

# HP Storage Essentials

For the Windows® and Linux operating systems

Software Version: 9.70

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## File Servers Guide

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This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).

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# Contents

File Servers Guide .....	1
Contents .....	6
Overview of File System Viewer .....	10
Caveats with Using File System Viewer .....	11
Setting up File System Viewer .....	12
Working with Scans and Schedules in File System Viewer .....	12
Adding File Servers for File System Viewer to Scan .....	13
Deleting Volume Data .....	14
Scheduling Single and Multiple Scans .....	15
Adding a Schedule .....	15
Excluding Volumes from Scanning of File Extension Details .....	17
Credentials .....	17
Edit Credentials .....	19
Scan Now .....	19
Schedule for Multiple File Servers (Multiple Scans) .....	20
Warning and Alert for Deleted Volumes .....	22
Scan Schedules Tab .....	23
Editing a Scan Schedule .....	23
Scan Status Tab .....	25
Performing a Test Scan .....	26
Importing User Information from LDAP and Active Directory Servers .....	27
Importing User Information from a Discovered Exchange Domain Server .....	28
Modifying the Collection Schedule for LDAP Servers .....	29
Editing Discovery Information of LDAP Servers .....	29
About Reports for File System Viewer .....	30
Creating Policies for File System Viewer Users .....	31
Enable the Scanning of Reparse Points .....	32
Working with Rules for Gathering File Server Information .....	33

Add/Remove Volumes .....	34
The Create Rule Wizard .....	35
Step 1 – Create File Server Report Rule .....	35
Step 2 – Add Volumes to the File Server Report Rule .....	37
Edit Rule Wizard .....	38
Edit Rule .....	38
Add or Remove Volumes from a File Server Report Rule .....	38
Enabling Rules .....	39
Disabling Rules .....	39
Deleting Rules .....	39
Viewing Results in Report Tree .....	40
Enabling the Collection of Access Control Entry Data Collection for Directories on Windows Servers .....	40
About the FileSRMProvider.properties File .....	42
Defining UNC Volumes .....	42
Known Issues .....	43
<b>Viewing File System Information Across the Enterprise .....</b>	<b>46</b>
Setting a Context .....	47
Saving a View .....	47
Dashboard Information for the Enterprise .....	48
Properties of the File Servers .....	50
Extension View .....	51
Providing Expressions for the Filter Fields .....	51
Viewing Extension Groups .....	52
Creating Extension Groups .....	52
Editing Extension Groups .....	53
Deleting Extension Groups .....	53
Aging View for the Enterprise Context .....	53
Sizes View for the Enterprise Context .....	54
Managing Users on a File Server - Properties of Users .....	55
Viewing Details for a File System Viewer User .....	57
Adding File System Viewer Users .....	57

Modifying File System Viewer Users .....	58
Deleting File System Viewer Users .....	59
Exporting a List of Users .....	59
Modifying a List of Users .....	59
Viewing Detailed Information for a User .....	61
Importing a List of Users .....	62
Policies for a User .....	63
Adding Policies .....	63
Editing Policies .....	64
Testing Policies .....	64
Deleting Policies .....	65
Viewing Security and User Identifiers for All File Servers .....	65
Viewing Detailed Information About an Owner .....	66
Enabling the Ownership Tab on Windows .....	66
Trustee View .....	67
Viewing Detailed Trustee Data .....	67
How Data is Calculated in the Trustee View .....	69
Scan Status .....	69
Scan Schedule .....	70
Viewing Attribute Details .....	70
<b>Individual File Server Details .....</b>	<b>72</b>
Dashboard Information for a File Server .....	72
Properties for a File Server .....	74
Finding Volume Details .....	75
Type of Files on a File Server .....	76
Extension Groups .....	77
Filtering Files .....	79
Aging Properties of Files on a File Server .....	79
Size Group Distribution Information .....	80
Users for a File Server .....	81
Ownership Information for a File Server .....	82
Trustee Information for a File Server .....	82



Events for a File Server .....	83
Setting up a Filter .....	83
Selecting a Custom Time Period .....	86
Resetting a Filter .....	87
Setting up Advanced Filtering .....	88
Clearing Advance Filtering Options .....	90
Viewing Event Details .....	90
Sorting Events .....	90
Viewing Topology for a File Server .....	91
Scan Status for File Servers .....	91
Scan Schedule for File Servers .....	92
<b>Individual Volume Details .....</b>	<b>94</b>
Dashboard Information for a Volume .....	94
Properties for a Volume .....	96
File System Details for a Volume .....	97
Extensions on Volumes .....	99
Extensions at the File Level .....	99
Aging Information for a Volume .....	100
Aging Properties for Individual Files .....	101
File Sizes on a Volume .....	101
Individual File Sizes .....	102
Users on a Volume .....	102
Ownership Information for a Volume .....	103
Trustee Information for a Volume .....	104
Scan Status for Volumes .....	104
Explorer View .....	105
Directory Dashboard Details on a Volume .....	106
<b>We appreciate your feedback! .....</b>	<b>110</b>

# Chapter 1

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## Overview of File System Viewer

File System Viewer helps you to understand if your file storage infrastructure is growing in a managed, organized, and efficient manner. File System Viewer creates an information store about your storage system.

By combining file, logical, and physical storage resource monitoring and reporting with active SAN management, File System Viewer provides a single integrated system for managing your entire file storage infrastructure.

Use File System Viewer to obtain detailed information about file servers and volumes across your network. You can get summary information about your files from across your enterprise to a specific file server or volume.

File System Viewer can help you with answering the following questions.

### **Overall View – Dashboard**

- How do I obtain an overview of the following statistics?
  - Top five file servers by scanned space
  - Top 10 file extensions by size or count
  - Top five file extensions
  - Accessed age distribution by usage or count
- The usage is the total size of all the files with the particular extension.
- The count is the number of files with the particular extension.

### **Composition – Aging, Size**

- Why are there files on a system that has not been accessed for more than six months?
- What is the size group distribution on various file systems?
- Do we need hierarchical storage management or a store and delete policy?

### **Content – Extensions**

- Are file systems being used properly?
- Is there misuse of storage space?
- If there is misused space, who are the offenders?

### **Consumer – Users, Ownership, Applications**

- Who is using how much space?
- Is the usage planned?

