers once per job, even if the reading goes below the threshold and back above during the job.
- Select to send a message to a message queue when a threshold is exceeded. Enter a library and message queue for the message, or click the Finder button to select from a list of message queues.
- Select to send a Robot Alert message to a message recipient when a threshold is exceeded. Enter a recipient name for the message or click the Finder button to select from a list of Robot Alert recipients.

  Note: To use this option, Robot Alert must be installed on your system.
- Select to send a Robot Network status message when a threshold is exceeded. Also select the type of message to display in the Robot Network Status Center: Informational, Warning, or Attention.

  Note: To use this option, Robot Network must be installed on your system.

Subsystem Exceptions

Use the Subsystem Filter tab to add, delete, and edit filters for the subsystems you want to monitor. You can select whether to monitor or not monitor the subsystems listed on this tab. If you choose, you can monitor all subsystems on your system.

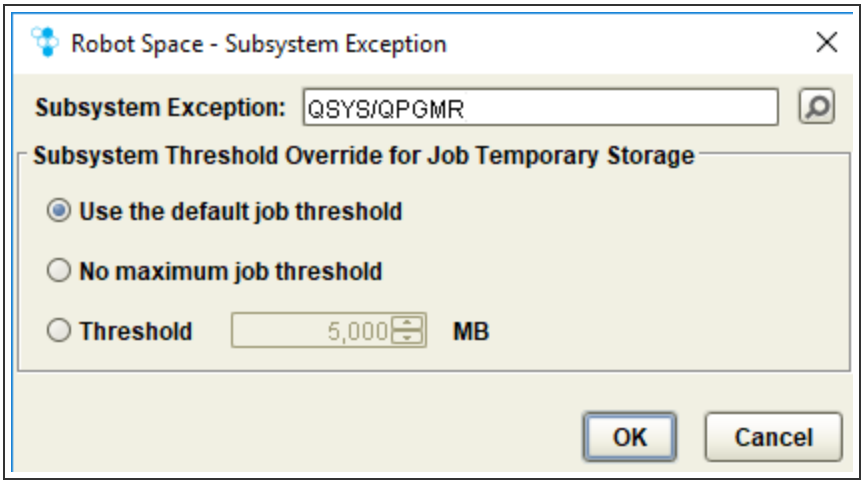


Select a subsystem filter type:

- All subsystems - Monitors every subsystem defined on your system. This is the default.
- Include listed subsystems only - Monitors the subsystems listed on this tab, uses the thresholds you set for them, and ignores all other subsystems.
- Exclude listed subsystems - Monitors every subsystem using the default job threshold level except those listed on this tab.

Click **Add** to add a new subsystem to be monitored. Select a subsystem and click **Edit** to update an existing subsystem that's being monitored. You assign a subsystem's threshold when you are adding it. You can change the threshold at any time.

The Subsystem Exception window displays:



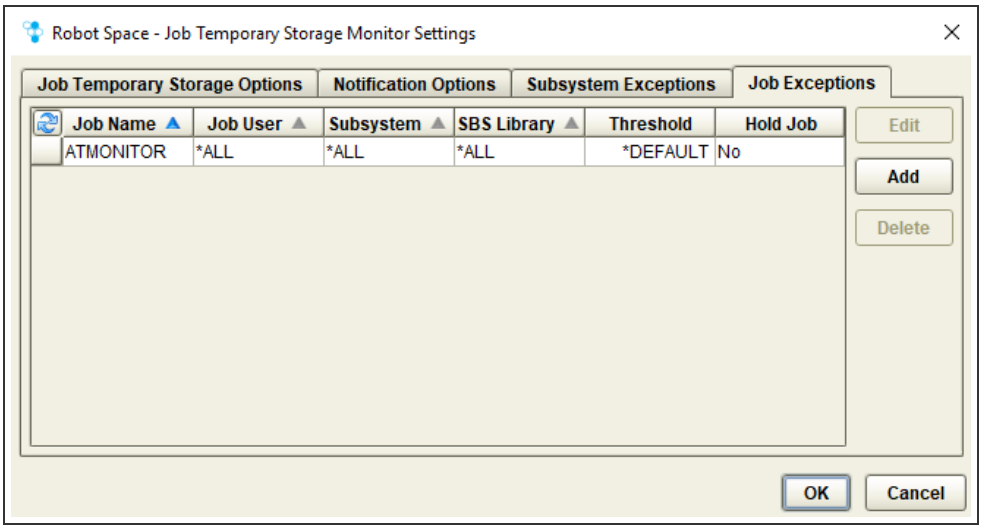
Select the subsystem filter threshold. This option displays in the Threshold column of the Subsystem Exception list as the number of MB you enter:

- Use the Default Job Threshold Level- Uses the Default job threshold level, which can be changed at the top of the Job Temporary Monitor Storage Settings window. This option displays as *DEFAULT in the Subsystem Exception list.
- No Maximum Job Threshold Level - Ignores the Default job threshold level; allows jobs to grow and grow. This options displays as *NOMAX in the Subsystem Exception list.
- Threshold - Enter a value from 5 to 32767 MB. This value must be higher than the Default job threshold level. If it is lower than the default level, it is ignored.

Select a subsystem and click **Delete** to remove it from the list. A confirmation dialog displays, asking if you want to remove the subsystem.

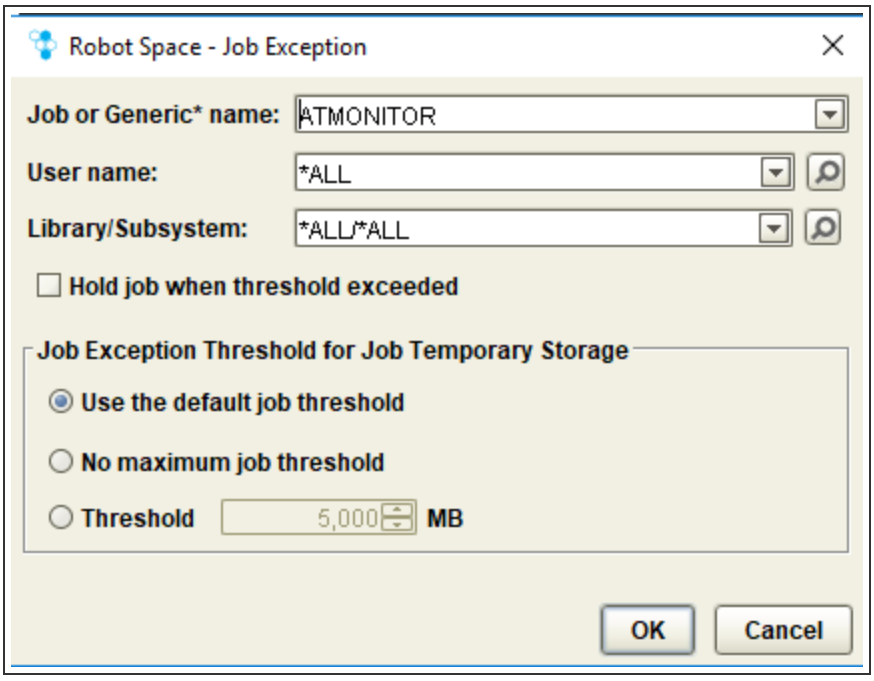
Job Exceptions

The Job Exceptions tab allows you to specify job thresholds higher than the default job threshold level or higher than the existing subsystem threshold. For example, if you have set the job threshold for a subsystem to the default, 40 MB, and want to give a specific job in that subsystem a 600 MB threshold, you can set the higher threshold on the Job Exceptions tab. Job exceptions can use generic values, such as DEV*, or specific values, such as *ALL.



Click **Add** to add a job exception or select a job exception and click **Edit** to modify it.

The Job Exception window displays.



Enter the name of a job exception you want to define. You also can enter a generic job name for exceptions that include more than one job. For example, if you wanted to include the jobs PAYROLL, PAYABLES, and PAYMENTS, you could enter PAY*. A job named *ALL could affect all jobs on your IBM i depending upon the User name and Library/ Subsystem filters.

Click the Finder button to select from a list of users. Enter a user name. If you enter *ALL, the job exception settings are used for the job(s) specified above, regardless of who runs them.

Enter a library and subsystem or click the Finder button to select from a library and subsystem list. Enter *ALL/*ALL to allow the job exception settings to be used for the job(s) specified above, regardless of where they run.

You can select to automatically hold the job (or jobs) specified on this window when the threshold you specify is exceeded. **Note:** If the job is released, Robot Space does not hold the job again until the monitor is shut down and restarted. Warning: Use caution when enabling Hold job when threshold exceeded. Make sure your filters are specific or your threshold is reasonable for your system. Low limits may cause important System jobs to be held.

Select the subsystem filter threshold. This option displays in the Threshold column of the Job Exception list as the number of MB you enter:

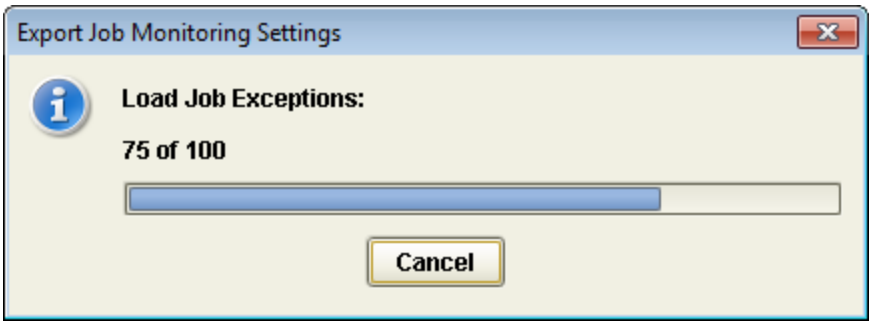
- Use the Default Job Threshold Level - Uses the Default job threshold level. If a subsystem exception is specified for the job and the exception is higher than the default job threshold level, this option uses the subsystem exception

- No Maximum Job Threshold Level - Ignores the Default job threshold level; allows jobs to grow and grow. With this option, you cannot hold a job when it exceeds a threshold.
- Threshold - Enter a value from 5 to 32767 MB. This value must be higher than the Default job threshold level. If it is lower than the default level, it is ignored.

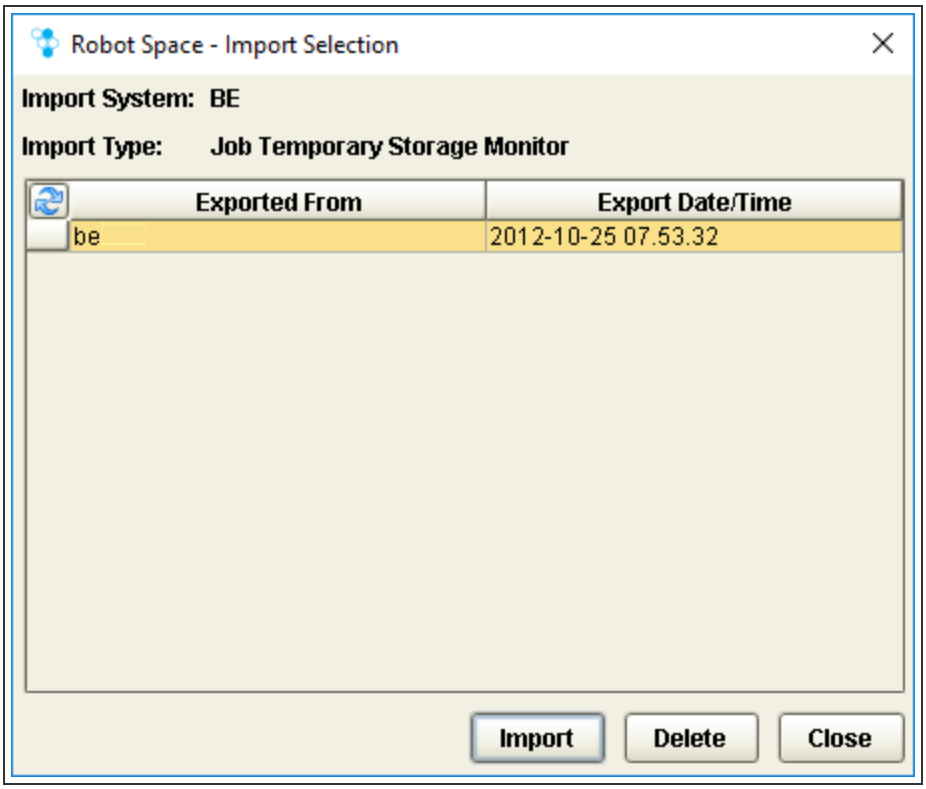
Importing and Exporting Active Job Storage Monitor Settings

You can export active job storage monitor settings to your PC, then import them to all systems where Robot Space is installed. When you export these monitor settings, all settings on the Job Temporary Storage Monitor Settings window are sent. When the same subsystem filters or job exceptions exist on two systems, the settings on the Import system are replaced with the settings from the Export system. Any subsystem filter or job exception set up on the Import system, that doesn't exist on the Export system, is removed.

Note: This process is the same for the Job QTEMP and Job Spooled File monitors.



Log onto a new system, right-click **Job Temporary Storage**, and select **Import**. The Import Selection window displays the name of the import system, the import type, the export system, and the time and date when the settings were exported.



Select a file and click **Import**. The Confirmation window displays. Click **Yes** to import the job temporary storage monitor settings.

Warning: Settings on the Import system will be replaced by the settings exported from the other system.

Starting and Stopping Active Job Storage Monitors

Click Active Job Storage Monitors from the left pane. Then right-click Job Temporary Storage Monitor from the List view and select Start Job Temporary Storage Monitor or Stop Job Temporary Storage Monitor.

Note: This process is the same for the Job QTEMP and Job Spooled File monitors.

Viewing Active Job Storage Threshold History

You can display the job threshold history for all monitored jobs on your system, using the Job Temporary Storage Detail History window or the Job Temporary Storage Summary History window.

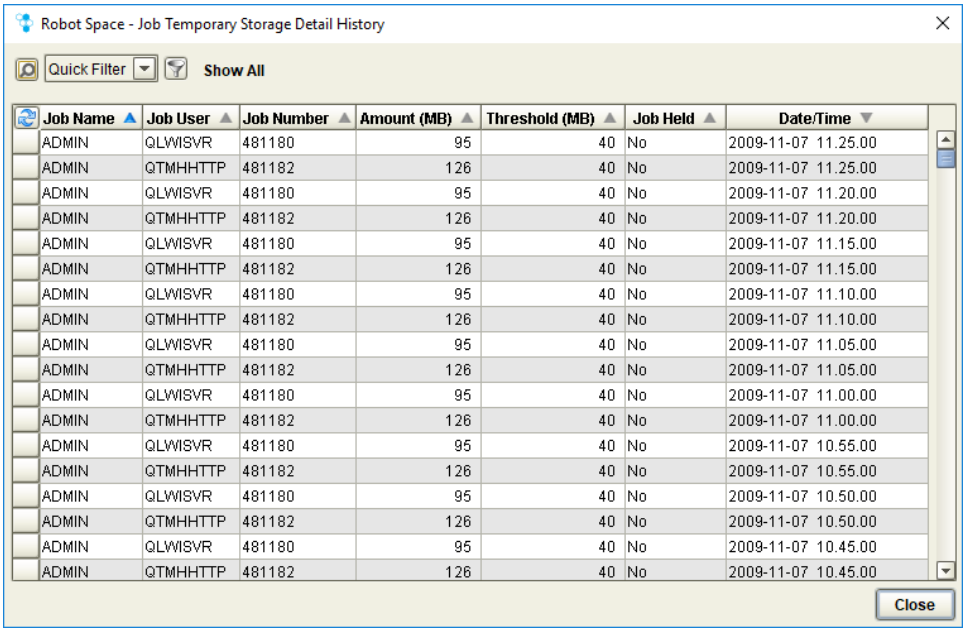
Threshold Summary History - The first time a job exceeds its threshold, a summary record is created for the job. The history record is updated as needed by subsequent readings that find the job still over the threshold.

Threshold Detail History - When the option to track exception detail is selected on the properties panel for the monitor, each reading that a job is over a threshold generates a detail history record. View these records to see the detail behavior of a job over a period of time.

Note: This process is the same for the Job QTEMP and Job Spooled File monitors.

Right-click **Job Temporary Storage Monitor** in the List view and select **Threshold Summary History** or **Threshold Detail History** to display the history for all monitored jobs on the system.

The Job Temporary Storage History window displays:



Job Name	Job User	Job Number	Amount (MB)	Threshold (MB)	Job Held	Date/Time
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.25.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.25.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.20.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.20.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.15.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.15.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.10.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.10.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.05.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.05.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 11.00.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 11.00.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 10.55.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 10.55.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 10.50.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 10.50.00
ADMIN	QLWISVR	481180	95	40	No	2009-11-07 10.45.00
ADMIN	QTMHHTTP	481182	126	40	No	2009-11-07 10.45.00

You can sort the history in ascending or descending order by clicking a column heading.

You can click and drag a column heading to rearrange the columns.

The Job Temporary Storage Detail History window shows each reading of a job that is over a threshold.

The Summary History window shows a summary record for the first time a job exceeds its threshold.

Overview of Storage Audits

Storage audits are disk cleanup utilities that analyze the libraries and IFS directories you specify for objects that meet the criteria you define. You can run storage audits as often as you want to check for exceptions in managing your disk space. Some of the audits simply list objects that meet the criteria (damaged or duplicate objects, for example). Other audits, at your option, actually perform a corrective action, such as deleting unused history files, or reorganizing file data.

Setting Up a Storage Audit

Each storage audit can contain one or many tasks. For example, you can set up a storage audit named Monthly that deletes old history files and saved journal receivers. For each task, you can display task description information and specify the task's corrective action. Robot Space also creates a list of the objects that meet the task's criteria. You can create a Robot Corral object list, and print the results of the audit. Then, you can select the objects for which you want to perform corrective action using Robot Space.

Library and Object Filtering

You can define filters for libraries and objects you want to include in—or exclude from—a storage audit. You also can use the Global Library Exclusion List to automatically exclude your critical libraries from being affected by storage audits.

Related Topics

Available Storage Audit Tasks

Creating and Editing Storage Audits

Importing and Exporting Storage Audits

Adding Tasks to a Storage Audit

Excluding Libraries from Storage Audit Modification

Running Storage Audits

Viewing Storage Audit History

Available Storage Audit Tasks

You can perform the following storage audit tasks.

Task	Description
Reorganize file data	This task reorganizes members of a file if the savings on any one file is greater than or equal to n MB, the percentage of deleted records in any one file is greater than or equal to n percent, and the reorganization of file members will take less than n minutes, where n is a value you specify in MB, percentage of deleted records, and the minutes. The report option on this task lets you see the files that Robot Space will reorganize. The report shows the file name, library, size, percent of deleted records, and the estimated time to reorganize. The reorganization time is an estimate that considers the current activity on the system each time the estimate is calculated. Since system activity often varies, this results in differences between estimates. We recommend scheduling the reorganize task in Robot Schedule to run at the same time every week with the same time limits. The reorganize time estimate determines if a file's reorganization can be completed in the time remaining and should be started. Robot Space eventually works its way through the entire file list. If large files have to be done in a special session—the report gives you an estimate on how long it will take.
Reorganize file data while active	This task reorganizes members of a file while active if the savings in any one file is greater than or equal to n MB, the percentage of deleted records in any one file is greater than or equal to n percent, and the reorganization of file members will take less than n minutes, where n is a value you specify in MB, percentage of deleted records, and the minutes. Reorganizing physical files while active allows applications to continue to run while the reorganize happens. Reorganizing physical files can improve performance and decrease the disk space used by freeing disk space that was allocated by records that have been deleted. Reorganizing while active requires the manual creation and usage of journal receivers and journals before the process is run.

Compress unused programming objects	This task compresses *PGM, *SRVPGM, and *MODULE objects unused for a number of days you specify. Our tests show that compressing the observability tables in a program reduces its size by up to 70% in ILE objects and up to 50% in non-ILE objects. Because IBM i programs can be large and this task is very fast, you should run the compress task regularly. It takes a few seconds to decompress the observability tables. However, you may experience a drop in performance if you put a program into debug mode.
Remove program observability	This task removes observability from programming objects created n or more days ago, where n is the number of days you specify. Our tests show that removing the observability tables in a program reduces its size by up to 85% in ILE objects and up to 70% in non-ILE objects. If you then compress those programs, you obtain another 20% reduction in size. **Note:** Do not remove the observability tables for programs for which you do not have the source code. A program with no observability tables cannot be put into debug mode or converted if a major change in the operating system takes place. You have to be able to recompile any program for which observability has been removed. Use the Exclude Library List feature to exclude libraries containing applications for which you do not have source code. **Tip:** We recommend that you back up your libraries before you remove observability. To speed up this process, you can use Robot Save to save and restore the libraries.
Clear large message queues	This task clears message queues larger than the number of KB you specify. It's easy to forget to clear message queues of old messages, especially queues that receive only informational messages. If a message queue is not cleared periodically, the size set for the queue is exceeded and the programs using the queue halt. When the Robot Space task clears a message queue, it leaves unanswered messages in the queue.
Re-create large data queues	This task re-creates data queues larger than the number of KB you specify. Data queues grow with use and never shrink. The only way to reduce them is to delete them and then re-create them. This task first records the definition of the data queue, then deletes the data queue and re-creates it according to the stored definition. Data queues that contain data are logged to the report, but not processed, as the data would be lost. **Tip:** Use Robot Schedule jobs to end your applications before running this audit so the data queues are cleared. Once the audit is complete, Robot Schedule can restart your applications.