#### Capacity – Used and Available

- What is the total available capacity?
- How much is being used?

File System Viewer does a recursive lookup on the file system and stores the information in an embedded database. File System Viewer can scan files very quickly because File System Viewer never opens the files.

You can use UNC shares to discover file system data from a server. To scan UNC volumes, you must define them in a UncShares.xml file. For details, see ["Defining UNC Volumes" on page 42](#).

## Caveats with Using File System Viewer

Keep in mind the following when using File System Viewer:

- The maximum number of threads File System Viewer can use is 15.
- If you do not see information for the file server, verify that the collector for the file server is running. You can verify this by selecting **Configuration > File System Viewer**. On the Scan Schedule tab, look in the Running? column. See ["Working with Scans and Schedules in File System Viewer" on the next page](#).
- File System Viewer is able to detect duplicate files only within a storage volume. File System Viewer cannot detect duplicate files that exist on different volumes. For example, if you have a duplicate file on two different storage volumes, File System Viewer is not able to detect the duplicate file.
- If you plan to have File System Viewer scan a host, make sure you have 80-120 MB for each set of one million files. The actual size depends on the length of the file names.
- If you want to use File System Viewer bulk import capability for non-ASCII characters (Chinese, Japanese, Korean), the file should be created with UTF-8 encoding. Tools such as Notepad let you specify the encoding in the "Save As" dialog.
- Reparse points (junctions) for file servers on Microsoft Windows are scanned. For example, assume you create a junction named C:\DDrive that points to the root of the D drive. The content of the D drive is available under C:\DDrive. After a scan, information on capacity and amount used is displayed for the C drive. However, the sum of the file sizes on the C drive also includes the junction (C:\DDrive), which points to the root of the D drive. If you do not want to include the scanning of reparse points, see ["Enable the Scanning of Reparse Points" on page 32](#). Reparse points created using the Windows Disk Management tool are discovered as a drive that can be scanned independently.
- A storage volume on a member node that is shared as a cluster resource is not managed through the member node. It is available only from the cluster. The File System Viewer scheduler user interface does not list cluster shared volumes of a member node.
- To scan an entire volume, the credentials used to discover the host or the credentials provided to scan the volume must have read access to the entire directory structure of that volume.

## Setting up File System Viewer

To obtain information about your file servers and volumes, you must do the following:

1. Discover the host as described in "Step 1 – Discovering Your Hosts and Backup Manager Hosts" in the Installation Guide or User Guide.
2. Make File System Viewer aware of the file servers it needs to scan, as described in "Adding File Servers for File System Viewer to Scan" on the next page. Then, scan the file servers.  
You will not see data in File System Viewer until you complete this step.
3. Create schedules for scans, as described in "Working with Scans and Schedules in File System Viewer" below.
4. Import user information as described in "Importing User Information from LDAP and Active Directory Servers" on page 27.
5. Create rules for gathering file server information, as described in "Working with Rules for Gathering File Server Information" on page 33.
6. Enabling the collection of ACL data, as described in "Enabling the Collection of Access Control Entry Data Collection for Directories on Windows Servers" on page 40.

You will not see data in the Trustee view until you complete this step.

## Working with Scans and Schedules in File System Viewer

The File System Viewer simplifies the process of specifying file servers for scan schedules and for working with the scan schedules. The following is the File System Viewer main page displaying a list of file servers.

The screenshot shows the File System Viewer interface with the 'File Servers' tab selected. The interface includes navigation tabs for 'File Servers', 'Scan Schedule', 'Scan Status', 'Report Rules', 'LDAP Servers', and 'Effective Utilization Index'. Below the tabs, there is a section titled 'Create or View File Servers and set-up File Scans:' with a sub-note: 'Actions such as Adding or Deleting File Servers, setting Volume Specific Credentials, Scheduling Interval Based Scans, Deleting Volume Data, Test Scans and Stop Scans can be performed.' Below this are four buttons: 'Add File Server...', 'Delete Volume Data...', 'Schedule Multiple File Servers...', and 'Delete ✓'. A filter section allows selecting the Operating System (OS) from a dropdown menu (currently set to 'All') and entering a File Server Name. A 'Filter' button is also present. Below the filter section is a 'List of File Servers:' table with columns for File Server, Operating System, Operating System Version, On Cluster, Action, Test Scan, and Delete. The table contains three entries:

File Server	Operating System	Operating System Version	On Cluster	Action	Test Scan	Delete
<input type="checkbox"/> tpmmedia	Solaris	Generic_117350-02.5.8		Select	Test	Delete
<input type="checkbox"/> QA-WZK8	Windows Server(R) 2008	6.0.6001		Select	Test	Delete
<input type="checkbox"/> VLNNDM1	Windows			Select	Test	Delete

The File Servers tab displays a List of file servers from which you can choose a specific server. You can select the following actions in the associated pull-down menus: Select, Add Schedule, Credentials, Scan Now, and Stop Scan.

The screen enables you to filter by operating system, file server name, or both. The screen contains three buttons located across the upper part of the page:

- **Add File Server** – Adds a file server.
- **Schedule Multiple File Servers** – Opens a wizard to schedule more than one file server at a time.
- **Delete** – Deletes more than one file server at a time. You will see a confirmation page before the deletion occurs.

The screen displays a list of file servers, including name, operating system and version, and whether a file server is part of a cluster. Associated pull-down menus (in the Action column) enable you to select the following actions for selected file servers:

- **Add Schedule** – Opens the Add Schedule wizard to enable the addition of a new File Server Viewer schedule. Only one schedule can be added for file servers on hosts with agents prior to 6.0.
- **Credentials** – Starts a wizard that enables you to specify the credentials to be used for scan volumes on the file server. This functionality is supported for CIFS shares on Windows file servers, and all types of volumes for UNIX file servers that are supported by File Server Viewer.
- **Scan Now** – Enables you to perform a “run once” scan on a selected set of volumes on a specified file server immediately.
- **Stop Scan** – Stops all the File Server Viewer scans currently running on the file server, but does not stop the schedule.
- **Test Scan** – Enables you to perform Test Scan functionality. The feature is not available for file servers on virtual cluster hosts. See ["Performing a Test Scan" on page 26](#).
- **Delete File Server (icon)** – Deletes the File Server Application created on the host and deletes all File Server Viewer information collected on the file server.