Age output queues	This task uses the special filters specified on the OUTQ Filter tab instead of the standard Object Filter tab on the Storage Audit setup panel. These filters allow you to specify different numbers of days to use as the age for different libraries and individual output queues. You should remove old spooled files from your system for two reasons: • Spooled files take up a lot of disk space. • The system keeps job information for a spooled file in work management areas for as long as the spooled file is on the output queue. This slows performance because the system must use CPU cycles to manage the information. Keeping output queues relatively clean can improve your system's performance. **Tip:** If you are using output queues to archive reports, consider getting Robot Reports, which catalogs and archives them to tape and retrieves them for viewing in its sophisticated report viewing system. See Adding and Editing Storage Audits–Output Queue Filter for more information..
Age IFS files	This task removes files that are over x days old from the specified IFS directories. It uses the Aged IFS File Filter tab on the storage audit setup to determine which directories to remove files from and to determine the age of files to remove from each directory. See Adding and Editing Storage Audits–Aged IFS File Filter for more information.
Delete unused history log files	This task deletes old history files (QHST*) if unused for a number of days you specify. We recommend running this task once a week, deleting all logs over seven days old. Then, you will always have the last seven days of logs available on your system. This task ignores any Library and Object filters specified by the Storage Audit.
Delete unused save files, journal receivers and network files	Each of these objects has its own task that deletes them if they are older than the number of days that you choose. If you want to see the list of objects, use the object list option. Network files are deleted if they are n days old and have not been received. What these objects have in common is that they are used once—if they are old, they're probably not needed. This task ignores any Library and Object filters specified by the Storage Audit. **Tip:** If you have Robot Save, you can archive this list of objects off the IBM i. The objects could be deleted and the tapes tracked permanently in Robot Save. See the Robot Save User Guide for more information about using an object list. You also can use Robot Corral APIs to write your own programs to act upon this list of objects.

List damaged library or IFS objects	Each type of object has its own task that lists damaged objects. Objects become damaged for several reasons and cannot be used by the system. If a program tries to use a damaged object, it crashes. Run these tasks periodically to warn you to re-create these damaged objects before an application needs them.
List duplicate library objects	This task searches the libraries in the library list looking for duplicate objects and lists them. Building an object list on the task aids you in deleting the duplicate objects.
List duplicate IFS objects	This task searches all directories looking for duplicate objects and lists them. Building an object list with the task aids you in deleting the duplicate objects.
List large IFS directories	If a directory (other than the root) has more than 2,048 objects, the system will be slowed down when accessing those objects. This task finds directories that exceed this limit so you can reorganize them. **Warning:** If you have too much nesting in a directory, system performance and the performance of the audit can suffer.
List files and journal receivers that need to be saved	Use this task to audit your backup procedures. A report highlights the important items that are not being saved on a timely basis. If this is a continual problem for you, consider getting Robot Save. It automatically ensures all objects are saved and can be recovered in case of system failure.
List unused library and IFS objects	Objects that have not been used for a long time probably are not needed or have been replaced by other objects. These tasks find objects that have not been used for the number of days you specify. Building an object list with these objects assists you in deleting them.
List old library and IFS objects	Programmers and testers love to create libraries and directories and then forget about their existence. This task lists objects that are older than n days. You can contact the object owner to justify the object's existence or delete it.
List objects overflowing their ASP	Important libraries sometimes are placed on isolated ASP drives. This protects the ASP library from loss if any other disk drive fails. If the library grows so that the ASP overflows, the isolation protection is lost. This task lists the overflowed objects. You can reduce the library size, then save the overflowed objects to tape, delete them, and then restore the objects back into the original library and ASP.
List unused file members	Unused file members usually are no longer needed. Or, they have been forgotten or replaced. Building an object list aids you in deleting the unused file members.
List logical files not in physical file library	Run this task to see a list of logical files that are no longer in their physical file library. An object list aids you in determining how many displaced logical files exist on your system and whether they can be deleted.

List new or restored objects	Objects are constantly being added or restored to systems, sometimes at an alarming rate. You should be aware of the objects added to your system—and the disk space they occupy. Building an object list helps you identify new and restored objects and their size.
List physical file members that are almost full	You can be proactive in identifying physical file members that are nearly full. An object list lets you know before it's too late.

Creating and Editing Storage Audits

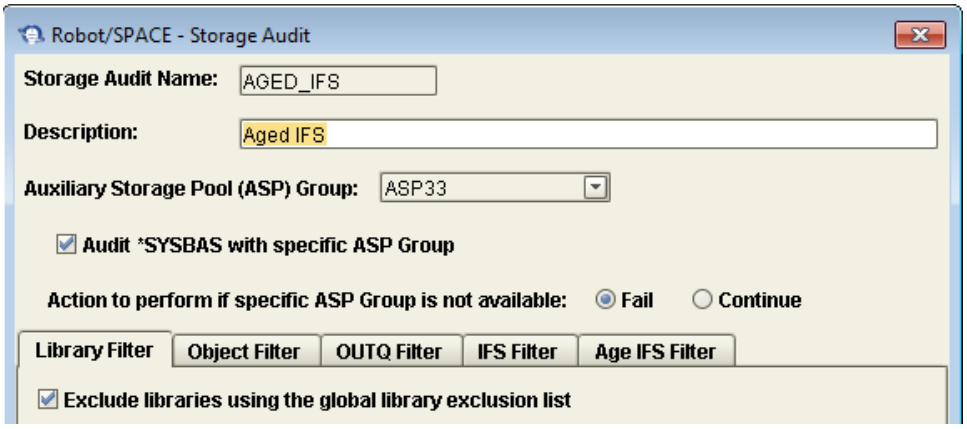
There are several ways to add storage audits to Robot Space. You can import them from other systems running Robot Space; you can copy an existing storage audit, rename it, and change its options as necessary; or you can create a new storage audit. You also can use Robot Guide to create a storage audit.

- To add a new Storage Audit, right-click **Storage Audits** select **Add**
- To modify an existing Storage Audit, right-click it and select **Properties**.
- To create a new Storage Audit based on an existing one, right-click the source Storage Audit and select **Copy**.

The Storage Audit window displays.

Basic Storage Audit Setup

Use the top part of the Storage Audit window to name and describe the audit you are adding and to select an ASP or IASP group for the audit. You also can use the Storage Audit window to create library, object, and aged output queue filters for the audit.



Enter a name and description for the storage audit.

Note: You cannot edit the name of an existing storage audit.

Select from a list of ASP and IASP groups for the storage audit.

The Audit *SYSBAS with Specific ASP Group field is enabled when you enter an ASP group name other than *SYSBAS or *ALLAVL. If you choose this option, you can select to fail, or continue the storage audit on *SYSBAS if the specific ASP is not available.

Note: If you select Fail, you can make the ASP group available and then rerun the storage audit.

Library Filter Tab Only: Select to exclude the libraries specified on the Storage Audit Global Library Exclusion List. All libraries (and the objects in them) on this list are excluded from storage audits. See Global Library Exclusion List for more information.

Adding and Editing Filters

Each filter tab lets you add new or edit existing filters. Click **Add** to add a new filter or select an existing filter and click **Edit** to modify it.

Specifying Library Filter Rules

Specifying Object Filter Rules

Specifying Output Queue Filter Rules

Specifying IFS Filter Rules

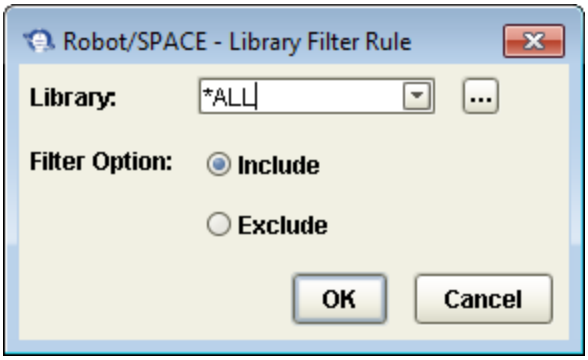
Specifying Age IFS Filter Rules

Deleting Filters

Select a filter and click **Delete** to remove it from the list.

Note: This action does not delete the selected item from your system.

Specifying Library Filter Rules

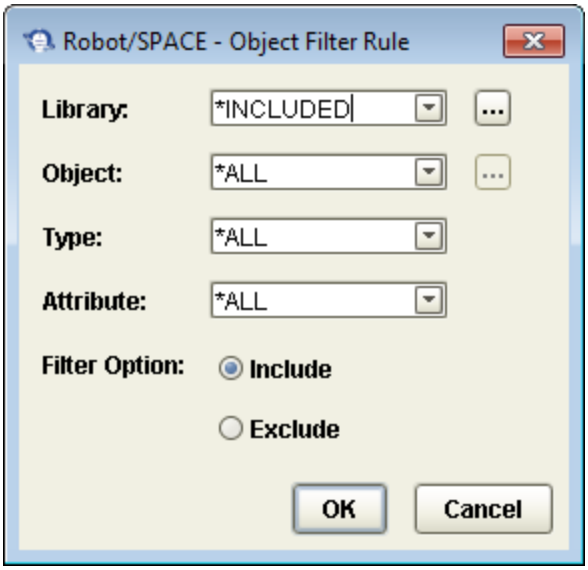


Enter a library name, a generic library name (ACCT*), or use *ALL (the default). Click the Finder button to select from a list of libraries on your system.

Select to include or exclude the libraries you specified. What you select displays next to the library name on the Library Filter tab on the Storage Audit window.

Click **OK** to return to the Library Filter tab.

Specifying Object Filter Rules



Enter a library name, a generic library name (ACCT*), or use *INCLUDED (the default) or *ALL. Click the Finder button to select from a list of libraries on your system.

Note: *INCLUDED uses all libraries included on the Library Filter tab. Click the Finder button to select from a list of all output queue libraries on your system.

Enter an object name, a generic object name (PGM*), or use *ALL (the default). Click the Finder button to select from a list of objects on your system.

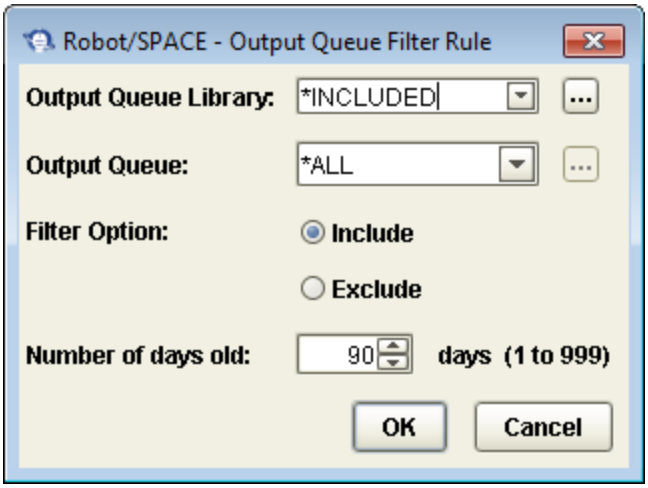
Click the arrow to select from a list of object types or use *ALL (the default). Click the arrow to select from a list of object attributes or use *ALL (the default).

Note: The attributes you can select are based on the type you select.

Select to include or exclude the objects you specified. What you select displays next to the object name on the Object Filter tab on the Storage Audit window.

Click **OK** to return to the Object Filter tab.

Specifying Output Queue Filter Rules



Enter an output queue library name, a generic name (DEV*), or use *INCLUDED (the default).

Note: *INCLUDED uses all libraries included on the Library Filter tab. Click the Finder button to select from a list of all output queue libraries on your system.

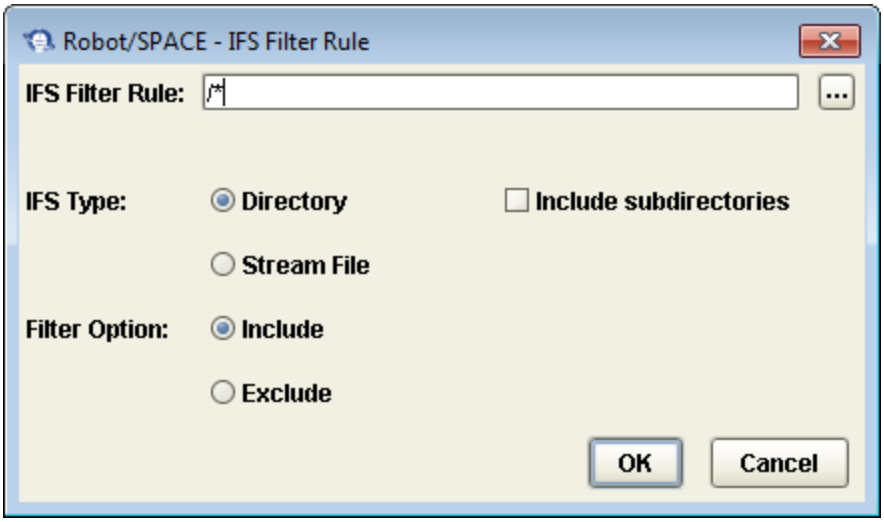
Enter an output queue name, a generic name (MARK*), or use *ALL (the default). Click the Finder button to select from a list of all output queues on your system.

Select to include or exclude the output queues you specified. What you select displays next to the object name on the OUTQ Filter tab on the Storage Audit window.

Enter the number of days (1 to 999) to retain information in the selected directories. The default is 90 days. Items older than the number of days you specify are deleted from the directory if the Delete spooled files corrective action is selected for the Age Output Queue task.

Click **OK** to return to the OUTQ Filter tab.

Specifying IFS Filter Rules



Enter the path to an IFS directory or file. Click the Finder button to display a list of the IFS objects on your system.

Note: Enter /HOME* to use all of the files in a directory for the filter.

Note: Most subdirectories are uppercase (not case-sensitive), but subdirectories under the QOpenSys directory are case-sensitive.

Select a directory or a particular file to determine the object type to use for this filter.

Select to include or exclude the objects you specified. What you select displays on the IFS Filter tab on the Collection Group window.

Select Include subdirectories to include all nested directories under the directory specified in the IFS Filter Rule field.

Note: This option is not enabled when you select Exclude as the Filter Option. You can enter /HOME* in the IFS Filter Rule field and select Exclude as the Filter Option to exclude all files in a directory.

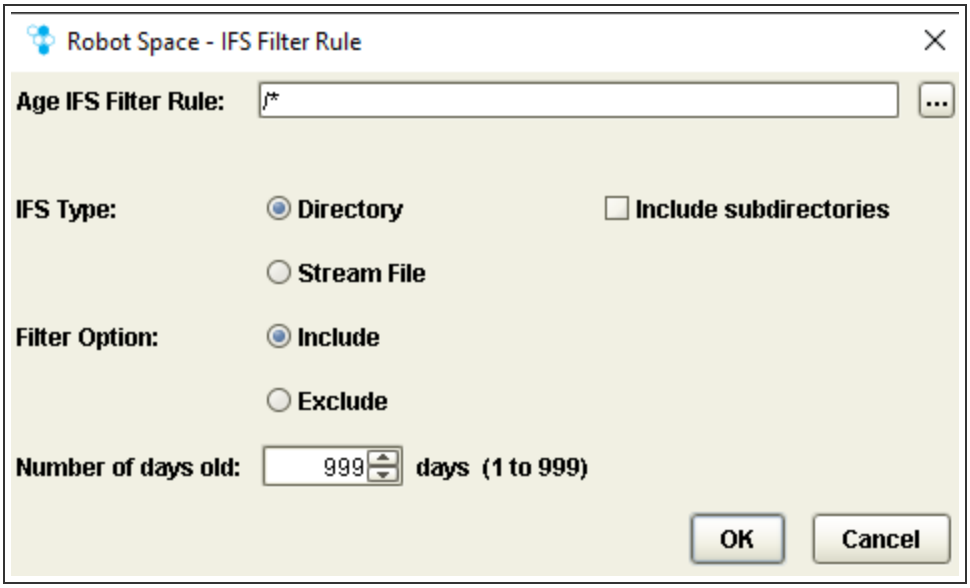
Select Summarize directories to automatically collect detail statistics for all of the files in the directory. When not selected (the default), one statistic record is created for the entire directory.

Note: This field is not enabled when you select Exclude as the Filter Option.

Enter a classification name or click the Finder button to display a list of the available classifications (the default is *DEFAULT). See Collection Classifications for more information.

Enter an event threshold or click the Finder button to select from a list of available event thresholds. See Collection Event Thresholds for more information.

Specifying Age IFS Filter Rules



Enter an IFS Filter Rule. Selecting /* and including subdirectories includes the entire IFS. Click the Finder button to list the IFS directories on your system.

Note: QOpenSys sub-directories are case sensitive. All other directories are automatically saved in upper case.

Select Directory or Stream File as the IFS type. If you select Directory, select Include subdirectories to allow the audit to include the selected directory and all subdirectories. Selecting Stream File lets you select generic files.

Select to include or exclude the directories you specified. What you select displays next to the object name on the Aged IFS File Filter tab on the Storage Audit window.

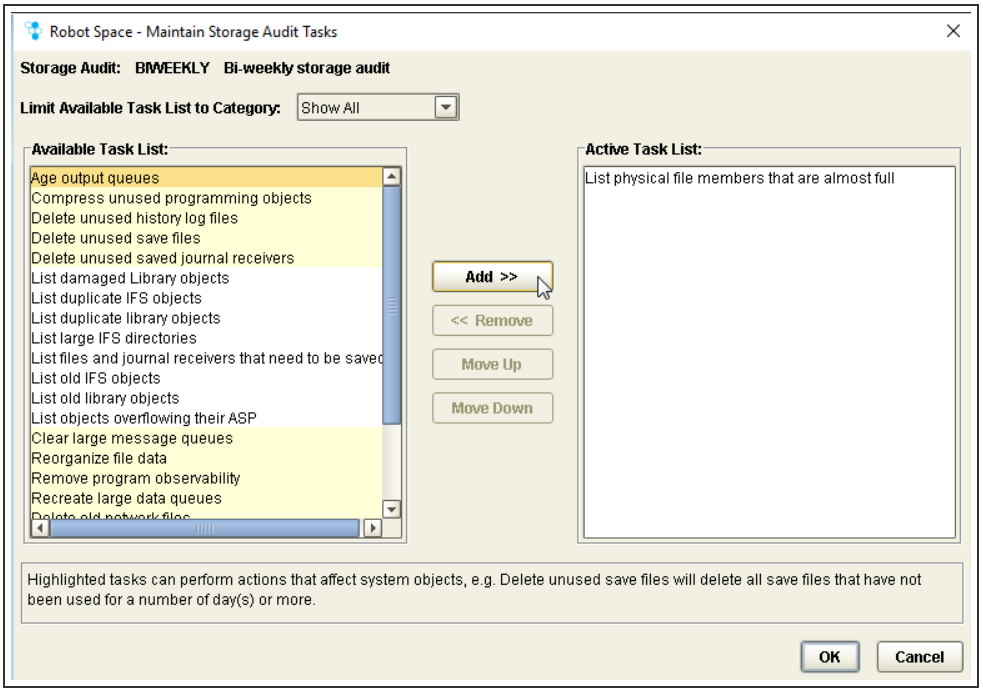
Enter the number of days (1 to 999) to retain IFS files. The default is 90 days. Items older than the number of days you specify are deleted from the IFS if the Delete IFS files corrective action is selected for the Aged IFS Files task.

Adding Tasks to a Storage Audit

Use the Maintain Storage Audit Tasks window to add and edit storage audit tasks. You also use this window to remove tasks from storage audits and to change the order in which audit tasks are performed.

There are two ways to access the Maintain Storage Audit Tasks window:

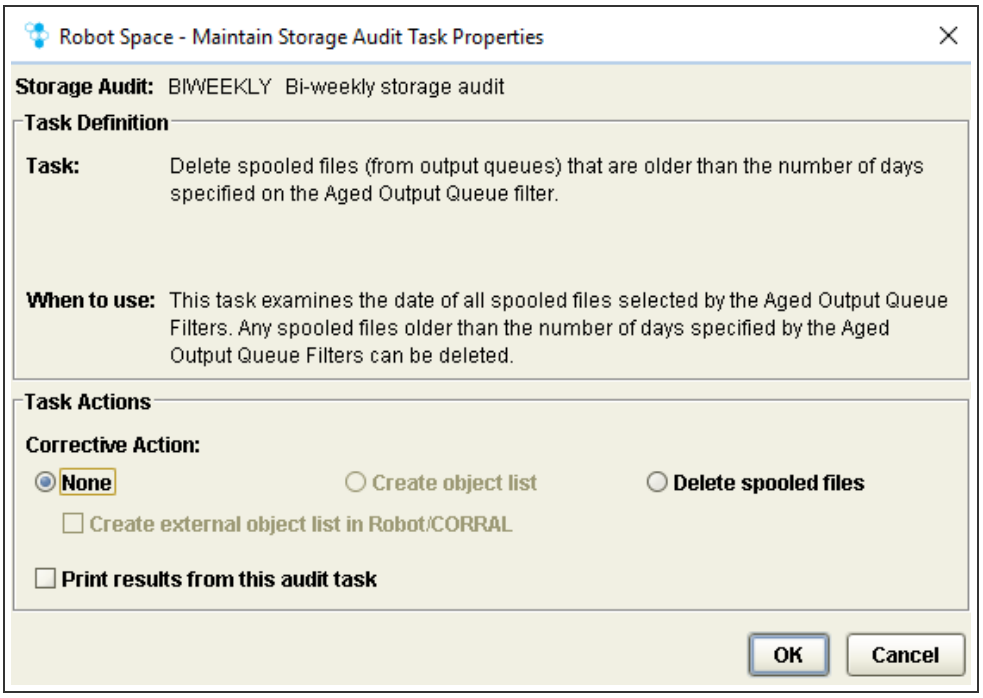
- From the Storage Audit window, click **Tasks** to display the Maintain Storage Audit Tasks window.
- From the list view, right-click a Storage Audit and select **Edit Assigned Tasks** from the list view.



Use the "Limit Available Task List Category" drop-down menu to limit the type of tasks displayed in the Available Task List.

Warning: Tasks highlighted in light yellow (see image above) can affect system objects. See Available Storage Audit Tasks for detailed storage audit task descriptions.

Select the task you want to include and click **Add** to display the task's properties window:



Specify a corrective action for the task. Note: The actions vary from task to task.

- None - No action is performed but you can print the results from the task.
- Create object list - No action is performed but a Robot Space list is created; you can select to create a Robot Corral list, if it is installed on your system.
- Delete Network Files - For this task, all network files that meet the storage audit's selection criteria and Task Variables are deleted.

The Task Variables section allows you to specify the variable(s) for the task. The variable you enter displays in the task description. Not every task has this section.

Click **OK** to return to the Maintain Storage Audit Tasks window. The task you added now displays in the Active Task List.

Rearranging Storage Audit Tasks

In general, tasks are performed in the order they appear in the Active Task List; the top task is performed first, and so on. However, most tasks are performed simultaneously for increased efficiency.

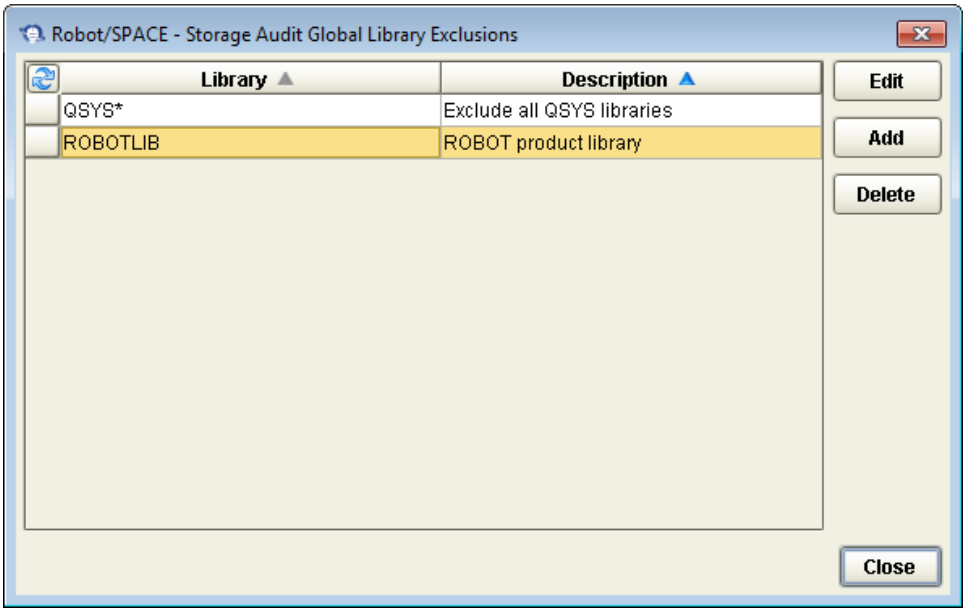
Select a task and click **Move Up** or **Move Down** to arrange the list.

Excluding Libraries from Storage Audit Modification

Use the Storage Audit Global Library Exclusion List to exclude your critical libraries from being modified by storage audits. You can add as many libraries to this list as is necessary. When you set up a storage audit, you can select to exclude the libraries on this list, which saves time when creating the filters for the storage audit.

Note: All QSYS libraries are automatically excluded from audit tasks that perform actions; however QSYS libraries can be included by audit tasks that create lists, for example: List duplicate library objects.

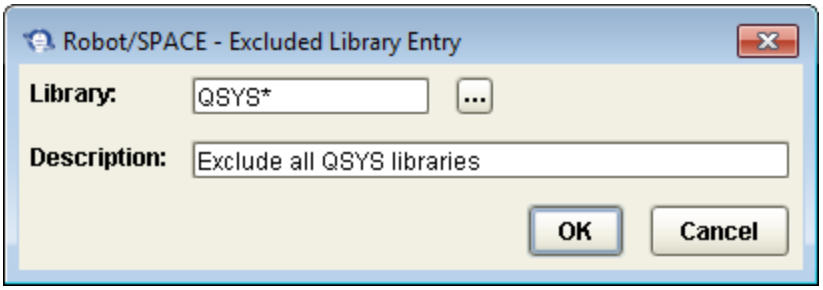
From the Tree view, right-click **Storage Audits** and select **Edit Global Library Exclusions** to display the Storage Audit Global Library Exclusions window.



The Storage Audit Global Library Exclusions window lists the libraries to be excluded.

You can sort the library list alphabetically in ascending or descending order by clicking the column heading.

Click **Add** to add a new library or select an existing library and click **Edit** to modify it. The Excluded Library Entry window displays.



Enter a library name or enter generic criteria. For example, you can enter ACCT* to select all libraries that begin with ACCT. Or, click the Finder button to select from a list of all libraries on your system.

Enter a description for the library.

Running Storage Audits

There are multiple methods for running Storage Audits:

- Submit your storage audits manually

  Right-click on the storage audit you want to run and select **Submit**. A confirmation windows displays.
- Click **OK** to run the storage audit.
- Schedule them in Robot Schedule, if it is installed on your system.

  Right-click on the storage audit you want to work with and select Schedule. The Robot Schedule Job Setup window displays. Enter the run time and day(s) to run for the storage audit.
- Run a storage audit using the Run Storage Audit (SPCAUDIT) command.

  See IBM i Commands for more information.

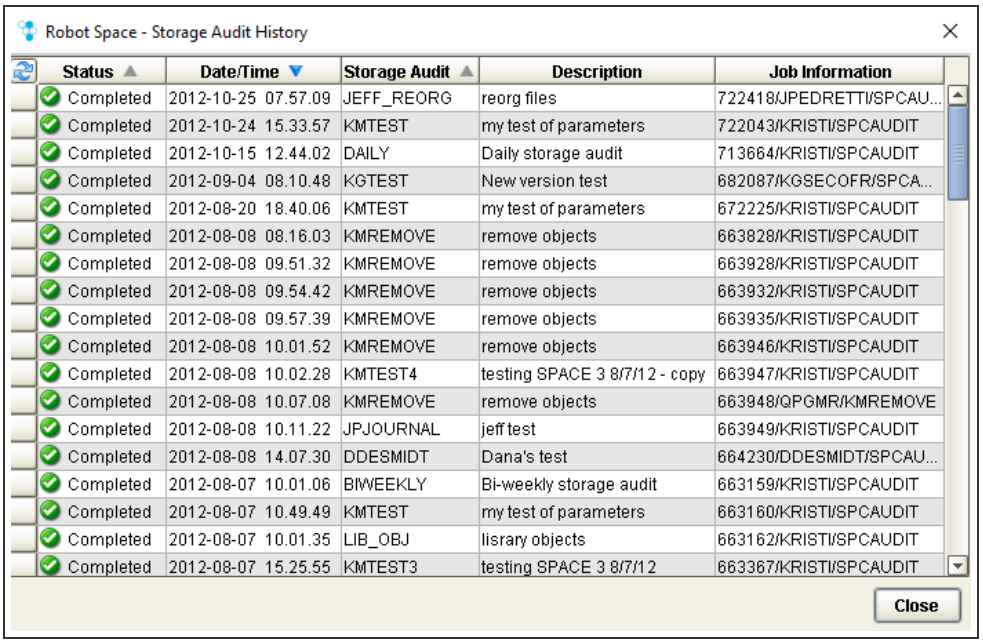
Viewing Storage Audit History

Use the Storage Audit History window to display the history for all storage audits on your system or for a particular storage audit only. The history allows you to see the Storage Audit History; the date and time an audit ran; and the audit's name, description, and job information.

Right-click **Storage Audits** in the Tree view and select **Audit History** to display the history for all storage audits.

Right-click on an audit in the List view and select **Audit History** to display the history for the selected audit only.

The Storage Audit History window displays:



You can sort the history in ascending or descending order by clicking a column heading.

You can accomplish other tasks from the Storage Audit History window:

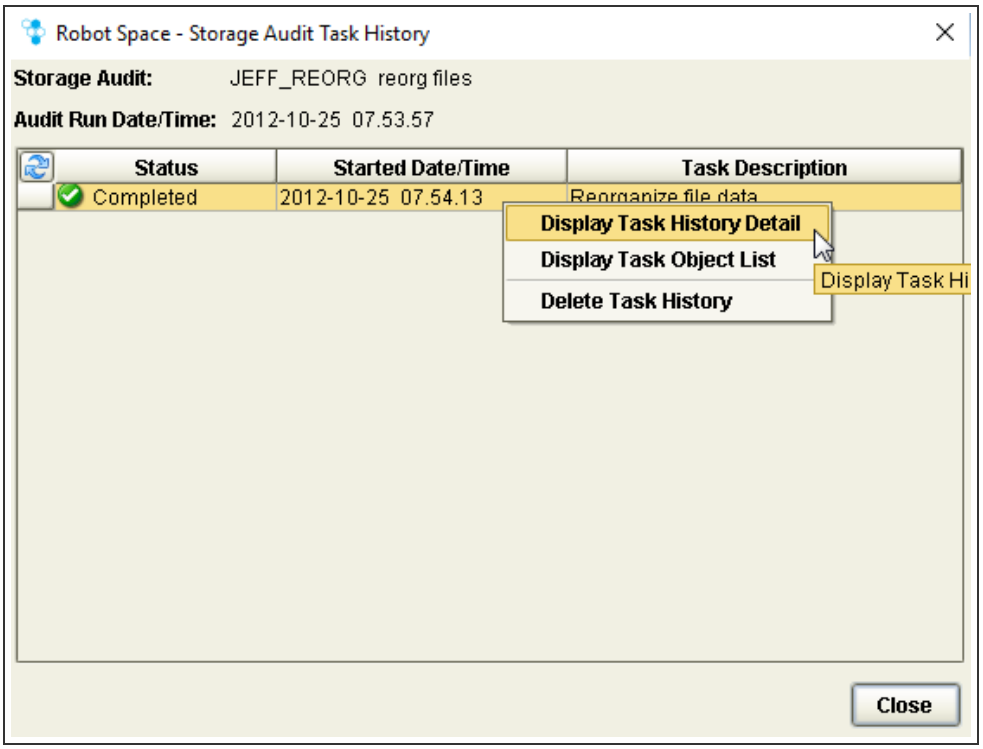
- Viewing Task History
- Viewing Task Object Lists
- Viewing Job Information

Viewing Task History

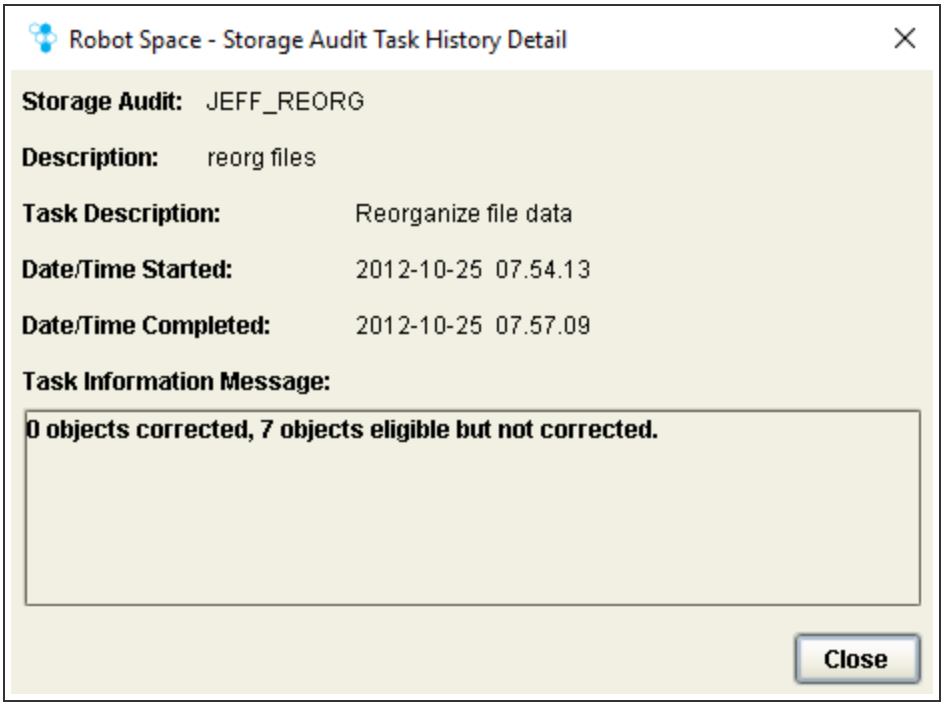
The Storage Audit History window lets you display storage audit task history and task history detail.

From the Storage Audit History window, right-click a history record and select **Display Task History**.

The Storage Audit Task History window displays:



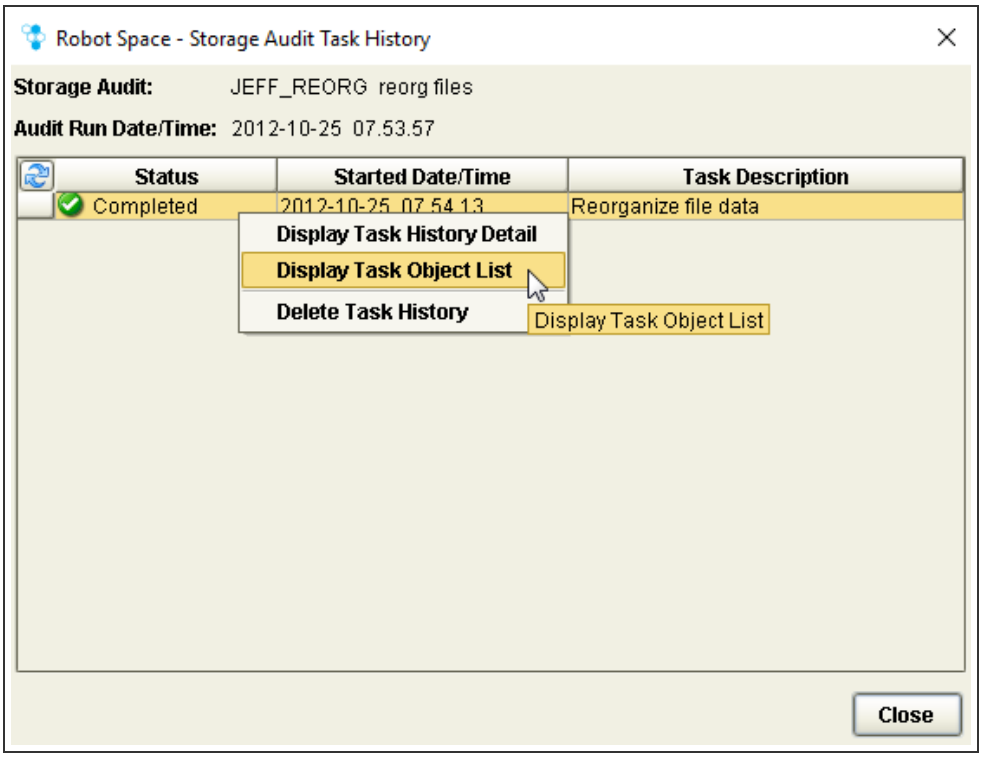
Right-click on a task history record and select **Display Task History Detail** to display the Storage Audit Task History Detail window:



The detail history displays the results of the storage audit task, for example how many unused save files were deleted.

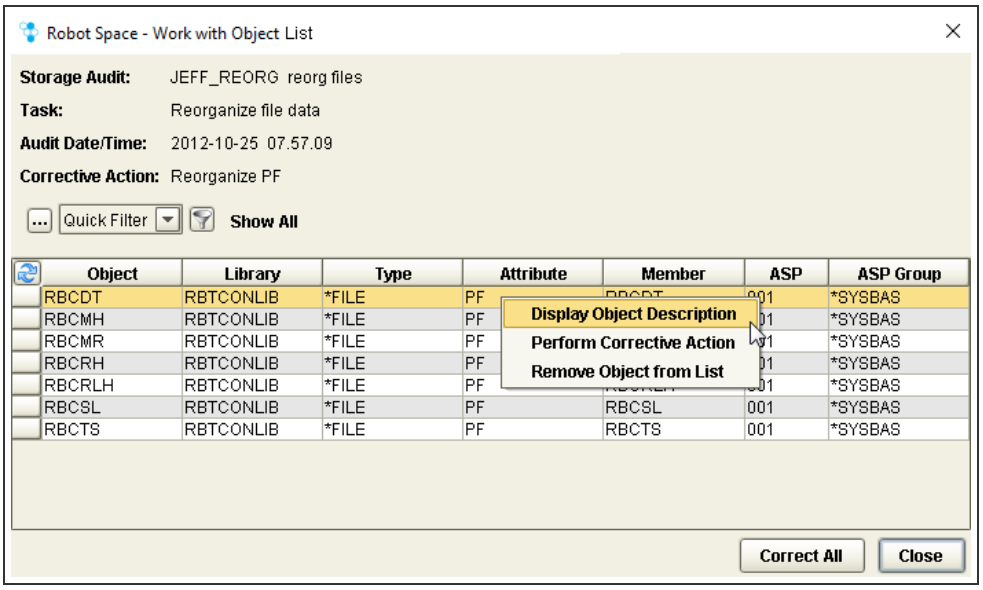
Viewing Task Object Lists

Some storage audit tasks allow you to create an object list when adding the task to a storage audit. You can create and print an object list instead of performing an action on the storage audit's objects. Use the object list to review the objects that met the storage audit's selection criteria and perform corrective actions manually. You also can select to generate an object list, which you can use in your own processes, in Robot Corral. See the Robot Corral User Guide for more information.



From the Storage Audit Task History window, right-click a task history record and select **Display Task Object List**.

The Work With Object List window displays:



Right-click an object to display options:

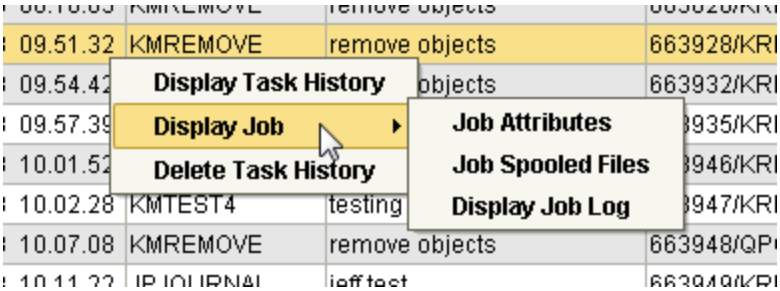
- Select Display Object Description to display the following object information: its owner and size; who created the object and on which system; when the object was last changed; when it was created; and its last save date and save size.
- Select Perform Corrective Action to perform the task's corrective action on the selected object. In this example, the action removes program observability.
- Select Remove Object from List to remove the object from the list. Note: This action does not affect system objects nor does it remove them from Robot Corral object lists. Keep in mind that the object will be selected by the next storage audit run unless you create a filter to exclude it.

Click Correct All to perform the task's corrective action on every object in the list, interactively.

Viewing Job Information

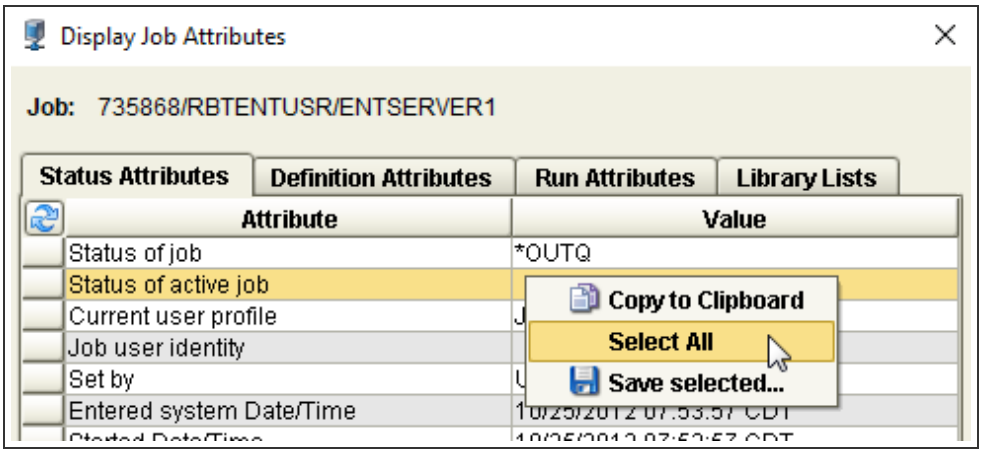
The Storage Audit History window also allows you to display Job Attributes, Job Spooled Files, and the Job Log.