Other tabs on the File System Viewer main screen include the following:

- **Scan Schedule** – Displays the screen used to set up and associate scan schedules to a selected file server. Functions available at the Scan Schedule screen include the Start and Stop scan buttons, Edit the schedule, and Delete (for individual file server schedule deletion and for deleting all the selected file server schedules).
- **Scan Status** – Provides information about the status of the most recent scan on each of the configured volumes.
- **Report Rules** – Displays the screen used to set up the rules for creating reports for specific needs.

## Adding File Servers for File System Viewer to Scan

You must make File System Viewer aware of file servers it needs to scan if you want to see information from your file servers.

File System Viewer does not scan the volumes with file system of type “GPFS” on HACMP clusters.

Cluster shared resources on file server member nodes are not displayed on the Topology tab.

File servers can only be created on hosts that have non-null as the operating system value.

To add file servers to scan:

1. Click **Add File Server** on the File System Viewer main page (**Configuration > File System Viewer**).  
The Add File Server button displays a list of available file servers that support File System Viewer. Data collection must be enabled on these file servers.
2. From the displayed list of available file servers, add file servers by selecting the check boxes for the file servers and clicking **OK**.  
File servers that are part of a host cluster are marked accordingly in the Is Cluster column of the list.

## Deleting Volume Data

You can delete the file system specific data of a scanned volumes so that the volume would be similar to an unscanned volume. The volume would also be removed from the scan schedule and any report rule mappings. If all volumes in a schedule are deleted, the schedule is also deleted.

Data from volumes currently being scanned would not be deleted. You can tell if a volume is currently being scanned because it will have a scan status of one of the following:

- Scan started
- Scan in progress
- Transferring
- File uploading

The volume with # symbol denotes that the volume was scanned before it was assigned as a cluster volume through the Build Cluster. This volume data is removed because it is not shown in any FSV page.

To delete volume data:

1. Click **Configuration > File System Viewer**.
2. Click the **File Servers** tab.
3. Click **Delete Volume data**.
4. Click the **Show Available Volumes** link if the volumes are not displayed.
5. Click the **Show Filter** link if the filter is not displayed.
6. In the Select OS field, select the operating system for the file server or select all to display all file servers. The file servers meeting the criteria of the Select OS field are displayed in the Select File Server window.
7. In the Select File Server window, select a file server. The name of the file server is displayed in the File Server Name field.
8. Click **Go**. HP Storage Essentials displays the volumes on the selected file server in the pane below.

9. Select the volumes you want to delete and click **Add Selected Volumes to Delete Data**. The selected volumes are displayed in the Selected Volumes table. Volumes that are in the Selected Volumes table are reverted to the status of an unscanned volume when the **Finish** button is clicked.
10. To remove a volume from the Selected Volumes table, select the volume and click **Remove Selected Volumes form Deleting Data**.
11. Click **Finish**. Volumes in the Selected Volumes table are reverted to the status of an unscanned volume.

## Scheduling Single and Multiple Scans

You can create single scan and multiple scan schedules for a file server. The multiple scan schedule feature enables you to schedule scans of different volumes at different intervals and at different start times. However, you can add only one schedule for file servers on hosts with agents prior to 6.0.

To begin configuring for single or multiple scans, you must first declare the intended host a file server, and then you use the Add Schedules wizard to create the schedules for the intended file server.

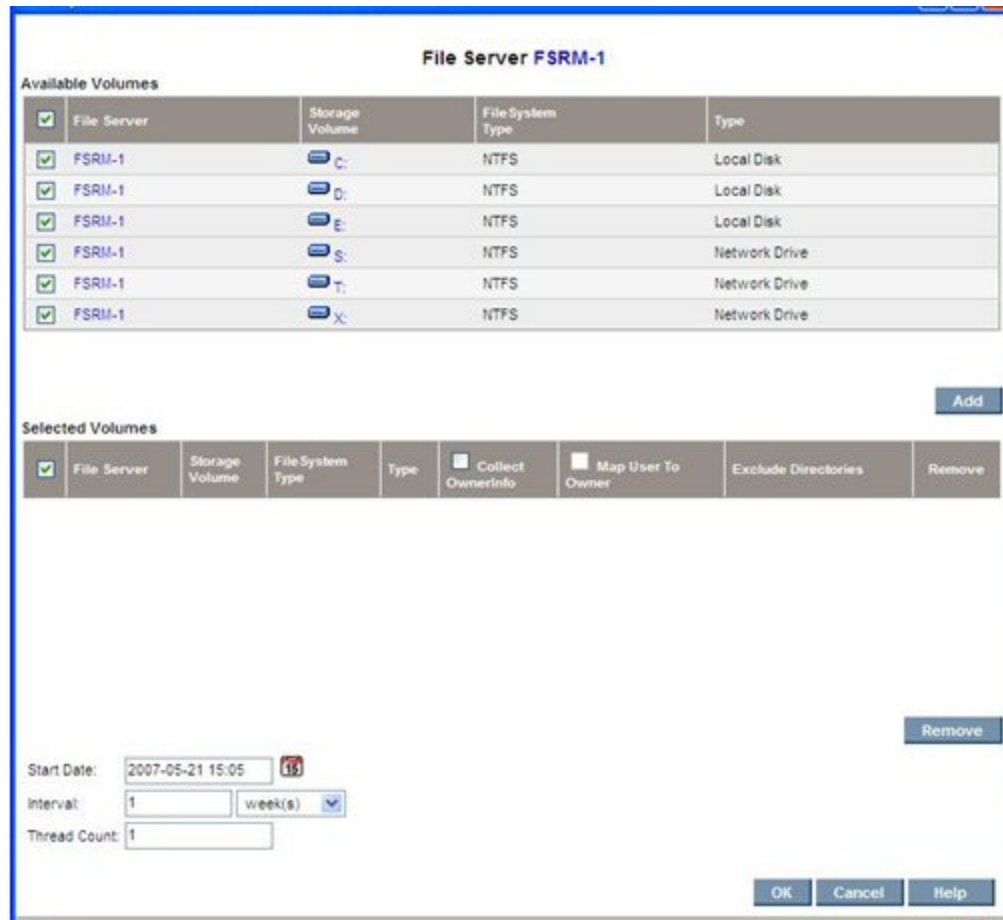
## Adding a Schedule

On the File System Viewer Main page (File Servers tab), locate the file server on which you want to set up the scan schedule.