From the Storage Audit History window, right-click a history record and point to **Display Job** to display job options.



Job Attributes

Select **Job Attributes** to display a dialog showing job attribute information.



The Status Attributes tab displays information on the job's current status, including the user profile that ran the job, its start time, type, and other job information.

The Definition Attributes tab displays job definition information.

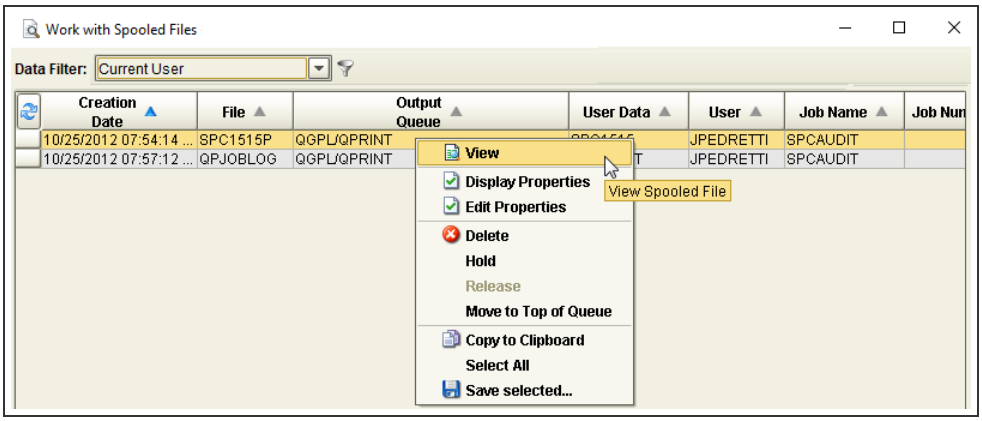
The Library Lists tab displays the library lists used for the job.

The Run Attributes tab displays job run information.

Right-click an attribute to see options for copying the data to your PC.

Job Spooled Files

Select **Job Spooled Files** to display a window listing the spooled files associated with the job.



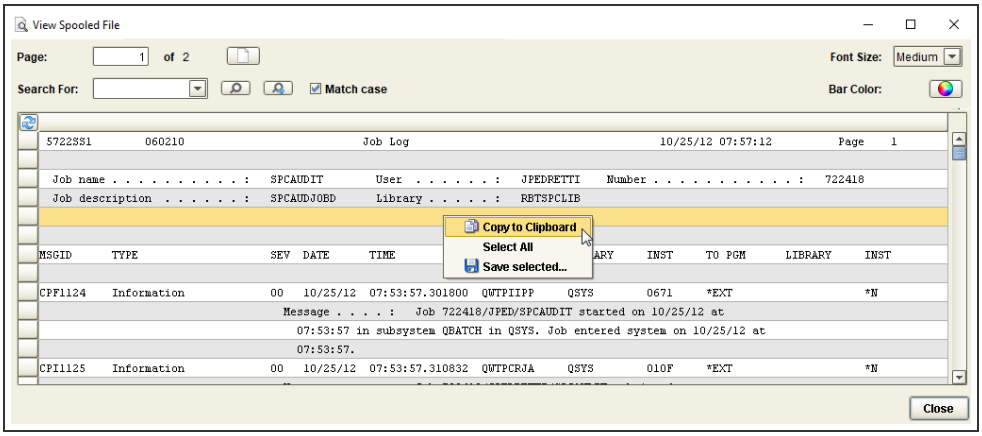
Each spooled file associated with the job is listed with its attributes. You can filter the display to display all spooled files for the current user, all spooled files on the system, or use a custom filter.

Right-click on a spooled file to see additional options.

Job Log

On a completed job, select **Display Job Log** to see a spooled file of the job log.

On a job that is running, select **Display Job Log** to see the job log associated with the job.



You can search the job log for any string of alphanumeric characters.

- The drop down box remembers your search items.
- Click the Jump button to go to the specified page in the log.

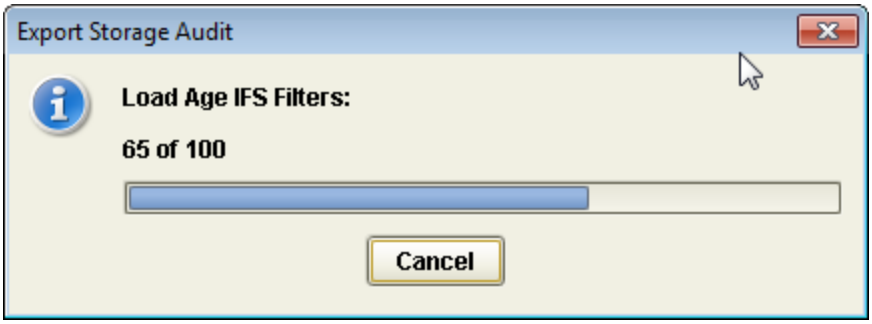
- Select Match case to make your search case-sensitive.
- Use the search buttons to continue searching for text.

You can highlight and save some or all of the information displayed to a file or to the clipboard.

Importing and Exporting Storage Audits

You can export storage audits to your PC then import them to all systems where Robot Space is installed. All tasks and filters associated with a storage audit are included when it is imported on a new system. If an existing storage audit has the same name as the one you are importing, the existing audit is replaced.

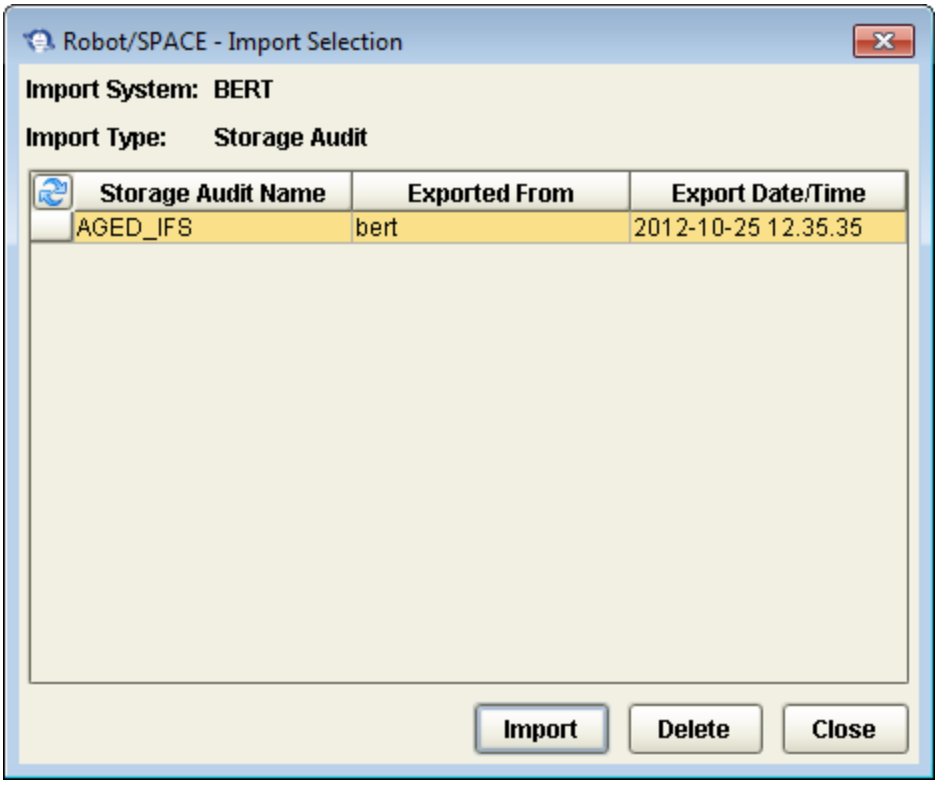
On the system with the Storage Audit you want to export, right-click the storage audit and select **Export**. The Export Storage Monitor window displays briefly.



Sign on to a new system, right-click **Storage Audits**, and select **Import**. The Import Selection window displays.

Click **Import**. The Confirmation window displays the name of the Export system and the time and date when the Storage Audit was exported.

Click **Yes** to save the new Storage Audit; **No** to cancel the process.


Robot/SPACE - Import Selection
Import System: BERT
Import Type: Storage Audit
Storage Audit Name
Exported From
Export Date/Time
AGED_IFS
bert
2012-10-25 12.35.35
Import
Delete
Close

Overview of Collection Groups

Use collection groups to collect statistics for different sets of objects on your system. You can collect statistics for native IBM i objects, IFS objects, and even for clients connected to your IBM i with Robot Client.

You run a collection when you want a snapshot of the size of the objects in the collection group. You can set up a collection group for all libraries and objects on your system and run it on a daily or weekly basis. You can create a collection group solely for a fast growing library and run the group hourly. Collection groups give you the flexibility to meet your short- and long-term storage collection needs.

You can use the collected statistics to display growth history graphs and growth trend graphs that show the growth of the selected objects over time, and predict future growth of the selected objects.

If you choose, you can use Robot Guide, a step-by-step guide to create collection groups. On the Robot Space Explorer, display the Robot Guide menu and select Collection Group Guide.

Note: The options you set up in the Advanced Options tab and the filter tabs determine the contents of the Collection Explorer window.

Collection Group Reports and Collection History

You can print or schedule the Collection Group Setup Report to view the setup information for all of your collection groups. See Printing Reports for more information on printing reports.

You can display the collection history for your collection groups in the Collection Explorer. The Collection Explorer allows you to drill down into the collected statistics, as well as display size history and trend diagrams for the objects in your collection groups. See Collection Explorer, earlier in this User Guide, for more information.

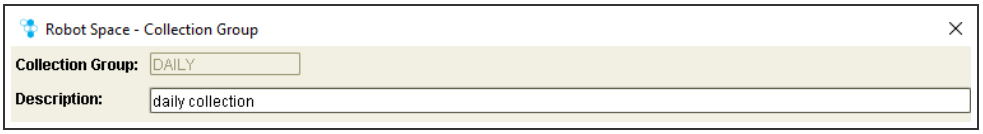
Creating and Editing Collection Groups

There are several ways to add collection groups to Robot Space:

- Import them from other systems running Robot Space
- Copy an existing collection group, rename it and change its options as necessary
- Create and add a new collection group.

To create a new Collection Group, right-click Collection Groups in the Tree view and select Add. To edit an existing Collection Group, right-click it and select Properties.

The Collection Group window displays.



Use the Collection Group window to name and describe the group you're adding.

The tabs on the Collection Group window allow you to specify the following:

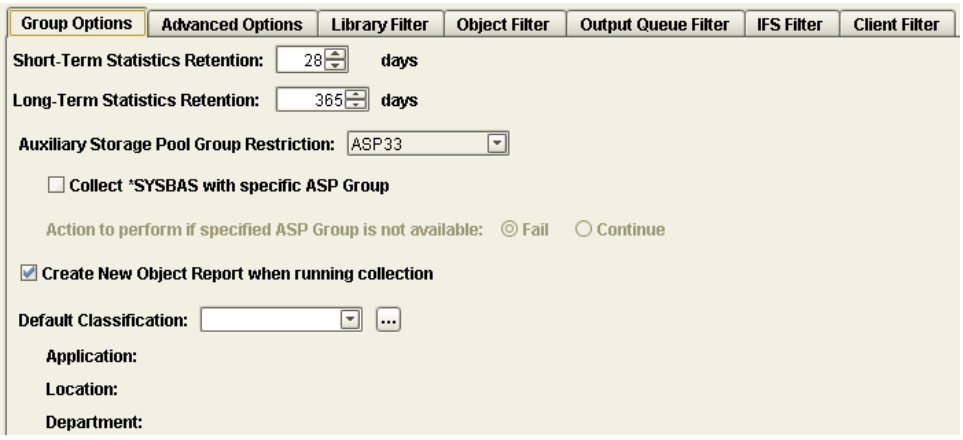
- Group Options
- Advanced Options
- Library Filters
- Object Filters
- Output Queue Filters
- IFS Filters
- Client Filters

Specifying Collection Group Options

The Group Options tab displays by default. Use this tab to specify retention periods for short- and longterm collection statistics. Statistics older than the retention periods you specify are deleted when you run the purge process. The short-term statistics are used to generate graphs that display the current size of the objects in a collection group. The long-term statistics are used to generate trend diagrams for the objects in the collection group. If you retain long-term statistics for a year, you can create a growth trend graph based on the year of collected growth history, which gives you a pretty good idea of the size of objects in the future. See Displaying Collection Summaries, later in this section of the User Guide, for more

information on displaying graphs and trends. You also use the Group Options tab to specify the ASP group(s) for the collection group.

Note: ASP storage threshold monitoring and event notification is done using an ASP monitor, not with a collection group. See Overview of ASP Monitoring for more information.



Enter the number of days to retain the short-term (the default is 28 days) and long-term (the default is 365 days) statistics. Statistics older than the values you specify are deleted when you run the purge process.

Select the name of the ASP Group for which you want to collect library, object, and output queue statistics. Select *SYSBAS to collect statistics from available ASPs from 1 to 32. Select *ALLAVL to collect statistics from all available ASPs from 1 to 255.

The "Collect *SYSBAS with specific ASP Group" field is enabled when you enter an ASP group name other than *SYSBAS or *ALLAVL. Select Collect *SYSBAS with specific ASP Group to include *SYSBAS in addition to the ASP group name you selected. The buttons that follow are enabled when you select Collect *SYSBAS with specific ASP Group. Select whether the audit should fail or continue if the ASP group you selected in the Auxiliary Storage Pool Group Restriction field is offline.

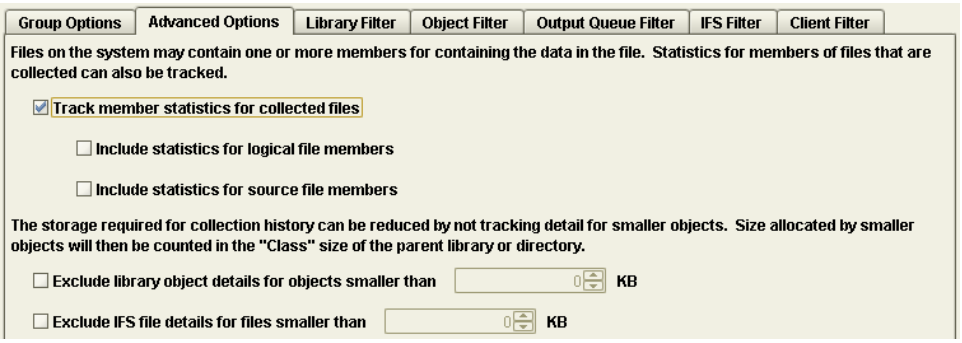
Note: If you select Fail, you can bring your ASP group online before statistics are processed. Running collections when ASPs are not available can cause inconsistent history, which causes inaccurate trending information.

Select if you want to generate a spooled file that lists new objects that haven't been collected before, but meet the collection group's selection criteria. This report allows you to track new system objects closely.

Select a default classification (used for billing and reporting purposes) for the collection group. Select *OWNER if you use RobotCPA and it is set to automatically assign Accounting Code, Location, and Department information based on the owner of the objects in the collection group. See Overview of Collection Classifications for more information.

Collection Group Advanced Options

Use the Advanced Options tab to track member statistics for collected files and to reduce storage needs by excluding files smaller than the set amount. When you choose to exclude smaller files, the storage allocated by the excluded files is added to the size for the parent library or directory.



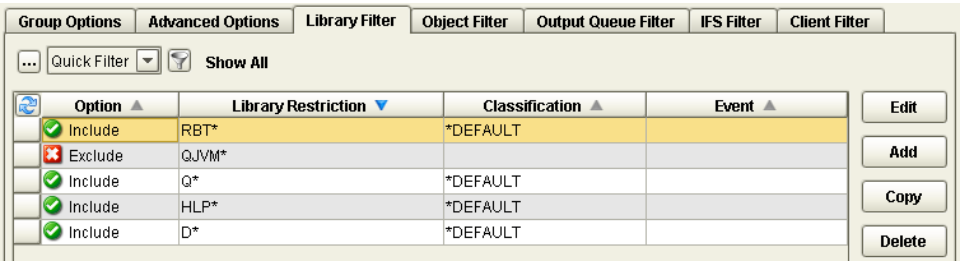
Select Track member statistics for collected files to track statistics for members of files that are collected. If selected, two additional options become available for including statistics for logical file members and source file members. If you select Track member statistics for collected files, you can view the tracked statistics by clicking Members in the Collection Explorer window.

Select to exclude library object details or IFS file details and set the maximum size of excluded files (in KB). Collection Event Threshold checks are not performed on objects that are smaller than the minimum size of included files specified here.

Collection Group Library Filters

If you choose, you can specify library, object, output queue, IFS, or client filters for your collection groups. All of the filters allow you to click an arrow to select generic criteria, for example, *ALL (the default for some filters). You also can enter your own generic criteria. For example, you can enter ACCT* to select all libraries that begin with ACCT. In addition, some fields have a Finder button that allows you to display all the libraries, objects, or output queues on your system.

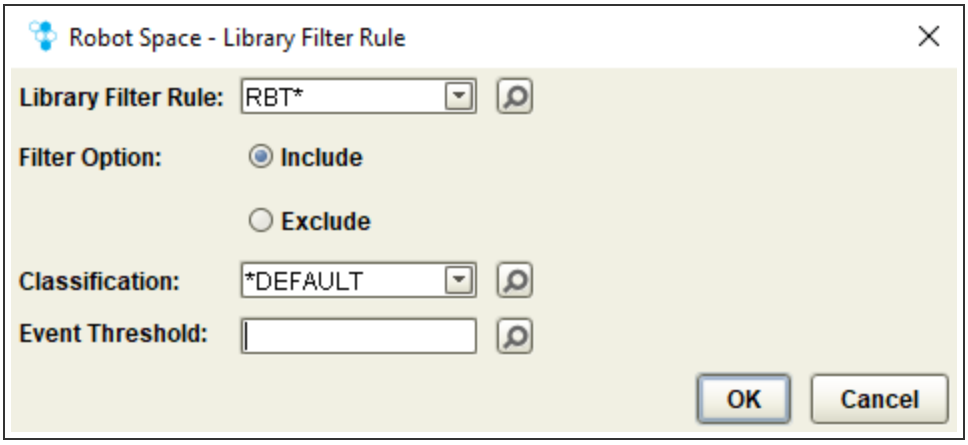
The objects collected for the filters you set up can be viewed in the Collection Explorer window.



Select a filter and click **Delete** to remove it from the list. This action does not delete objects from the system.

Click **Add** to add a library filter. Select an existing filter and click **Edit** to modify it or **Copy** to create a new filter based on the currently selected filter.

The Library Filter Rule window displays:



Enter a library name, a generic library name (ACCT*), or use *ALL (the default). Click the Finder button to select from a list of libraries on your system.

Select a filter option. The Include option causes statistic records to be collected. The Exclude option allows you to filter out libraries from a collection.

Enter a classification name or click the Finder button to display a list of the available classifications. The default is *DEFAULT. See Collection Classifications, later in this section, for more information.

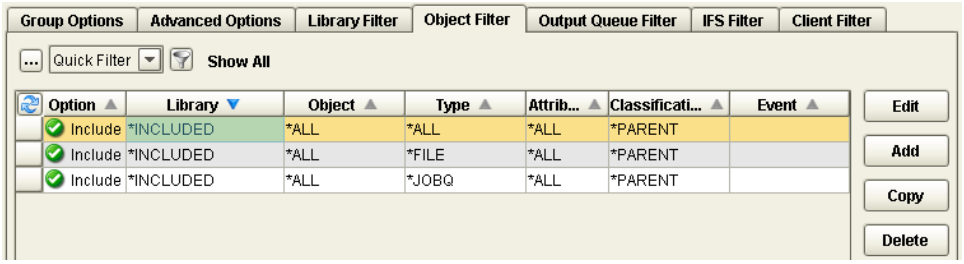
Enter an event threshold or click the Finder button to select from a list of available event thresholds. See Collection Event Thresholds, later in this section, for more information.

Click **OK** to return to the Library Filter tab.

Collection Group Object Filters

The Object Filter tab allows you to create a filter for the objects in a collection group.