To add a schedule:

1. Select **Add Schedule** from the pull-down menu choices (in the Action column).
2. Select the **Create Schedule** wizard, which opens and displays a screen similar to the

following:



The wizard contains two volume lists:

- Available Volumes – Shows volumes available for scheduling
- Selected Volumes – Shows volumes selected for scan

The lower part of the display contains scan schedule information (start date and time, interval for the scan). The display also shows the number of threads, representing the number of parallel scans to be performed for this schedule. The minimum value for the field is 1. Start time cannot be earlier than the current time. Thread count cannot be more than the number of volumes.

Volumes can be selected for inclusion in a schedule by selecting the corresponding check boxes and clicking the **Add** button. This removes the selected volumes from the Available Volumes table and adds them to the Selected Volumes table.

You can correct inadvertent selections by clicking the **Delete** button below the selected volumes table. This moves the corresponding volumes from the Selected Volumes table to the Available Volumes table.

Each volume can be individually configured. The options for each volume in the Selected Volumes table are:



- Volume specific exclude directory list  
The default exclude directory list is based on the value of the JBOSS property `fileSrm.excludeDirectories`.

Scanning of a directory in the exclude directory list skips collections if the directory exists in the root of the volume. If a directory of the same name exists at any other level, that directory is scanned.

- Option to collect ownership
- Option to map users to ownership. The option is enabled only if the ownership collection is selected.
- Option to collect ACL information for Windows file server

When a schedule is saved, changes to the properties do not affect already saved schedules. All schedules can be viewed and edited in the Scan Schedules page.

## Excluding Volumes from Scanning of File Extension Details

If you have volumes with more than two million files, you might want to decrease the scanning time by excluding volumes with many files from the scan.

File extension details are not collected for the volumes specified in the `fileSrm.volumesToSkipExtensionsGathering` property; for example:

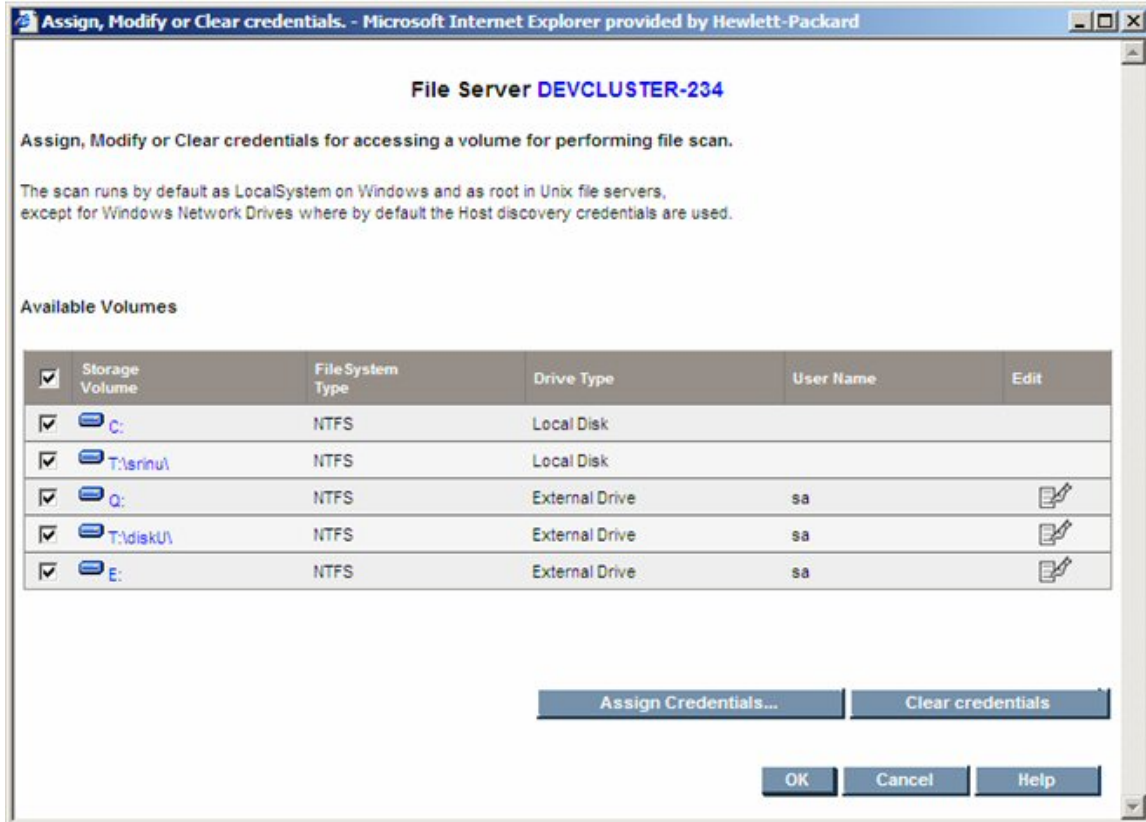
```
fileSrm.volumesToSkipExtensionsGathering=10000,10001
```

In this instance, 10000 and 10001 are volume IDs for the volumes that are designated to be excluded. The property can be found in **Configuration > Product Health > Advanced > Default Properties**.

Skipping collection of file extensions could affect the way file extensions are displayed in the drill-down menus of the product. The information displayed for the file extensions on excluded volumes could be missing or outdated.

## Credentials

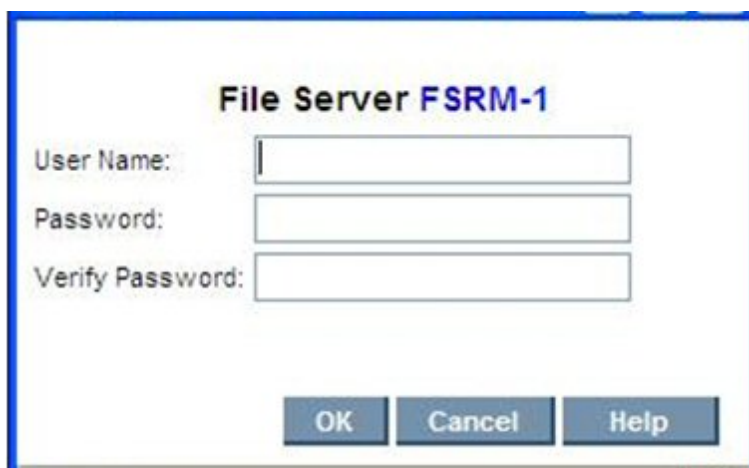
You can specify or edit the credentials used by the File Server Viewer to scan volumes on the File Server Viewer. To assign or clear credentials, select **Credentials** from the pull-down menu choices (in Action column).