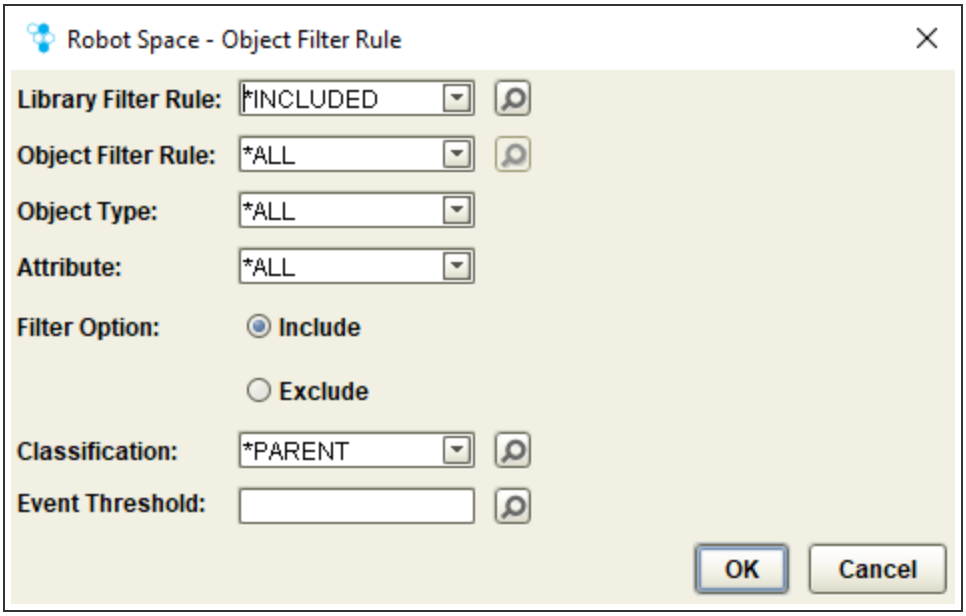
Note: The size of a library's objects that are not included (specifically excluded) from a collection group are tracked and used to calculate the library's Classification Size. Excluding objects means that detail statistics are not tracked; however, object size is included in the Library Classification Size. The Classification name information is used for billing and reporting.



Select a filter and click Bto remove it from the list. This action does not affect system objects.

Click **Add** to add an object filter. Select an existing filter and click **Edit** to modify it or **Copy** to create a new filter based on the currently selected filter.

The Object Filter Rule window displays.



For the Library Filter Rule, select *INCLUDED (used as a reference for all libraries that are included in or for the collection based on the Library Filters for the collection group); *ALL; a specific library name; or a generic library name (for example, ACCT*). Click the Finder button to select from a list of libraries on your system.

For the Object Filter Rule, select *ALL (the default), a specific object name, or a generic object name (for example, PGM*). Click the Finder button to select from a list of objects on your system.

For the Object Type, select from a list of object types or use *ALL (the default). Then, click to select from a list of object attributes or use *ALL (the default). The attributes change depending on which Object Type you select.

Note: The attributes you can select are based on the type you select.

For the Filter Option, select Include to collect statistic records. Select Exclude to filter out objects from a collection.

For the Classification, enter a classification name or click the Finder button to display a list of classifications. Select *OWNER if you use RobotCPA and it is set to automatically assign Accounting Code, Location, and Department information based on the owner of the objects in the collection group. Select *PARENT to adopt the classification settings from the library for the object. The default is *DEFAULT. See Overview of Collection Classifications for more information.

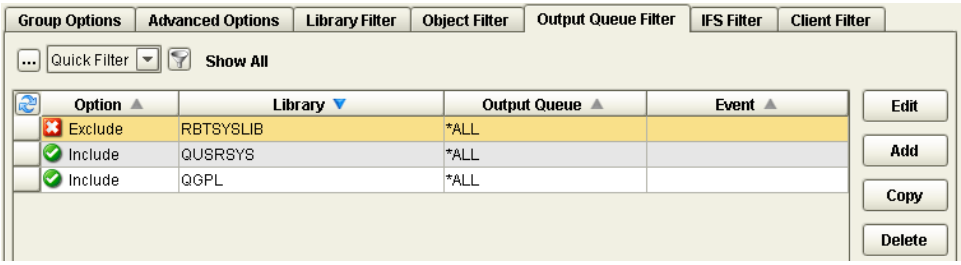
For Event Threshold, enter an event threshold or click the Finder button to select from a list of available event thresholds. See Overview of Collection Event Thresholds for more information.

Click **OK** to return to the Object Filter tab.

Collection Group Output Queue Filter

When the system reports the size of an output queue, it does not include the size of the spooled files that are stored in the output queue. The spooled file data is actually stored in data files in the QSPL library, and is reported this way under normal object collections using the standard Object Filter described earlier.

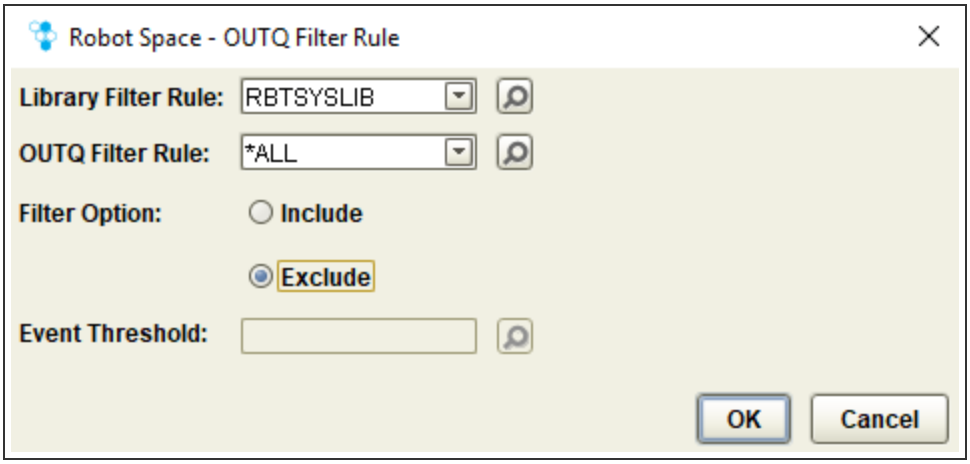
Use Output Queue Filters to identify output queues to collect when you want to see the actual amount of storage allocated by an output queue. Robot Space associates the QSPL disk space used by the spooled files with the output queue to report an accurate size.



Select a filter and click **Delete** to remove it from the list. This action does not remove system objects.

Click **Add** to add an output queue filter. Select an existing filter and click **Edit** to modify it or **Copy** to create a new filter based on the currently selected filter.

The OUTQ Filter Rule window displays:



For the Library Filter Rule, select *INCLUDED (used as a reference for all libraries that are included for collection based on the Library Filters for the collection group); *ALL; a specific library name; or a generic library name (for example, ACCT*). Click the Finder button to select from a list of libraries on your system.

For the OUTQ Filter Rule, enter an output queue name, a generic output queue name (DEV*), or use *ALL (the default). Click the Finder button to select from a list of output queues on your system.

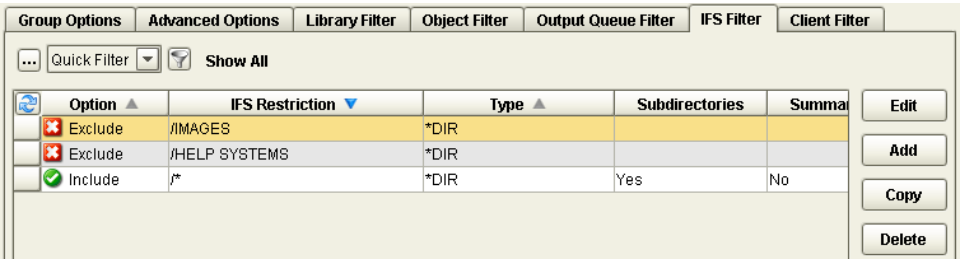
For the Filter Option, select Include to collect statistic records. Select Exclude to filter out output queues from a collection.

For the Event Threshold, enter an event threshold or click the Finder button to select from a list of available event thresholds. See Collection Event Threshold, later in this section, for more information.

Click **OK** to return to the Output Queue Filter tab.

Collection Group IFS Filters

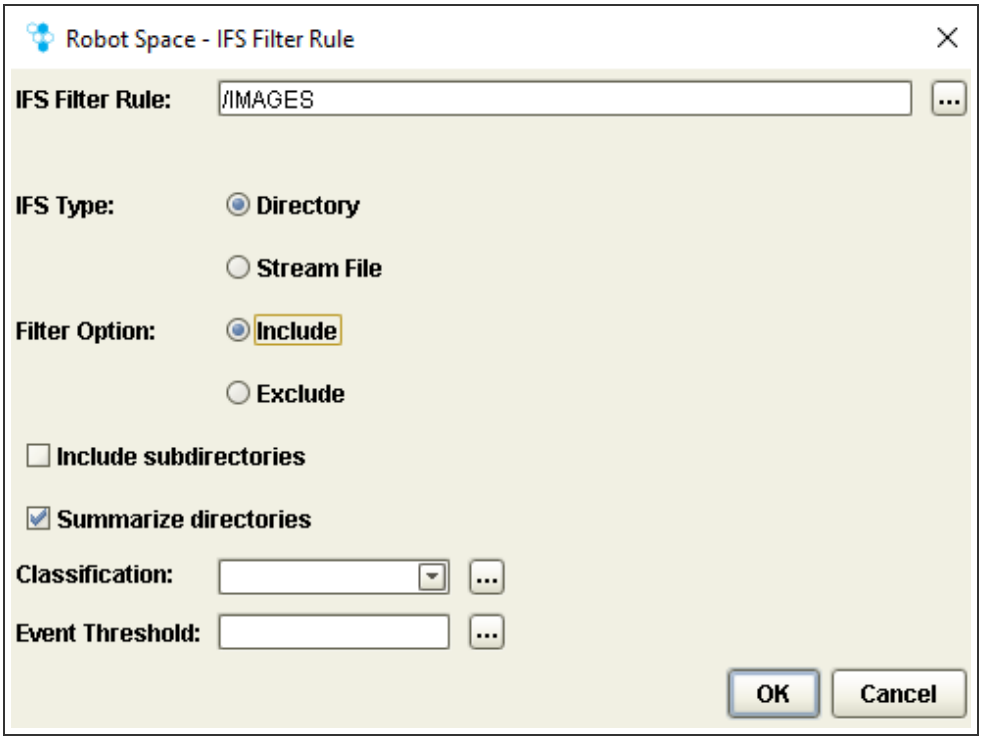
The IFS Filter tab allows you to create a filter for the IFS directories, subdirectories, and files in a collection group.



Select a filter and click **Delete** to remove it from the list. Note: This action does not remove system objects.

Click **Add** to add an IFS filter. Select an existing filter and click **Edit** to modify it or **Copy** to create a new filter based on the currently selected filter.

The IFS Filter Rule window displays:



For the IFS Filter Rule, enter the path to an IFS directory or file. Click the Finder button to display a list of the IFS objects on your system or enter a generic filter.

- Enter /DEV* to use all files in a directory for the filter.
- QOpenSys subdirectories are case sensitive. All other directories are automatically saved in uppercase format.

Select an IFS type for the filter, a directory or a particular file, to determine the object type to use for this filter.

For the Filter Option, select Include to collect statistic records. Select Exclude to filter out output queues from a collection.

Select Include subdirectories to include all nested directories under the directory specified in the IFS Filter Rule field.

Note: This option is not enabled when you select Exclude as the Filter Option; however you can enter /HOME in the IFS Filter Rule field and select Exclude as the Filter Option to exclude all files in a directory.

Select Summarize directories to summarize the size of the files in the directory into the directory history record. When unchecked, a history record is created for each file in the directory.

Note: This field is not enabled when you select Exclude as the Filter Option.

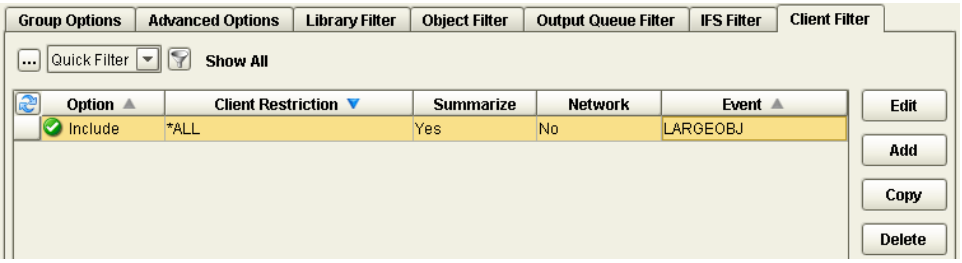
For Classification, enter a classification name or click the Finder button to display a list of the available classifications. The default is *DEFAULT. See Overview of Collection Classifications for more information.

For Event Threshold, enter an event threshold or click the Finder button to select from a list of available event thresholds. See Overview of Collection Event Thresholds for more information.

Click **OK** to return to the IFS Filter tab.

Collection Group Client Filters

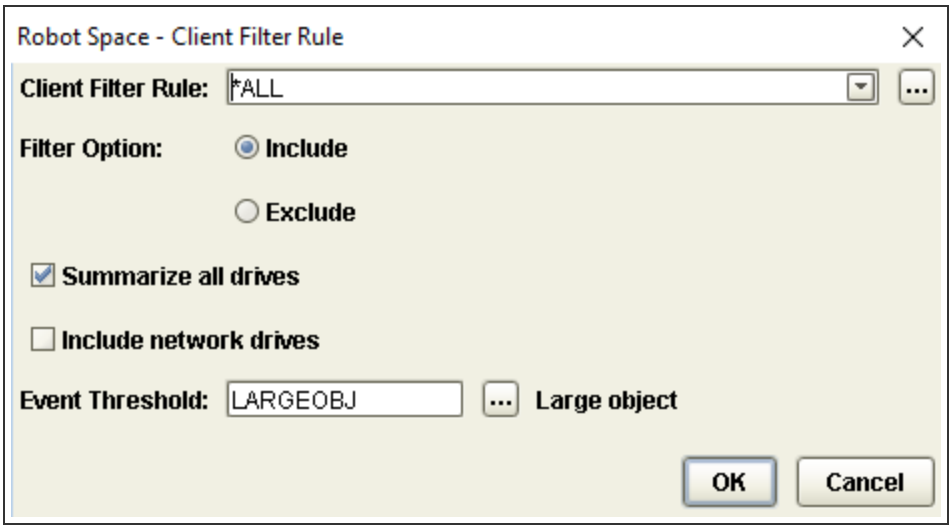
The Client Filter tab allows you to create a filter for the IBM i, PC, and UNIX clients in a collection group that are attached to your IBM i using Robot Client. Robot Client must be installed on your system to use this option.



Select a filter and click **Delete** to remove it from the list. This action does not remove client definitions from Robot Client.

Click **Add** to add a Client Filter. Select an existing filter and click **Edit** to modify it or **Copy** to create a new filter based on the currently selected filter.

The Client Filter Rule window displays:



For the Client Filter Rule, enter a client name or use *ALL (the default). Click the Finder button to select from a list of clients (attached using Robot Client) on your system.

For the Filter Option, select to include or exclude the clients you specified.

Select Summarize all drives to automatically collect detail statistics for all drives on the specified computer(s) or server(s). When not selected (the default), one statistic record is created for all specified drives.

Note: This field is not enabled when you select Exclude as the Filter Option.

Select Include network drives to report the storage for network drives that are connected to the client. Caution: Use this option for one client only. When used with the *ALL option for the Client Filter Rule, shared network drives could be reported more than once by multiple clients.

Note: This field is not enabled when you select Exclude as the Filter Option.

For Event Threshold, enter an event threshold or click the Finder button to select from a list of available event thresholds. See Collection Event Thresholds, later in this section, for more information.

Overview of Collection Classifications

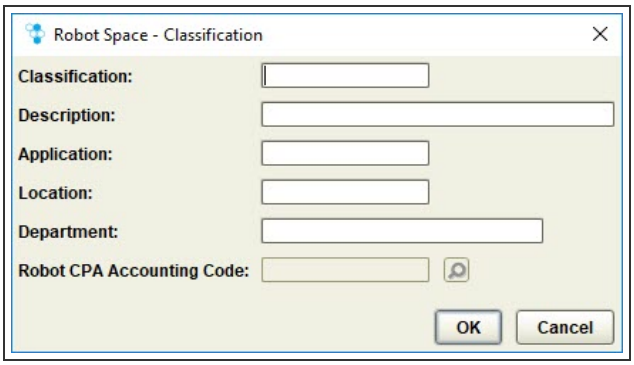
A collection classification is a logical group of system objects. You can use a classification with Robot CPA, our IBM i usage reporting and chargeback software, to charge users for disk space use and for disk usage reports. You also can use collection classifications with Robot Query to track system object growth. Collection classes are reusable and can be used by more than one collection group. In addition, collection classes define the Application, Department, Location, and Accounting Code fields that are assigned to collection statistics. These fields are used to group collection summaries, reporting functions, and for use with Robot Query and combine the statistics into meaningful groups of information. See Robot Query for detailed information.

Adding and Editing Collection Classes

Use the Classification window to create collection classifications (classes). You must give each collection classification a name and description. Optionally, you can enter application, department, and location information for the classification.

Note: If you are using Robot CPA for disk usage chargeback, you can enter a Robot CPA Accounting Code, which automatically retrieves department and location information for the classification. Before you can do this, you must select the Link to Robot CPA Profile Records option on the Robot Space System Setup window. If you're not using Robot CPA, the Robot CPA Account Code field on the Classification window is disabled.

1. Right-click on Collection Classifications in the Tree view, or right-click on an existing collection class in the List view, and select Add to add a collection class.
2. Right-click on an existing collection class in the List view and select Properties to edit it. The Classification window displays.



Complete the following:

Classification and Description

Enter a name and description for the class. These fields are required.

Application, Location, Department

If you do not use RobotCPA, enter a location and department name for the class. If you use RobotCPA, the application, location, and department information is filled in for you.

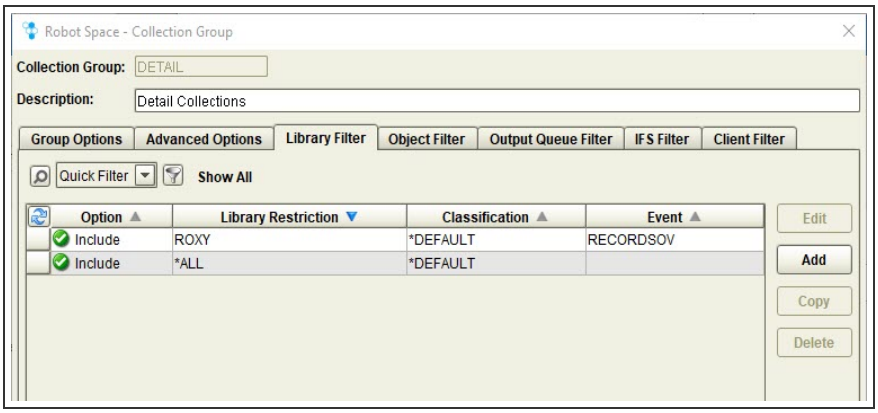
RobotCPA Accounting Code

If RobotCPA is installed on your system and you're using it for chargeback, enter an accounting code or click the Finder to display a list of all accounting codes on your system. If they are defined for the accounting code you select, the Location and Department fields are filled automatically.

Note: This field is disabled if you do not use RobotCPA or you have selected not to use it on the Robot Space System Setup window.

Assigning Collection Classifications

After you create collection classifications, you must assign them, and an event threshold, to a collection filter to collect specific objects. To perform these assignments, you use the Robot Space Filter Rule windows. You display these windows by clicking Add or Edit from the various Filter tabs on the Collection Group window.



Related Topics

Assigning a collection classification to a library filter

Assigning a collection classification to an object filter

Assigning a collection classification to an output queue filter

Assigning a collection classification to an IFS filter

Assigning a collection classification to a client filter

Copying a Collection Classification

If you want to create a new collection class that is similar to an existing one, you can copy the existing classification, rename it, and edit it.

1. In the List view, right-click on the classification you want to copy and select Copy. The Classification window displays with the properties of the class you selected, however, the Classification field is blank.
2. Enter a new name for the class and make changes to it as needed.

Overview of Collection Event Thresholds

You can create a collection event threshold to perform an action when a collection object reaches a threshold you've specified. You can use the same event threshold for multiple collection objects. Use the Collection Explorer to display event threshold history. See Collection Explorer for more information.

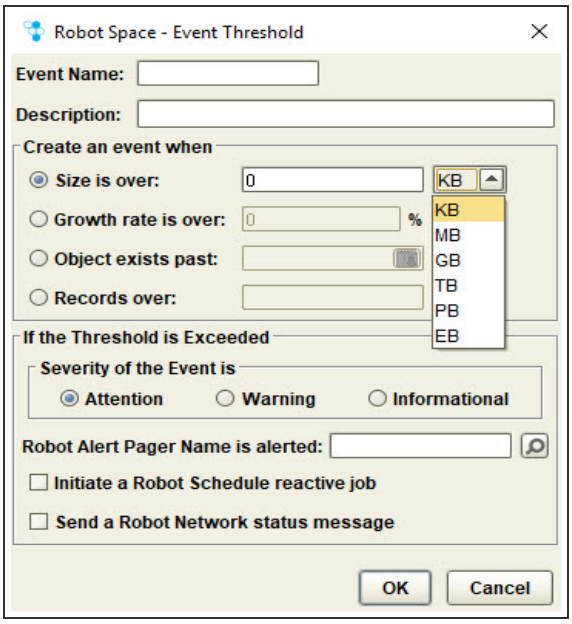
If you have Robot Alert installed, you can send a page, text, or e-mail message. If you have Robot Network installed, you can have message sent to the Robot Network Status Center. If you have Robot Schedule installed, you can kick off a job automatically.