You can assign credentials, clear credentials, and edit credentials. To assign credentials to a given set of volumes, choose the volume and select the **Assign Credentials** button.

You can edit or clear credentials for a UNC share volume. However, doing this on a Windows-based system does not prevent running further successful scans on the volume. Windows allows you to run a successful scan on that volume, even though the credentials for it were edited or cleared.

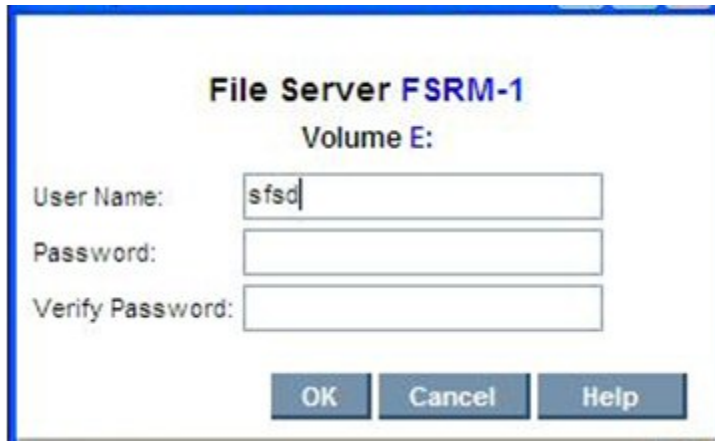
You can assign (specify) the user name and password to use for scanning the volume.



Enter the user name and password, and then click **OK**. The credentials are saved into the database after the wizard completes.

## Edit Credentials

The Edit Credentials screen enables you to change a user name and password previously assigned.

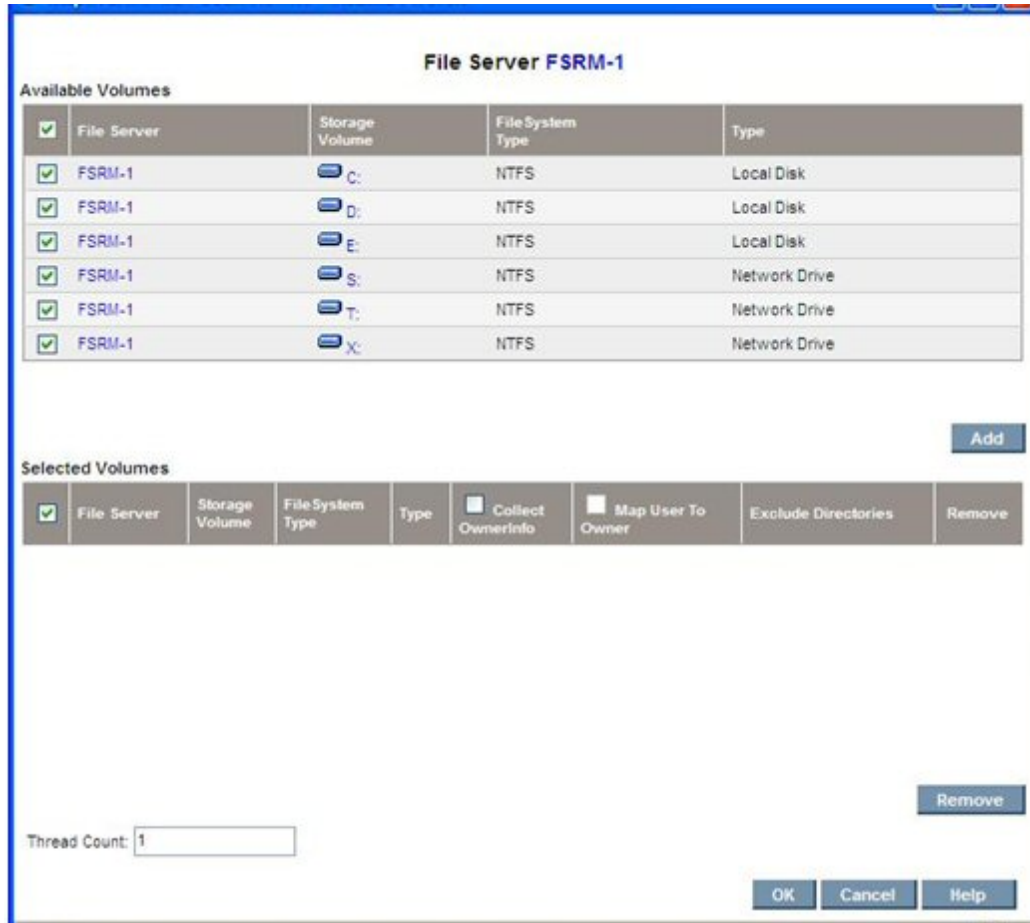


The screenshot shows a dialog box titled "File Server FSRM-1" with a subtitle "Volume E:". It contains three input fields: "User Name:" with the text "sfsc" entered, "Password:", and "Verify Password:". At the bottom, there are three buttons: "OK", "Cancel", and "Help".

The associated volume is shown in the header. Enter the new credentials and then select **OK**.

## Scan Now

Select the **Scan Now** pull-down menu choice (Action column) to perform an immediate scan on a given set of volumes. The wizard and functionality are similar to configuring an interval-based scan, except that the start time and interval are not required.

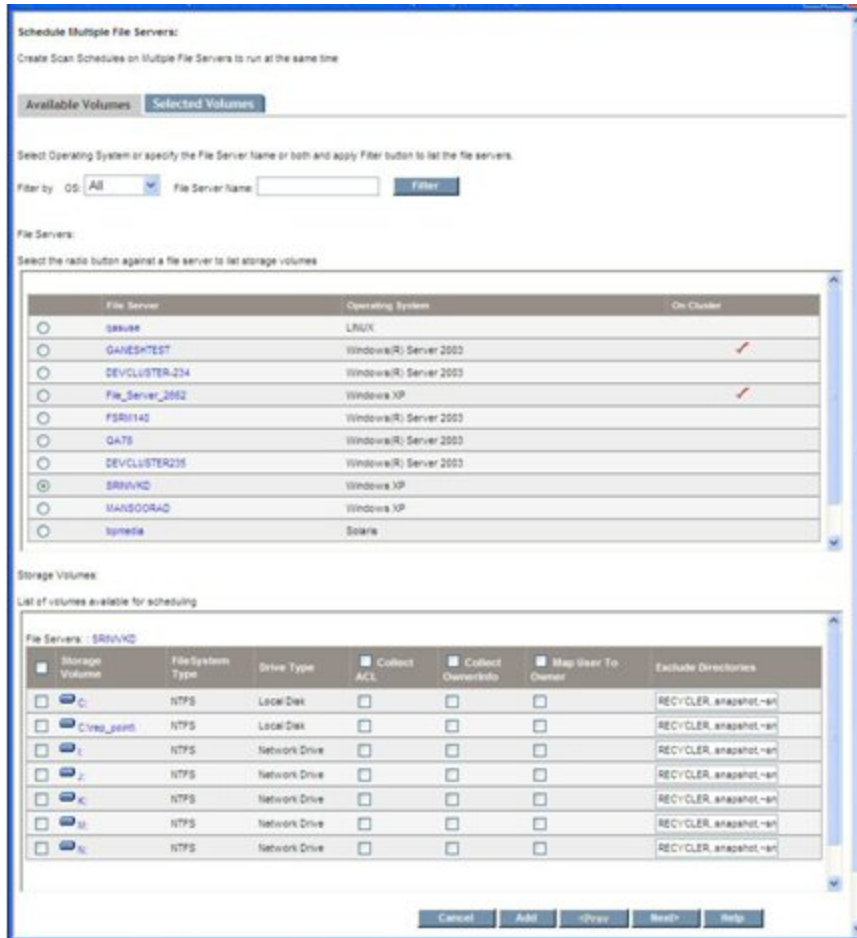


The @ symbol appended to the drive name indicates that the volume is scheduled for a scan in an interval schedule. The Thread Count feature enables you to specify the number of parallel scans to be run in the schedule.

The Scan Now option creates a “run once” schedule, which is not stored for future use. Exercise caution when using the Scan Now option, because a scheduled scan could already be in process at the instant that a forced scan is invoked. In such a situation, the volumes being scanned, or the volumes currently in the scan queue, are omitted from the new scan request.

## Schedule for Multiple File Servers (Multiple Scans)

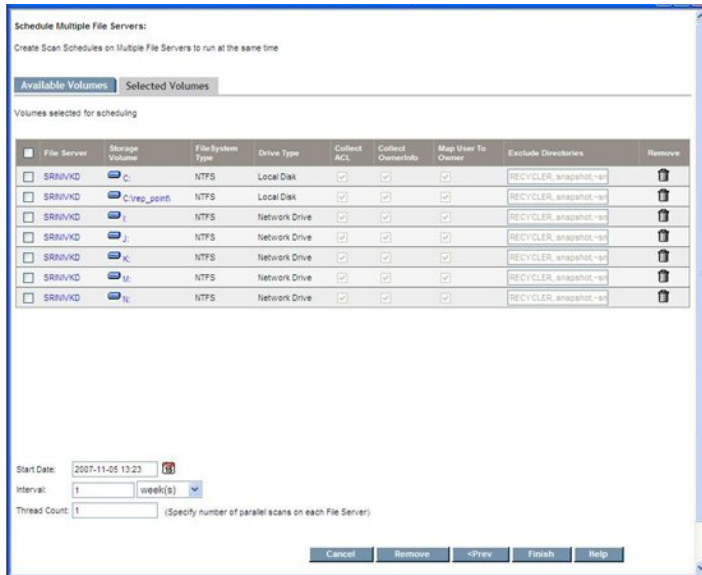
The Schedule Multiple File Servers button on the main FSRM display page, File Servers tab, provides functionality similar to the Add Schedule button. It also provides the additional capability to create multiple schedules across multiple file servers. Selecting the button starts a wizard which contains two tabs, Available Volumes and Selected Volumes.



The filter enables you to narrow the list of file servers displayed. After filtering, the File Servers list shows the list of file servers available for scheduling. Use the corresponding radio buttons to populate the list of volumes available for scheduling (Storage Volumes table).

Multiple volumes can be selected and configured from the table to be added in the schedule. After the configuration is finished, select the **Add** button to confirm the number of volumes selected for the schedule.

You can repeat the previous steps for other file servers in the File Servers table, or you can filter new file servers. After you add the volumes for the file servers, select the **Next** button to open the Selected Volumes tab display.



The display shows the volumes added for the various file servers in the Available Volumes tab. The Selected Volumes tab display does not permit editing volumes. To edit configurations, or remove volumes, select the **Prev** button to go back and make the changes.

The Selected Volumes tab displays the date and time, the interval, and the thread count for the schedules created. After you assign the required values, select the **Finish** button to create schedules for the multiple file servers.

The wizard helps you create multiple schedules at the same time. Once submitted, schedules are created for each file server that was configured.

The thread count for the schedule created is computed with the following formula:

Thread Count = minimum (Number of Volumes Selected, value in Thread Count field)

## Warning and Alert for Deleted Volumes

When you select drives for a particular host, they show as selected (on the Configuration File Viewer page) for a period of time (one day, 12 hours, etc.). When the drives no longer display as selected after that period of time, a warning icon appears for those schedules that are partially or fully affected.

When you click the warning icon, an alert message appears. The message content depends on whether the volumes are partially or fully affected. Message contents are the following:

- **All volumes affected** – Assume a schedule contains five volumes and are all deleted in the database. If you click on the warning icon that appears, an alert message similar to the following appears:

Storage volumes scheduled for a scan in this task either do not exist now, or have changed in the database. These volumes cannot be scanned now. Please click the **Delete** icon to delete them and create a new schedule.