Adding a Collection Event Threshold

Use the Event Threshold window to create Event Thresholds. You must give each collection event threshold a name and description. Then, you define whether the threshold is based on object size, object growth rate, or object age.

Note: You must have Robot Alert, Robot Network, or Robot Schedule installed on your system to use these products to respond when an object surpasses a threshold.

1. To add a event threshold, right-click on Collection Event Thresholds in the Tree view (or right-click on an event threshold in the List view) and select Add.
2. Right-click on an existing event threshold in the List view and select Properties to modify it. The Event Threshold window displays.



Complete the following:

Event Name and Description

Enter a name and description for the classification. These fields are required.

Create an event when

Select an event type and enter the threshold size, growth rate, records over, or object exists past date.

(If the Threshold is Exceeded) Severity of the Event is

Select a severity level for the status message when the threshold is exceeded. For example, you may want to see only the messages with a severity of Attention.

Robot Alert Pager Name is alerted

Enter the name of Robot Alert pager name.

Initiate a Robot Schedule Reactive Job

If you have Robot Schedule, click here to start a Robot Schedule job.

When the event occurs, it submits a SNDRBTDTA command using the event name as the PRQJOB parameter in the command. The status of the job will be Complete. For more information about setting up the job, see the Robot Schedule User guide.

Send a Robot Network Status Message

Select the type of message to display in the Robot Network Status Center: Informational, Warning, or Attention.

Copying a Collection Event Threshold

You can copy an existing event threshold and rename it to create an new event threshold that is similar.

1. In the List view, right-click the event threshold you want to copy and select Copy. The Event Threshold window displays with the properties of the event threshold you selected.
2. Enter a new name for the event threshold in the Event Name field and modify the threshold as necessary.

Overview of Robot Query

While the Collection Explorer uses filters to track the growth of certain objects, Robot Query allows you to create customized selection and sort criteria to make very specific requests about system objects. Robot Query also allows you to view your query results as growth history graphs, growth trend graphs, and reports.

When you run a query, Robot Space gathers the data from its collections and displays it for the objects that meet the query's criteria. Robot Space provides many options for creating a query to ensure that it includes only the data you want. Criteria are stored in a query object so you can use it over and over again to see the data you need.

New queries are easy to create by copying a similar one and editing it. Robot Space ships with many predefined queries to make this task even easier. These sample queries have commonly used selection criteria. You can use them as they are, or edit them to meet your needs.

Related Topics

Overview of Selection Criteria

Total Size and Classification

Creating and Editing Queries

Importing and Exporting Queries

Running Queries

Total Size and Classification

The total size of a statistic record for a library includes its size and the size of all the objects in the library. The total size of a statistic record for an object in a library is the size of the object only. Note: When you use total size for summary queries, you should restrict your query to libraries or everything other than libraries only. Otherwise, object sizes can be doubled; their size is included in the total size of their library statistic record and their statistic record's total size.

The advantage of displaying the total size of libraries only is that all of the objects in each library can be grouped by owner, application, location, department, and accounting code.

Classification (or class) size is the preferred size to use in summary queries. The size of each object is summarized by the object's owner, application, location, department, and accounting code rather than by its libraries.

The class size for a library is the total size of the library less any objects that have their own individual statistics records. The class size of an object statistic is the same as the total size of the object statistic.

Overview of Selection Criteria

A query object has one or more field comparisons, which consist of a field description, operator, and value. Each field comparison is a separate line in the query object. Each line consists of the following:

Line # - Indicates the order in which the item is used to select objects.

AND/OR - Used to set up powerful data conditions with AND/OR logic.

Field - Specifies the field to be tested. Click the Prompt button to display valid fields.

Operator - Provides the value to be used by the comparison or operation. Click the Prompt button to display valid values. Comparison operators include standard values (Equal, Greater Than, and so forth), in addition to Like and Not Like. Use Like and Not Like to determine if the contents of the field are similar or not similar to a value. These operands require an underscore (_) or percent (%) in the Value field. An underscore (_) represents any 1 character; a percent (%) represents 0 or more characters. For example, SOF% includes all names that begin with SOF; %SOF% includes all names with the character string "SOF" that may be preceded or followed by other characters.

Value - The value you want the field compared against.

Creating and Editing Queries

There are several ways to add library and IFS queries to Robot Space.

- Import them from other systems running Robot Space;
- Copy an existing query, rename it, and change its options as necessary
- Create and add a new library query.

A query object has three parts: a description, selection criteria, and sorting criteria. The description includes its name, output type (display, report, graph, or trend), and whether the query is a detail or summary query.

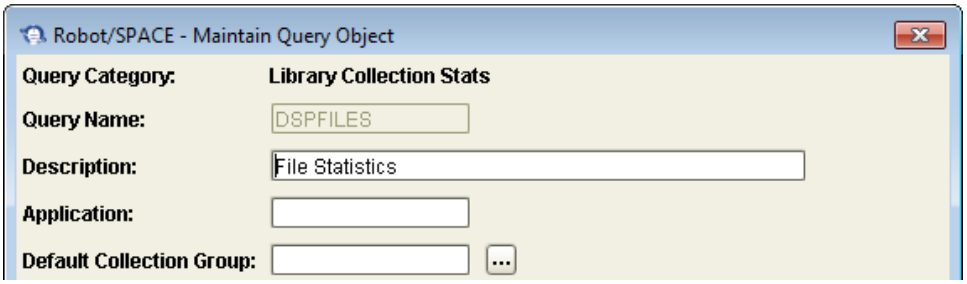
Selection criteria consists of one or more field comparisons, which include a field description, operator, and value (for example, Department = Sales). It can contain multiple comparison criteria to narrow down the list of objects as much as you need. Optional sorting criteria specify how the information is sorted on the detail query displays. For example, you can list information by department and total size in descending order.

Right-click **Library Queries** and select **Add** to add a new library query or right-click an existing query in the List view and select **Properties** to modify it or **Copy** to create a new query based on the selected one.

The Maintain Query Object window displays.

Basic Query Object Setup

Use the top portion of the Maintain Query Object window to define the query you're adding or modify an existing query.



Enter a name and description for the query. **Note:** You cannot edit the name of an existing query.

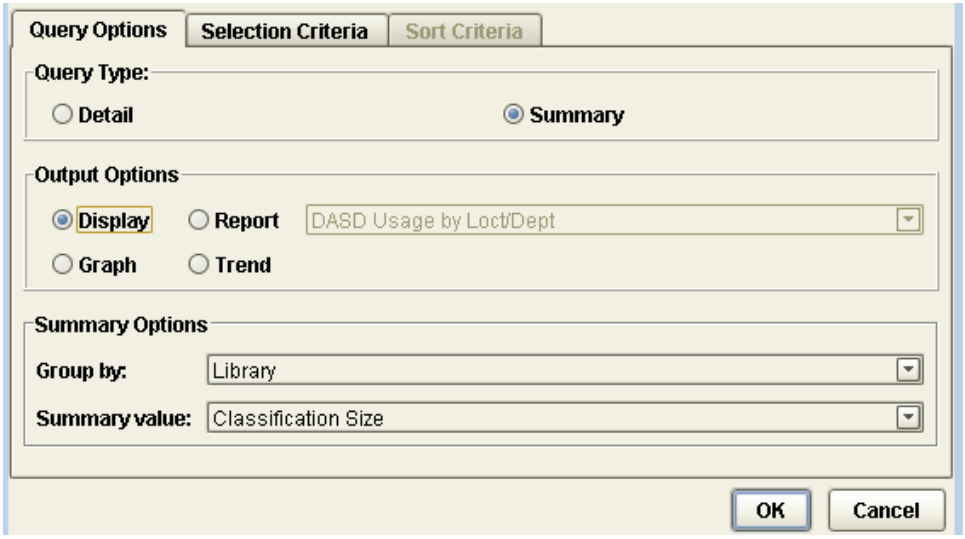
Enter an application name if the query is for objects from a specific application.

Enter a collection group name or click the Finder button to select from a list of collection groups. The group you select is the default for the query. Note: When you run the query interactively, you are presented with a choice to run it against another collection group, if desired.

Specifying Query Options

The Query Options tab displays by default. Use the Query Options tab to specify whether the query is detail or summary. You also use this tab to select an output option for the query: display (query results display in a list), as a report, growth history

graph, or a growth trend graph. In addition, the Query Options tab allows you to specify summary options for the query (for summary queries only).



Select the query type. Detail queries display statistics for each object that meets the selection criteria. Summary queries display only totals grouped by the field you specify (for example, department or location). Note: Only summary queries can be used in graphs and trends. If you select the Detail option on this window, the Graph and Trend output types are disabled.

Note: The Sort Criteria tab is not available for Summary Query Types.

Select the output type. If you select Report, click the arrow to choose a report format. Based on the report format you select, the Summary Options are set for you when the query is saved.

Select how you want to group the summaries for the selected output option. For example, if you select Graph as the Output Option and specify Accounting Code in the Group by field, the graph displays the total size of each accounting code from the statistics you select for the collection group.

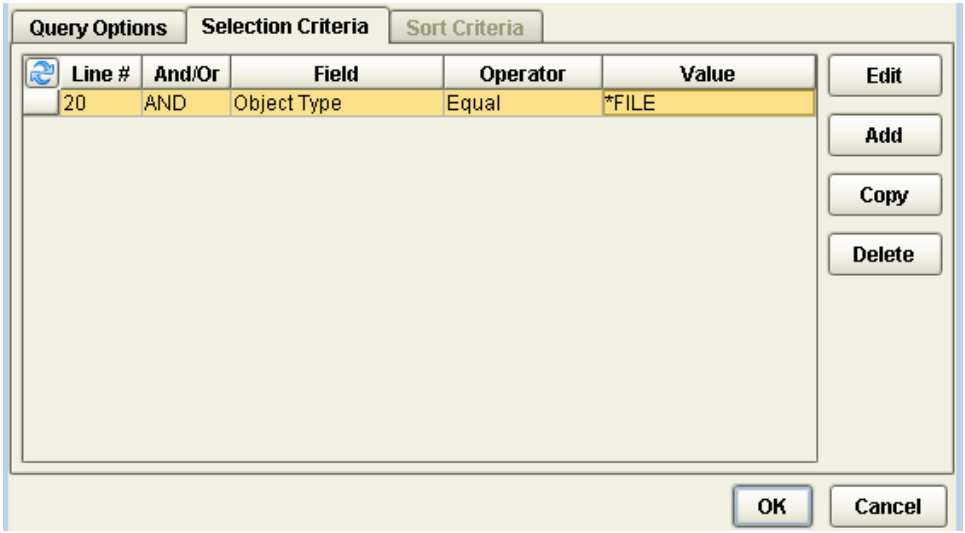
Select how you want to total the summary statistics for the selected output option, by Total Size or Classification Size. The Total Size of a statistic record for a library includes its size and the size of all the objects in the library. The Total Size of a statistic record for an object in a library is the size of the object only. The Classification Size (should be used for summary queries) allows you to see the size of each object, summarized by owner, application, location, department, and accounting code (instead of its libraries).

See Total Size and Classification for more information.

Specifying Selection Criteria

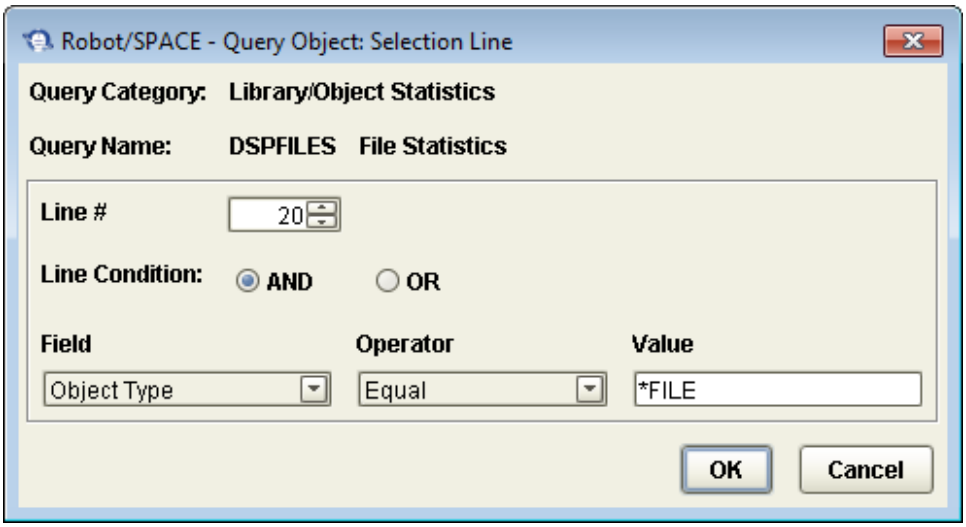
Use the Selection Criteria tab to define one or more specific statements for the query. You can use field comparisons and the AND/OR logic to create very specific criteria that select only the objects you want to analyze. See Overview of Selection Criteria for a detailed description and an example of how to create selection criteria.

Note: After you have defined a query, you can edit a query's selection criteria from the List view: right-click it and select Selection Options.



Click **Add** to add a selection statement or select an existing statement and click **Edit** to modify it.

The Query Object: Selection Line window displays.



Enter a line number, which determines the statement's position in the query.

Select the condition for the line: AND or OR.

Click the arrow to select from a list of field items, such as accounting code, date last used, growth (MB), and more.

Click the arrow to select an operator, such as equal, not equal, like, not like, greater, and more.

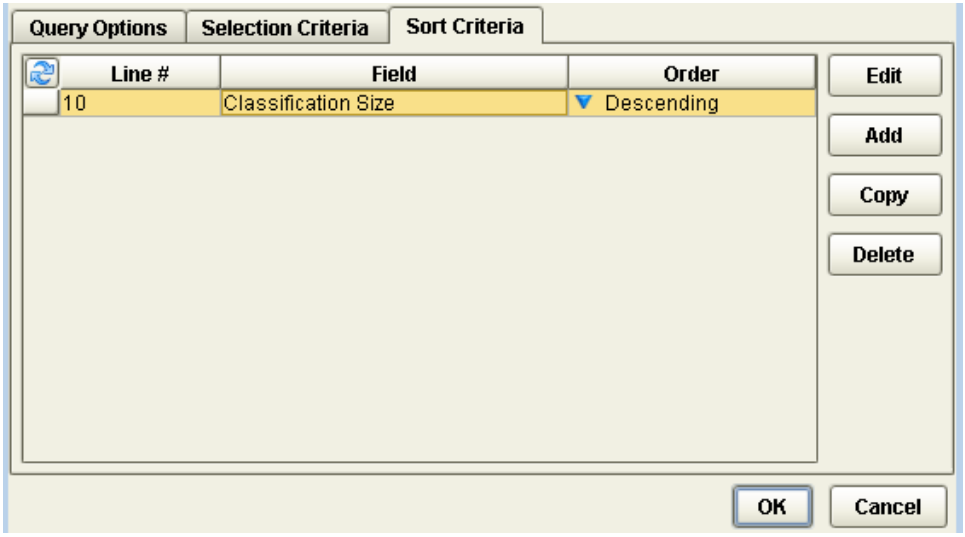
Enter a specific value (for example, PRODUCTION) or a generic value for the statement such as PROD*.

Click **OK** to save the changes or the new statement and return to the Selection Criteria tab.

Specifying Sort Criteria

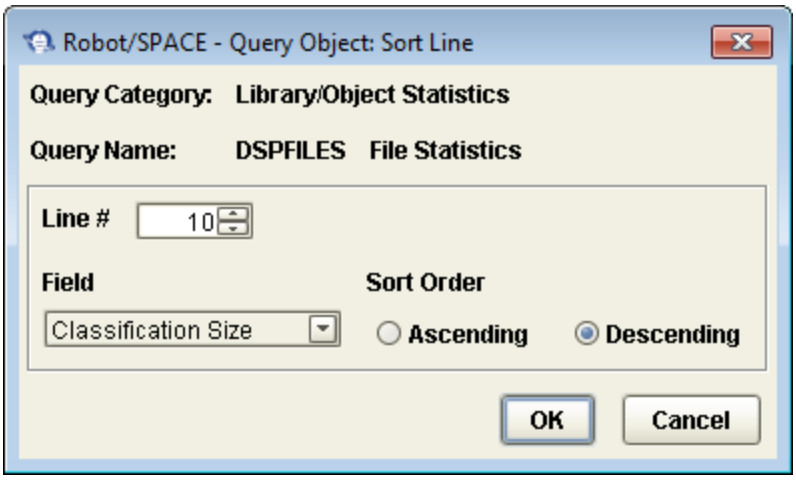
If you have defined a Detail query, the Sort Criteria tab is enabled and allows you to specify how you want the query output sorted. You can sort objects in ascending or descending order by field name, which you define on the Query Object: Sort Line window.

Note: You also can edit a query's sort criteria from the List view by right-clicking it and selecting **Sort Options**.



Click **Add** to add a sort rule or select an existing rule and click **Edit** to modify it.

The Query Object: Sort Line window displays:



Enter a line number, which determines the rule's position in the query.

Note: You can change the order of the operands by changing the line number.

Click the arrow to select from a list of field items.

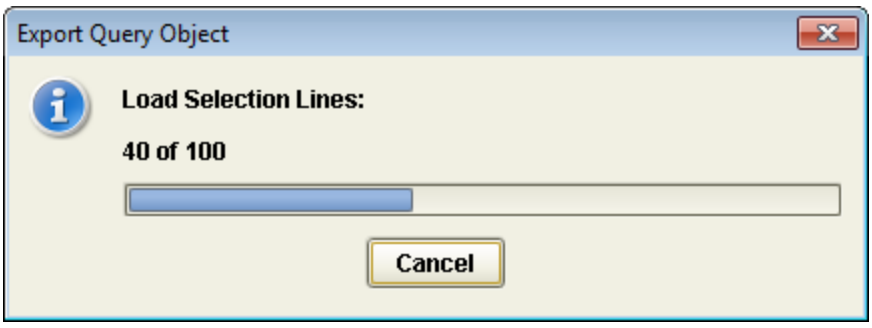
Select the sort order: Ascending or Descending.

Click **OK** to save the changes or the new rule and return to the Sort Criteria tab.

Importing and Exporting Queries

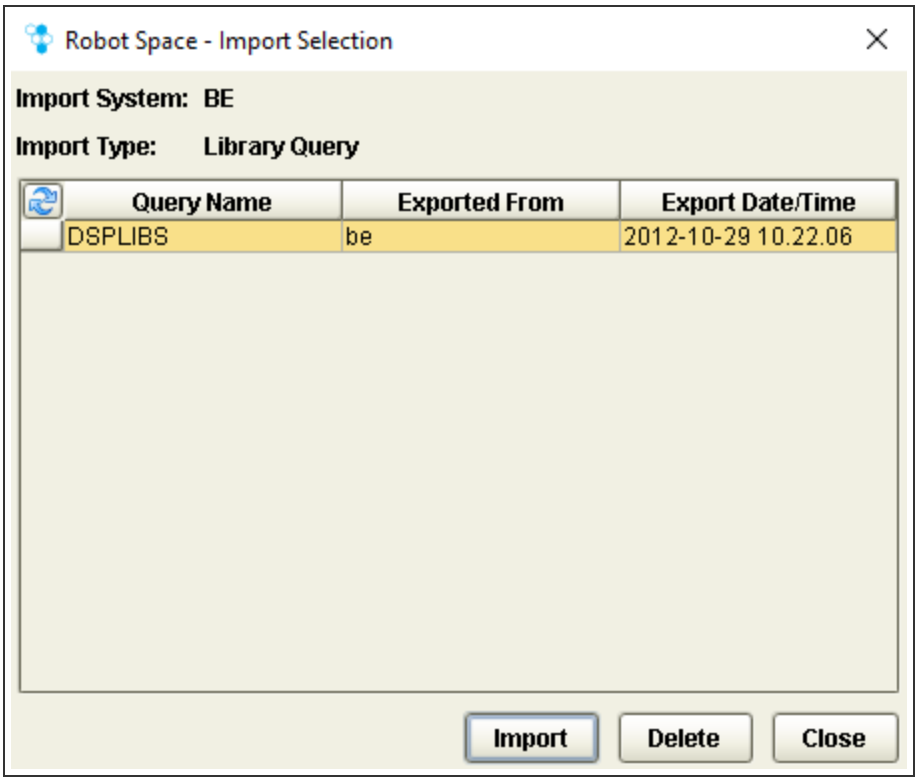
You can export queries to your PC then import them to any systems where Robot Space is installed. All query type, output, and summary settings, as well as selection criteria and sort options, are included when a query is imported on a new system. If an existing query has the same name as the one you are importing, the existing query is replaced.

On the system with the query you want to export, right-click the query and select **Export**. The Export Storage Monitor window displays briefly.



Log onto a new system, right-click **Library Queries** or **IFS Queries** in the Tree view and select **Import**.