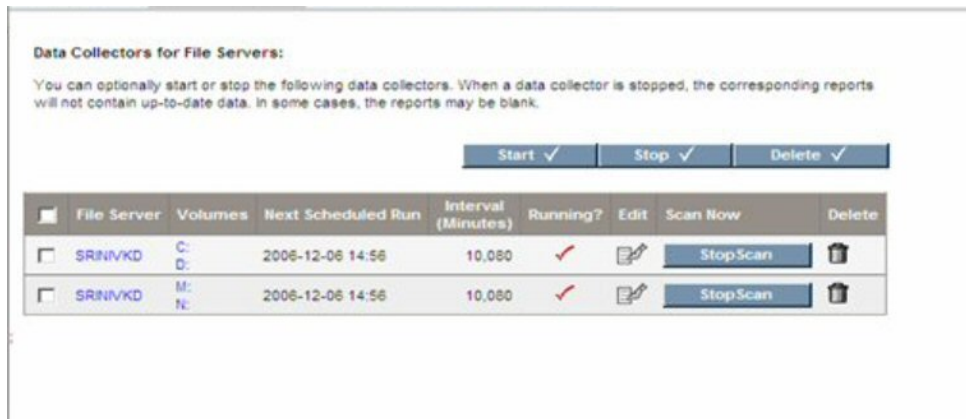
- **Some volumes affected** – Assume a schedule contains five volumes and only some of them

are deleted in the database. If you click the warning icon that appears, then an alert message similar to the following appears:

Some Storage volumes scheduled for a scan in this task either do not exist now, or have changed in the database. These volumes cannot be scanned now. Please click the **Edit** icon to include them for a scan.

## Scan Schedules Tab

The Scan Schedules Tab on the File System Viewer main page lists all the schedules created for the various file servers:



The screenshot shows a web interface titled "Data Collectors for File Servers:". Below the title is a paragraph: "You can optionally start or stop the following data collectors. When a data collector is stopped, the corresponding reports will not contain up-to-date data. In some cases, the reports may be blank." Above the table are three buttons: "Start ✓", "Stop ✓", and "Delete ✓". The table has the following columns: File Server, Volumes, Next Scheduled Run, Interval (Minutes), Running?, Edit, Scan Now, and Delete. There are two rows of data:

File Server	Volumes	Next Scheduled Run	Interval (Minutes)	Running?	Edit	Scan Now	Delete
SRNIVKD	C: D:	2006-12-06 14:56	10,080	✓		StopScan	
SRNIVKD	M: N:	2006-12-06 14:56	10,080	✓		StopScan	

The **Start** and **Stop** buttons near the middle of the screen, at the right, can be used as batch operations to start or stop the selected multiple schedules. The **Delete** button can be used as a batch operation to delete selected multiple schedules.

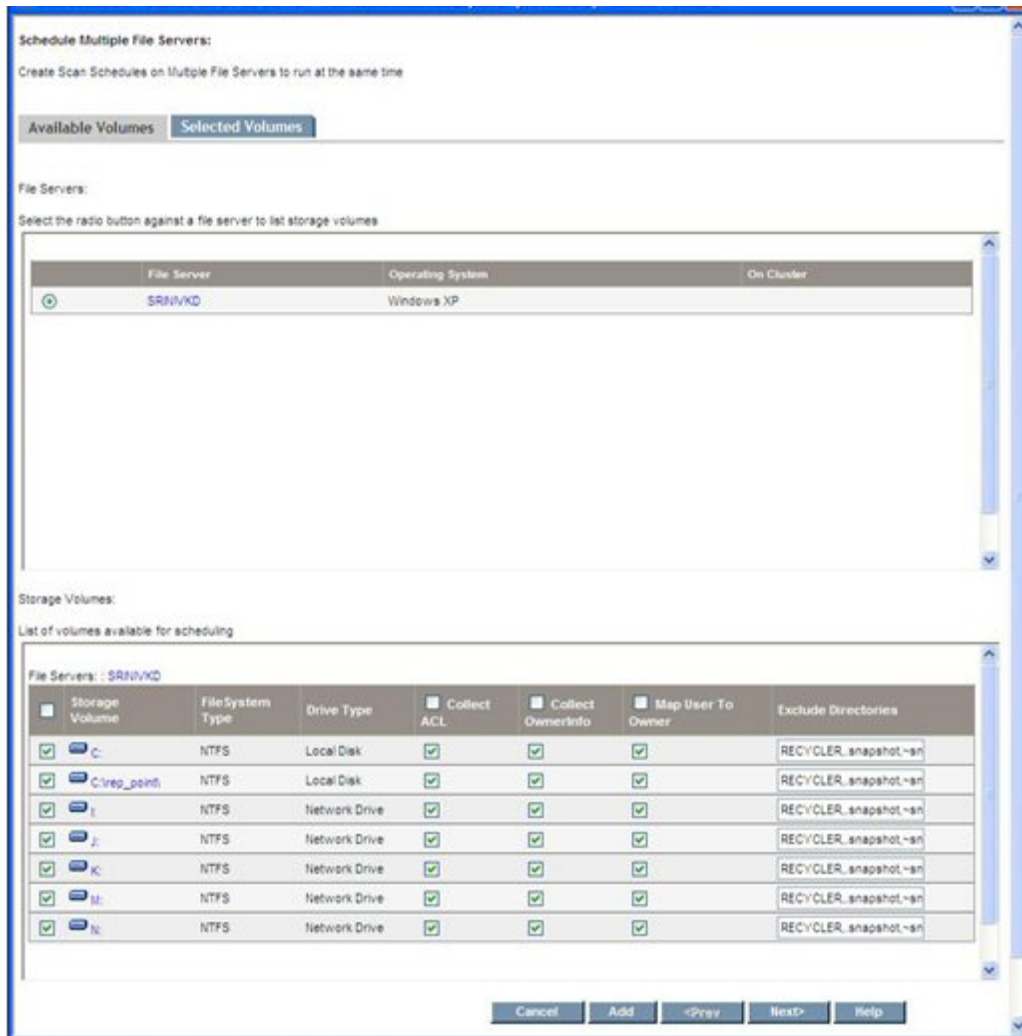
Each schedule lists the file server, volumes selected for scan on the file server, the time the schedule is invoked next, the interval in minutes, and its status (running or stopped). The display also contains the following:

- **Stop Scan** – This button attempts to stop the scan on the volumes selected in the schedule. It does not stop the schedule and the schedule can run at the next interval. If you want to disable a schedule, select the Stop button (at the top of the page) after selecting the schedule to be disabled.
- **Delete Schedule icon** – Select this icon to delete the schedule. It stops the scan on the volumes selected for the schedule before the deletion. However, this does not alter any File Server Viewer data already collected for the volumes in the schedule.
- **Edit icon** – This starts the Edit wizard, letting you modify the schedule to change the volume list or its other scan options. Edit is described further in the following paragraphs.