The Import Selection window displays the Import System and Type, Query Name, Export system, and the date and time.



Click **Import**. The Confirmation window displays the name of the Export system and the time and date when the query was exported.

Click **Yes** to save the new query; **No** to cancel the process.

Running Queries

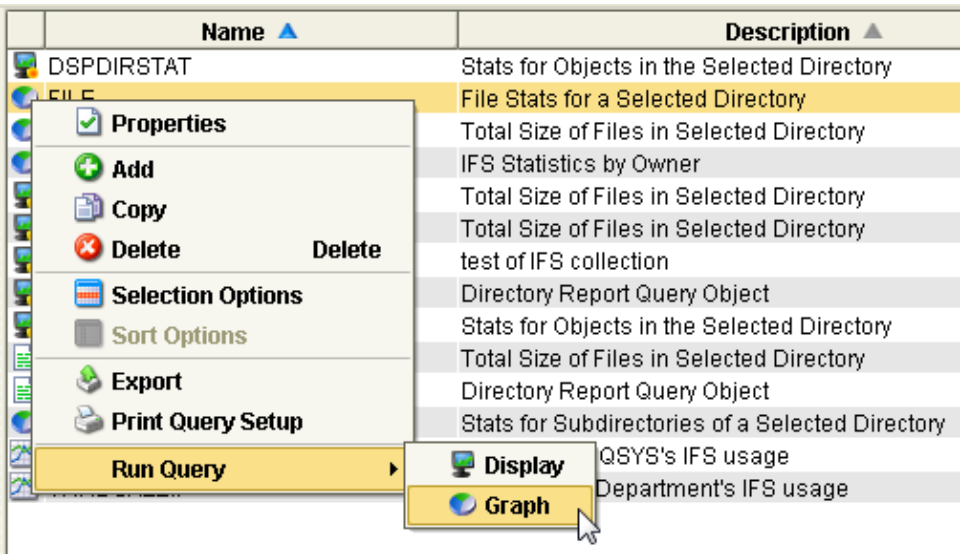
You can run a query across any collection group. When you run the query, you can select to use the collection group's most recent collection or a range of collections.

For detail queries, you can display results in a PC list or report. For summary queries, you can display a PC list, report, summary graph, or growth trend graph.

The icon next to the query name (in the List view) indicates the type of query and the selected output option.

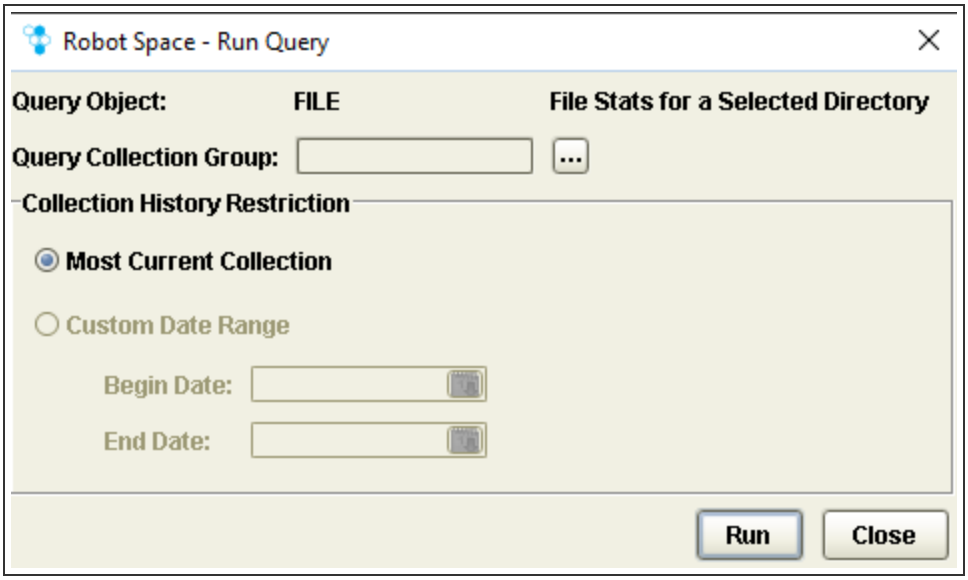
Icon	Output
	PC list
	Summary graph
	Report
	Growth trend graph
	Icons with a star are detail queries. Icons without a star are summary queries.

In the List view, right-click the query name and point to **Run Query**.



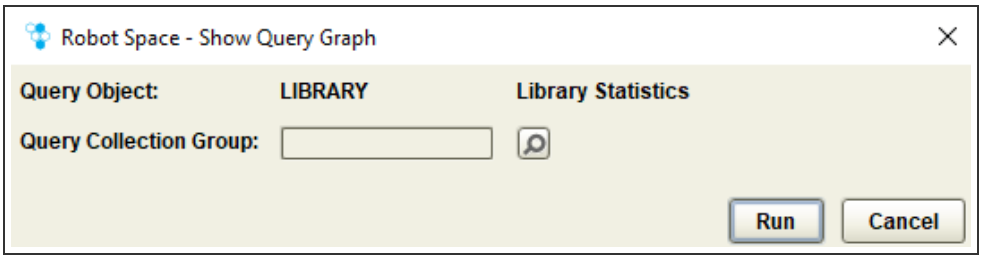
Select how you want to see the query results:

- If you select **Display**, you can select the collection group and collection you want to run the query against.



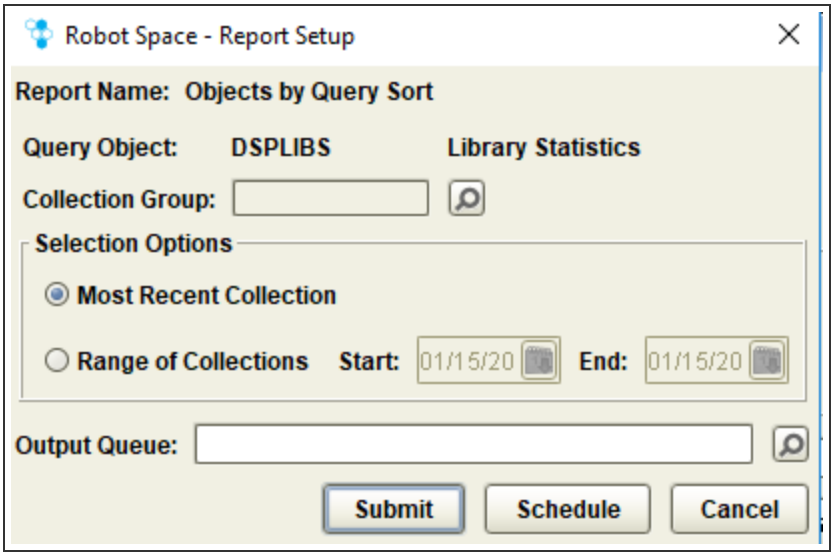
The results display in a PC list.

- If you select **Graph** or **Trend**, you can select the collection group you want to run the query against.



The results display in a growth history graph or growth trend graph.

- If you select **Report**, you can select the collection group and collection you want to run the query against. You also can enter an output queue for the report.



Overview of Reports

Robot Space includes multiple reports to assist you in monitoring your IBM i disk space. Other reports help you manage the tools in Robot Space that you use for disk space monitoring. These include system reports, such as the Good Morning Report and the System Health Report, that give you feedback on the largest objects on your system. In addition, collection reports detail library and IFS growth. Whether you want a highlevel summary or a comprehensive analysis of your disk space usage (or something in-between), Robot Space can accommodate your needs.

System Reports

Report	Description
System Reports	
Good Morning Report	Lists the largest libraries, objects, directories, and IFS files on your system. You also can include collection events, monitored ASP information, monitored job information, and storage audit information.
System Health Report	Lists the largest libraries or only the libraries over a specified minimum size (in MB). You also can list the objects, output queues, and spooled files over a specified minimum size (in MB). Note: You also can use the SPCHEALTH command to run this report. See IBM i Commands for more information.
Product Security Setup Report	Lists security settings information for a specific role. You can select to print security information for all roles defined in Robot Space.
Monitor Reports	
Monitor Setup Report	Lists ASP monitor and active job monitor setup information.
Storage Audit Reports	
Storage Setup Report	Lists the setup and associated task information for a particular audit or all storage audits.
Collection Reports	
Collection Setup Report	Lists the setup and collection group information for a particular group or all collection groups.
Total DASD Report	Lists the amount of DASD used by a specified collection group. You can base the report on a collection group's most recent collection, a specific collection, or a range of collection dates.
Utilization By ASP Report Report	Lists ASP utilization from a specified collection. You can base the report on a collection's most recent collection, a specific collection, or a range of collections. You also can list ASP detail, ASP group totals, and system totals.
Library Collection Statistics Report	Lists the amount of DASD used by the libraries in a collection group. You can base the report on a collection group's most recent collection or a range of collection dates.
Member Collection Statistics Report	Lists the members in a collection group that you specify. You can choose from the most recent collection with a start and end date.
IFS Collection Statistics Report	Lists the amount of DASD used by the IFS objects in a collection group. You can base the report on a collection group's most recent collection or a range of collection dates.
Client Collection Statistics Report	Lists the amount of DASD used by the clients in a collection group. You can base the report on a collection group's most recent collection or a range of collection dates.

Library Growth Report	Lists the growing libraries in a collection group. You can base the report on a library's minimum growth percentage and growth amount. Note: You also can use the SPCGRTHRPT command to run this report.
IFS Growth Report	Lists the growing IFS objects in a collection group. You can base the report on an IFS object's minimum growth percentage and growth amount. Note: You also can use the SPCGRTHRPT command to run this report.
Compare Collections Report	These reports allow you to select a collection group and list items that have changed or only the items that have grown by the number of MB you specify. You can base the report on a range of collection dates. You can use these reports to compare libraries, objects, file members, IFS directories, IFS files, and output queues. **Note:** You also can use the SPCCMPRPT command to run this report.
Query Reports	
Query Setup Report	Lists the setup and query selection information for a particular query or all queries.
Report Using Query Object	Runs a report based on the query selection criteria of an existing Robot Space query. **Note:** You are limited to using Query Objects that are defined with a "Report" as the output option.

Related Topics

Printing Reports

Scheduling Reports

Printing Reports

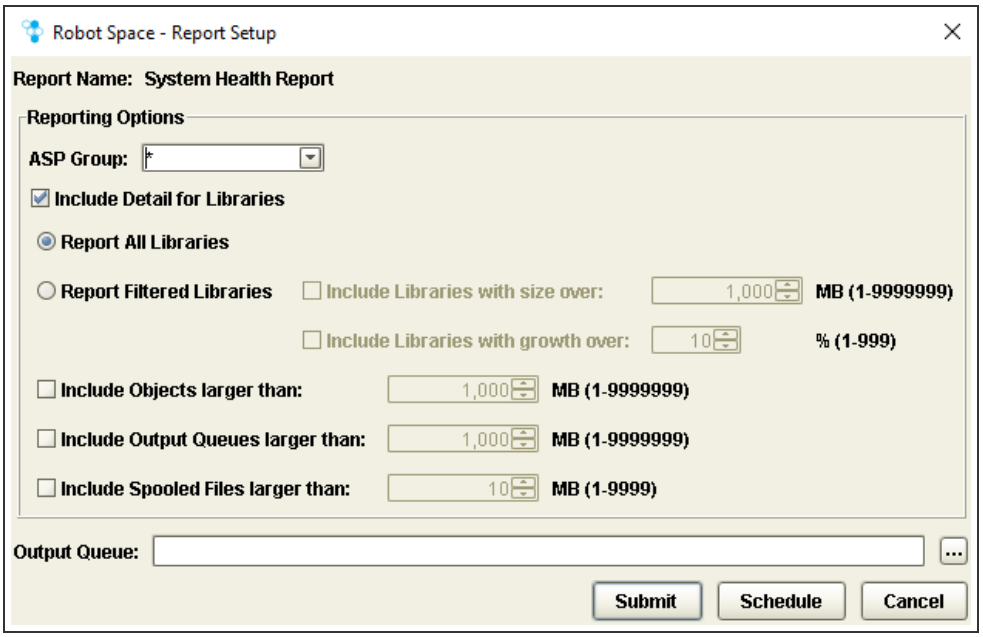
Select Reports in the Tree view to display the Robot Space report categories:

- System Reports
- Monitor Reports
- Audit Reports
- Collection Reports
- Query Reports.

Select a report category in the Tree view to display its dependent reports in the List view. You can click on the report name in the List view to see a brief summary of the information in the report in the QuickView. For example, if Print is an option, selecting it from the Tree view prints a report for all objects; selecting it from the List view prints a report for the specific object selected.

To set up and submit a report, right-click the report name in the List view and select Report Setup. The Report Setup window displays with the name of the report you selected. Use this window to specify the output queue for the report.

For most Robot Space reports, the Report Setup window also allows you to specify selection options (for example, a date range) for the report.

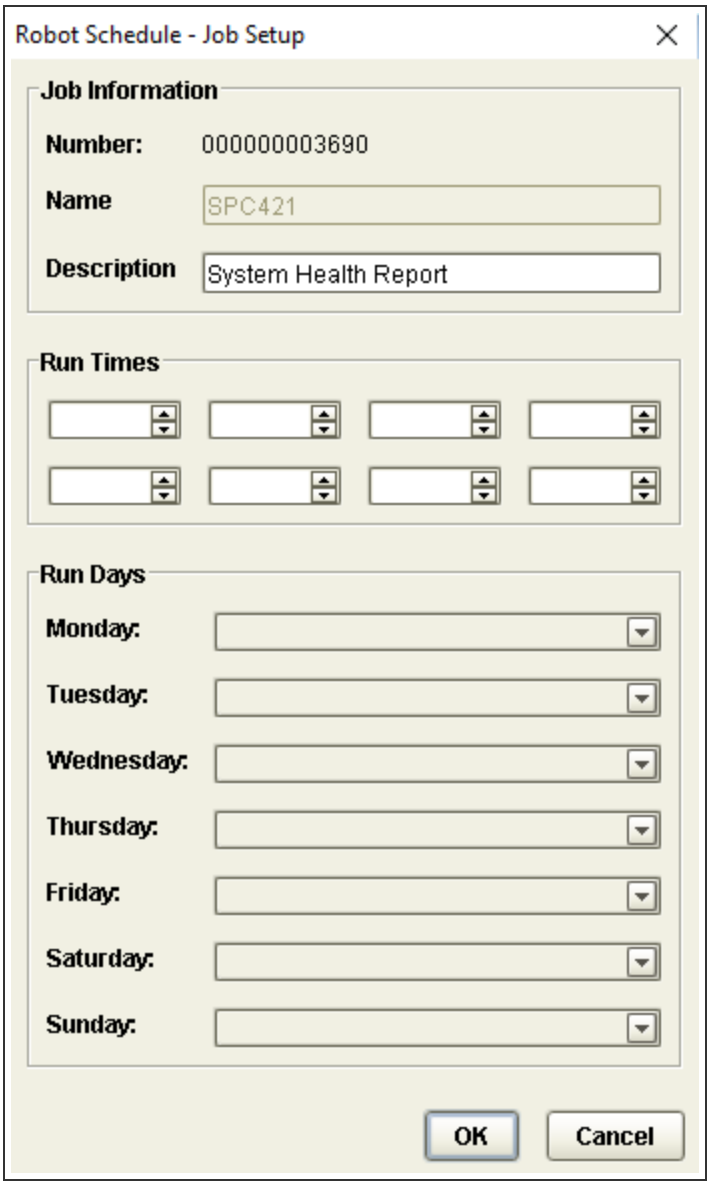


Scheduling Reports

To set up and submit or schedule a report:

Right-click the report name in the List View and select Report Setup. The Report Setup window displays with the name of the report you selected.

Use the Report Setup window to specify the output queue for the report, to submit the report or schedule it in Robot Schedule (if it is installed on your system), and to specify selection options (such as a date range).


Robot Schedule - Job Setup
Job Information
Number:
000000003690
Name
SPC421
Description
System Health Report
Run Times
Run Days
Monday:
Tuesday:
Wednesday:
Thursday:
Friday:
Saturday:
Sunday:
OK
Cancel

Overview of System Setup

Robot Space Setup allows you to define product security options, system setup options, user preferences, and history purge options. When you click Setup in the Tree view, Product Security, System Setup, User Preferences, and History Purge display in the List view.

Use the Product Security options to enable security for the product, and authorize users for specific functions or data. Use the System Setup option to define the Robot Space collection options and options for RobotCPA, if it is installed on your system. The User Preferences option allows you to set table, graphing, and trending preferences. Use the History Purge option to submit and schedule the purging of collection statistics, threshold history, and storage audit history.

Related Topics

Creating Secured Roles

Setting Up Collection Options

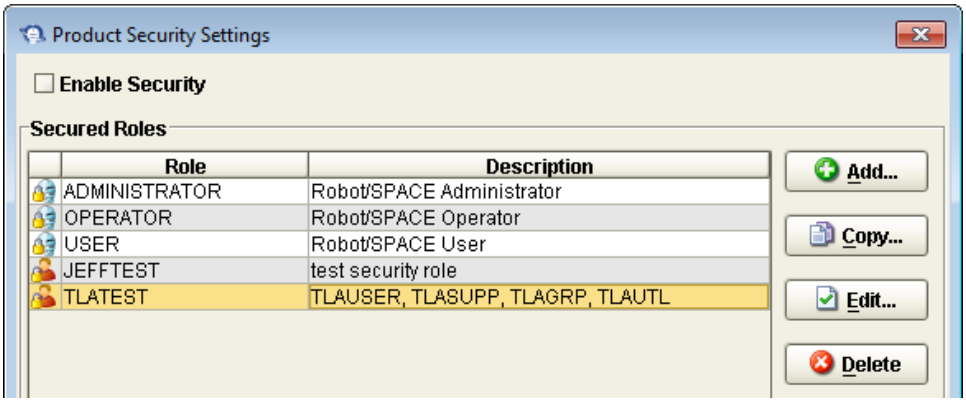
Setting User Preferences

Purging Collection Statistics and History Records

Creating Secured Roles

The Robot Space Product Security options allow you to enable security for Robot Space and to authorize user access to specific functions or data. Use the Product Security Settings window to enable or disable Robot Space security, view and maintain your existing security settings, create new roles, or delete existing ones (you cannot delete the three standard Robot Space roles: Administrator, Operator, and User).

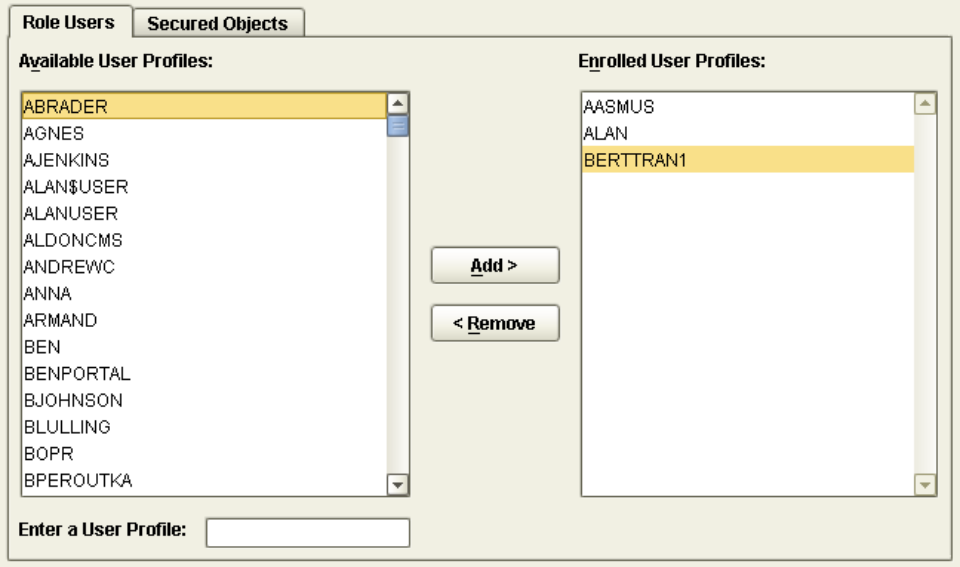
1. Double-click **Product Security** to open the Product Security Settings window.



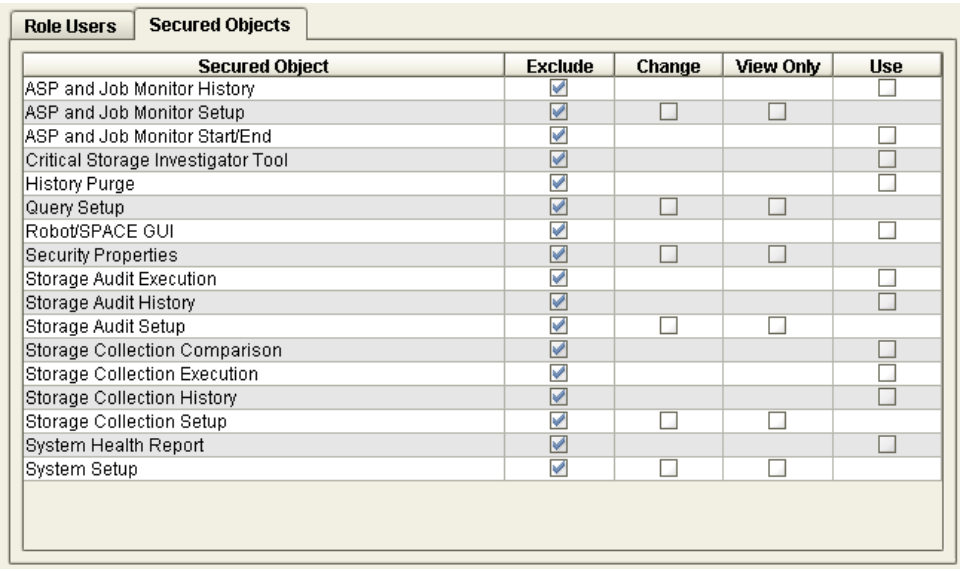
2. Click **Enable Security** to turn on security for Robot Space. Note: When security is enabled, users with *ALLOBJ special authority who are not defined to a role are considered administrators by default.
3. Click **Add** to define a new role. The Role Properties window displays.
4. Use the Role Properties window to add new security roles, or copy them from existing ones. You also use the Role Properties window to add users to, or remove them from, security roles.

   Note: A user may be a member of only one role at a time.
5. The Role Properties window displays:

6. Enter a name for the role in the Role field, and a description in the Description field.
7. Select one or more user profiles (by holding down the shift key) to include in the new security role and click Add. The profiles are moved to the Enrolled User Profiles view. You can also type a user profile in the Enter a User Profile field and press Enter to add it to the Enrolled User Profiles view. To remove a user profile, select one or more user profiles and click Remove.



8. Use the Secured Objects tab to set permissions for each secured object.

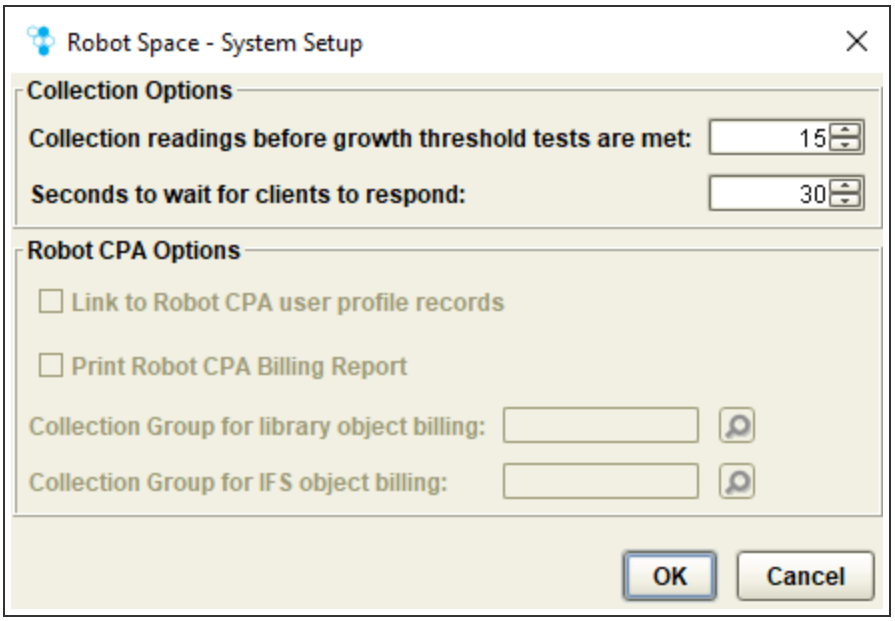


9. Select the permission level for each secured object in this role:
   - Exclude: The role cannot access this object.
   - Change: The users can use, view, and change this object.
   - View Only: The users can use and view this object, but not change it.
   - Use: The users can use this object, but not view or change it.
10. When you are ready, click **OK** to return to the Product Security Settings window and display the new role. Or, click **Cancel** to cancel the process.

Setting Up Collection Options

Use the System Setup window to specify the collection options for Robot Space. You can specify the number of readings before growth threshold tests are met and how long to wait for clients using Robot Client to respond. If Robot CPA is installed on your system, you can specify whether to print a detailed billing report, as well as the specific collection group to use for library object and IFS object billing. The changes you enter in this window affect all users.

Right-click **System Setup** and select **Properties** to display the System Setup window.



Collection Options

Enter the number of collections to collect before a growth threshold is met. For example, if you enter 15, Robot Space evaluates the last 15 collections to determine whether a growth threshold was met. Note: This field does not affect ASP storage and unprotected storage thresholds.

If you use Robot Client to collect client statistics, enter the number of seconds you want Robot Space to wait for a response from the clients. There will be no collection on a client if it does not respond within the limit you set.

Robot CPA Options

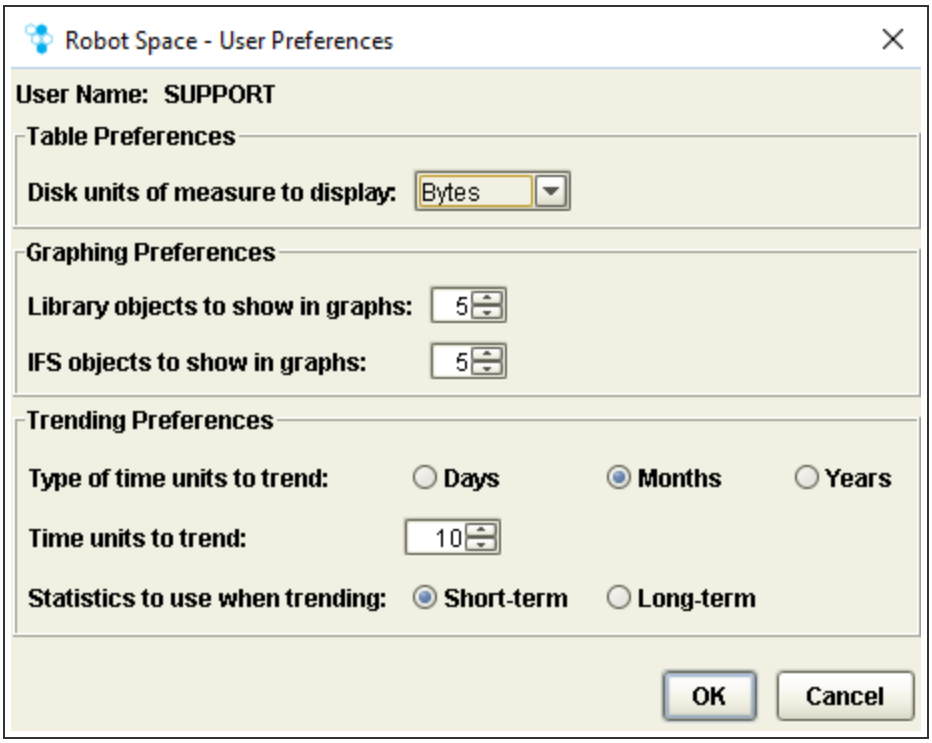
You can select to link to user profile records for billing disk usage in Robot CPA. Note: Robot CPA is required to use this option.

You can select to print a detailed billing report when Robot CPA calls Robot Space for chargeback information.

Enter the name of the collection groups that you want Robot CPA to use when calculating chargeback amounts for library object and IFS object billing. Click the Finder button to select a collection group.

Setting User Preferences

The User Preferences window lets you specify your Robot Space table, graphing, and trending preferences.



Select the unit of measure to use when displaying your disk space information. The options are Bytes, KB, MB, GB, TB, and PB.

Select the number of library objects to display in query graphs.

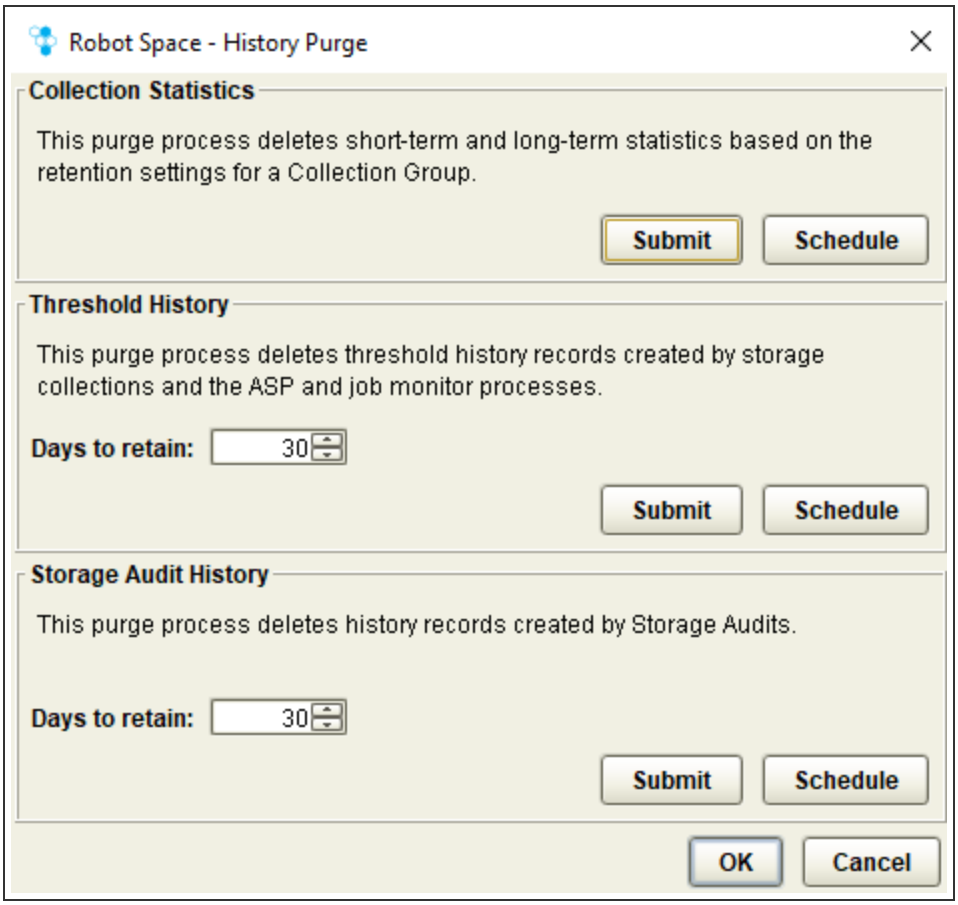
Select the number of IFS objects to display in query graphs.

Select the unit of time to use for collection summary growth trend graphs and the number of units to trend: days, months, or years. For example, if you select days as the unit of time and 10 as the units to trend, 10-day trending information is displayed.

Select the type of statistics to use for trending. When you set up collection groups, you specify retention periods for short- and long-term statistics.

Purging Collection Statistics and History Records

Use the History Purge window to submit or schedule the deletion of short- and long-term collection statistics, threshold history records, and storage audit history records. You can submit the deletion immediately or schedule the deletion to run in Robot Schedule, if it is installed on your system.



- The Collection Statistics section allows you to delete collection statistics based on the settings of each collection group.
- The Threshold History section allows you to specify how many days of threshold history records to retain when purging.
- The Storage Audit History section allows you to specify how many days of storage audit history records to retain when purging.

Click **Submit** for any option to purge the selected statistics or records immediately.

Click **Schedule** to schedule the deletion in Robot Schedule (if it is installed on your system). If you click Schedule for any of the purge processes, the Robot Schedule Job Setup window displays. Enter the run time and days to run for the purge command.

IBM i Commands

Robot Space includes several IBM i commands that allow you to start and stop ASP and job monitoring; change ASP monitoring thresholds; collect information for a collection group or run a storage audit; and run Query Reports, the Disk Space Growth report, and the System Health report. You can include these commands in another application program and call them when needed, or schedule them to run at regular times using Robot Schedule.

Start the Monitor Job(s) (SPCSTRMON)

Use the Start the Monitor Job(s) (SPCSTRMON) command to start ASP and/or job monitoring.

Enter the name of the monitor you want to start and press Enter. Or, press **function key 4** to see a list of valid values. Valid values include the following:

Value	Description
*ASP	Starts the ASP Monitor. You also can use the ASP value.
*QTEMP	Starts the Job QTEMP Monitor.
*SPLF	Starts the Job Spooled File Monitor.
*JTS	Starts the Job Temporary Storage Monitor. You can also use the JOB value.
*JOBMON	Starts all active job monitors (*QTEMP, *SPLF, and *JTS at the same time).
*ALL	Starts all job monitors and the ASP Monitor. You can also use the BOTH value.

Note: The ASP, JOB, and BOTH values will not be supported in future releases of Robot Space. If you are using these values in scheduled jobs, use the new values listed above to update your job.

End the Monitor Job(s) (SPCENDMON)

Use the End the Monitor Job(s) (SPCENDMON) command to stop ASP and/or job monitoring.

Enter the name of the monitor you want to start and press Enter. Or, press **function key 4** to see a list of valid values.. Valid values include the following:

Value	Description
*ASP	Stops the ASP Monitor. You also can use the ASP value.

*QTEMP	Stops the Job QTEMP Monitor.
*SPLF	Stops the Job Spooled File Monitor.
*JTS	Stops the Job Temporary Storage Monitor. You can also use the JOB value.
*JOBMON	Stops all active job monitors (*QTEMP, *SPLF, and *JTS at the same time).
*ALL	Stops all job monitors and the ASP Monitor. You can also use the BOTH value.

Note: The ASP, JOB, and BOTH values will not be supported in future releases of Robot Space. If you are using these values in scheduled jobs, use the new values listed above to update your job.

Control ASP Monitor Thresholds (SPCASPCTL)

Use the Control ASP Monitor Thresholds (SPCASPCTL) command to change and control the ASP monitoring thresholds. This command allows you to enable, disable, or continue to use the same ASP storage thresholds for one or all of your monitored ASPs.

Enter the number of the ASP whose storage thresholds you want to enable or disable. If you want the thresholds to apply to all ASPs, enter *ALL. Press function key 4 to see available ASP numbers.

Enter whether you want to enable or disable the ASP storage threshold settings.

The possible values are:

Value	Description
*SAME	Use the current storage threshold setting, either enabled or disabled.
*ENABLED	Enables the storage threshold for the specified ASP(s).
*DISABLED	Disables the storage threshold for the specified ASP(s).

Enter whether you want to enable or disable the growth rate threshold for the specified ASP(s).

The possible values are:

Value	Description
*SAME	Use the current ASP growth rate threshold setting, either enabled or disabled.
*ENABLED	Enables the storage threshold for the specified ASP(s).
*DISABLED	Disables the storage threshold for the specified ASP(s).

Enter whether you want to enable or disable the unprotected storage threshold. The Unprotected Storage parameter applies only to ASP 001. If you specified *ALL in the ASP Number or *ALL field, the Unprotected Storage parameter is used only for ASP 001.

The possible values are:

Value	Description
*SAME	Use the current unprotected threshold setting, either enabled or disabled.
*ENABLED	Enables the unprotected storage threshold for ASP 001.
*DISABLED	Disables the unprotected storage threshold for ASP 001.

Collect Disk Information (SPCCOLLECT)

Use the Collect Disk Information (SPCCOLLECT) command to run a collection for a collection group. A collection collects statistics for the system objects defined in the collection group. You can collect statistics for native IBM i objects, IFS objects, and even for clients connected to your IBM i with Robot Client.

You use the collected statistics to display growth history graphs and growth trend graphs that show you the growth of the selected objects over time, and predict future growth of the selected objects.

Enter the name of the collection group you want to run and press Enter. You can also press function key 4 to see a list of available collection group names.

Enter *YES to perform a long-term collection. Enter *NO to perform a short-term collection. See Storage Collections, earlier in this User Guide, for detailed information on the difference between short- and long-term collections.

Run Storage Audit (SPCAUDIT)

Use the Run Storage Audit (SPCAUDIT) command to specify and run a storage audit.

Enter the name of the storage audit that you want to run and press Enter. You can also press function key 4 to see a list of available storage audit names.

Compare Objects Report (SPCCMPRPT)

Use the Compare Objects Report (SPCCMPRPT) command to run the Compare Object report. You can specify a collection group and compare the growth of its libraries or objects over a specific date range.

Enter the name of the collection group whose collections you want to compare. Press function key 4 to see a list of group names.

Use the Compare Type (COMPTYPE) command to specify if you want to compare libraries or objects in the collection group.

The possible values are:

Value	Description
*LIB	Compares libraries in the collection group.
*OBJ	Compares objects in the collection group.

Press function key 4 to see other compare values.

Enter a starting date for the comparison.

Note: If a collection run does not exist for the date you enter, Robot Space uses the first collection run prior to the specified date.

The possible values are:

Value	Description
*FIRST	Uses the first available collection run for the collection group.
-n Days	Specify the number of days prior to the date of the ending collection run as the collection run to use.
yyyy-mm-dd	Enter the specific date of a collection run in yyyy-mm-dd format.

Enter the ending date for the comparison period. Note: If a collection run does not exist for the date you enter, Robot Space uses the first collection run prior to the specified date.

The possible values are:

Value	Description
*LAST	Uses the most recent collection run in the collection group.
yyyy-mm-dd	Enter the specific date of a collection run in yyyy-mm-dd format.

Specify a minimum size for the libraries or objects that should be included in the comparison report. The value entered applies to libraries if you specified *LIB in the Compare Type field, or objects if you specified *OBJ.

The possible values are:

Value	Description

*ALLCHG	Includes all objects whose size has changed (either larger or smaller) in the report.
1-9,999,999 MB	Enter the minimum size of the objects to be included in the comparison report. You can enter any value between 1 and 9,999,999 MB.

Robot Space Disk Growth Report (SPCGRTHRPT)

Use the (SPCGRTHRPT) command to run the Robot Space Disk Growth report. Specify a collection group and list objects that have grown more than a number of MB or the percent you specify over a specific date range.

Enter the name of the collection group whose collection statistics will be used for the report. Press function key 4 to see a list of valid collection group names.

Enter the beginning date of the current collection to be used for the beginning comparison values. Enter the date in System Date format; separators are optional. For example if your date format is MDY, you can enter MMDDYY or MM/DD/YY.

Enter the ending date of the current collection to be used for the ending comparison values. Enter the date in System Date format; separators are optional. For example if your date format is MDY, you can enter MMDDYY or MM/DD/YY.

Enter a minimum percentage value for the libraries/objects that will be included in the report.

Enter a minimum size in MB for the libraries/objects that will be included in the report.

System Health Report (SPCHEALTH)

Use the (SPCHEALTH) command to run the System Health Report. You can specify an ASP group and list details for selected libraries. The details include: libraries larger than x MB; libraries that have grown x percent; objects larger than x MB; output queues larger than x MB; and spooled files larger than x MB.

Note: You can only submit or schedule the SPCHEALTH command. It cannot be run interactively.

Enter the name of the ASP group for the report. This is a required parameter. Press function key 4 to see a list of valid ASP group names.

Specify the type of library detail to be included in the report.

The possible values are:

Value	Description
*ALL	Includes all library detail in the report.
*FILTER	Specify *FILTER to enter minimum values for the library information to be included in the report. If you specify *FILTER, you must enter the minimum values in the Libraries larger than or Libraries with growth over fields, or both.
*NONE	Do not include libraries in the System Health report.

If you specified *FILTER in the Details for Libraries field, you can enter a minimum library size for the libraries included in the report.

The possible values are:

Value	Description
*NONE	There is no minimum library size for the report.
1-9,999,999 MB	You can enter any value between 1 and 9,999,999 MB.

If you specified *FILTER in the Details for Libraries field, you can enter a minimum percentage of growth for the libraries included in the report.

The possible values are:

Value	Description
*NONE	There is no minimum library size for the report.
1-999 %	Enter a value between 1 and 999 percent.

Enter a minimum object size for the objects included in the report.

The possible values are:

Value	Description
*NONE	Do not include objects in the System Health report.
1-9,999,999 MB	You can enter any value between 1 and 9,999,999 MB.

Enter a minimum output queue size for the output queues included in the report.

The possible values are:

Value	Description
*NONE	Do not include output queues in the System Health report.

1-9,999,999 MB	You can enter any value between 1 and 9,999,999 MB.

Enter a minimum spooled file size for the spooled files included in the report.

The possible values are:

Value	Description
*NONE	Do not include spooled files in the System Health report.
1-9,999 MB	You can enter any value between 1 and 9,999 MB.

Run Robot Query Report (SPCQRYRPT)

Use the (SPCQRYRPT) command to run the Robot Query Report. You can specify a Robot Query object name, Collection Group, and how to run it.

Enter the name of the Robot Query object to use for the report. Press function key 4 to see a list of valid query objects.

Enter the name of the collection group whose collection statistics will be used for the report. Press function key 4 to see a list of valid collection group names. The default selection uses the collection group defi ned to the Query Object.

The Run Option determines what collection history to use for the report. *LASTRUN uses history information from the single most recent collection for the Collection Group. *RANGE allows you to specify a date range to use, which may include history from multiple collections during that date range.

For *RANGE, enter the ending date of the current collection to be used for the ending comparison values. Enter the date in System Date format; separators are optional. For example if your date format is MDY, you can enter MMDDYY or MM/DD/YY.