## Editing a Scan Schedule

The Edit button enables you to change the scan configuration by changing the volume list for the scan, changing the start time (next scheduled time to run if one is already started), interval, and thread count. You can also change volume specific information, such as ownership collection, mapping users to ownership, exclude directory list, and ACL collection for the Windows file server.

Clicking the Edit icon starts a wizard. The screen contains two tabs, Available Volumes and Selected Volumes.

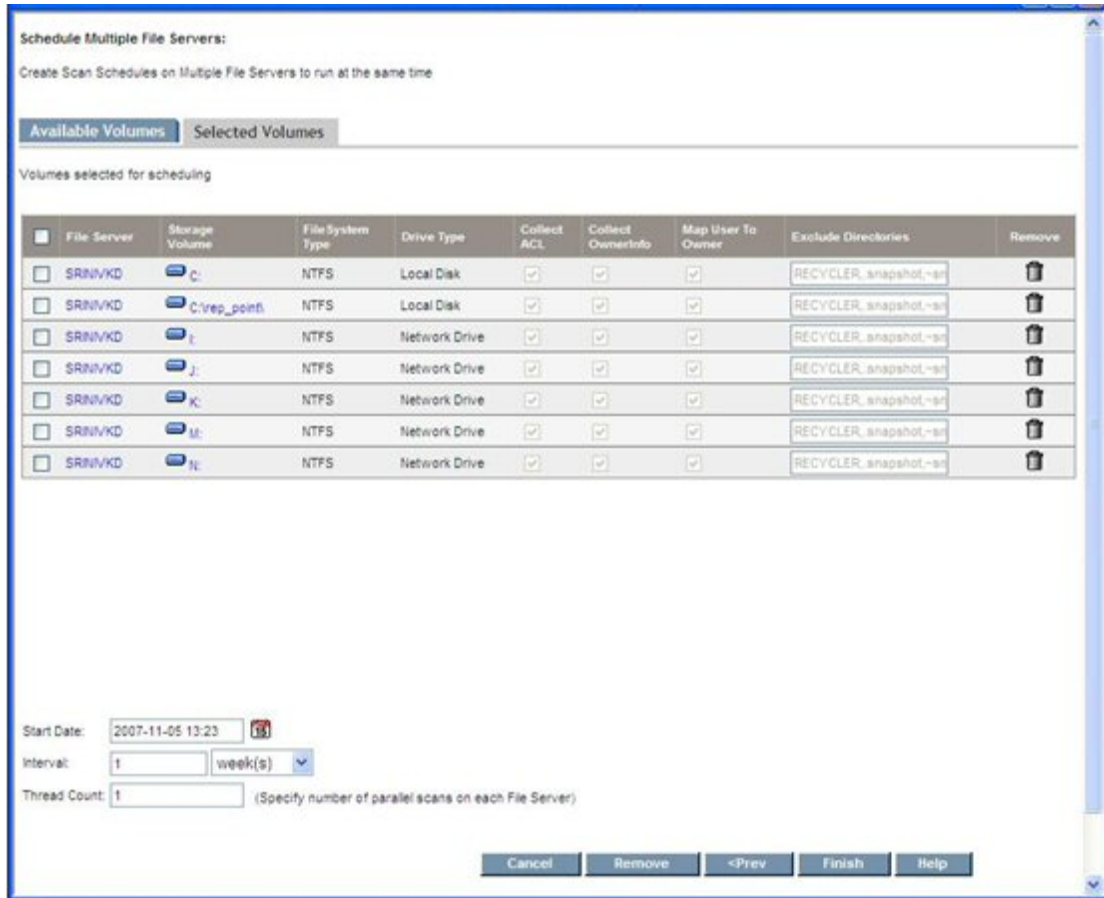


This screen enables you to select volumes available for further addition to the schedule by checking the corresponding check box. You can also modify the default configuration information for each volume. After making your selections, select the **Add** button to confirm your intent to add them to the schedule.

The **Add** button does not add the volumes to the schedule yet; it only confirms they are considered for addition.

After selecting the **Add** button, select the **Next** button to open the **Selected Volumes** tab.





This display provides a list of volumes for this schedule. You can remove volumes by selecting the **Remove** button.

There must be at least one volume in the Selected Volumes tab. You cannot delete the schedule by simply removing all the volumes from the Select Volumes tab. If you attempt to do so, an alert is raised.

## Scan Status Tab

You can review the status of the current scan or the most recent scan that took place on each of the volumes on which a scan was started.

To check the status of a scan:

1. Select **Configuration > File System Viewer**.
2. Click the **Scan Status** tab.

The following table provides details about the Scan Status tab.

Column Heading	Description
File Server	Displays the name of the file server from which this collector gathers information.
Volume	Displays the volume selected for scanning on a file server.
Scan Start	Displays the time that the scan began.
Last Polled	If the scan is still in progress or failed, it displays the time of the last scan.
Scan End	If the scan is completed, displays the completion time.
Scanned Space	Displays the total size of the files scanned by File System Viewer.
No. Of Files	Displays the number of files that have been scanned.
Current Directory	Displays the directory that is currently being scanned.
Scan Status	The following scan statuses are possible: <ul style="list-style-type: none"> <li>• No Data</li> <li>• Scan in Progress</li> <li>• Scan Done</li> <li>• Scan Failed</li> <li>• Transferring Data</li> <li>• Transfer Completed</li> <li>• Uploading Data</li> <li>• Uploading Completed</li> <li>• Error</li> </ul>

## Performing a Test Scan

If you changed your network configuration and are not sure the management server can still scan the server running File System Viewer, you can perform a test File System Viewer scan. During this scan, the management server verifies that it can access the server and perform a high-level File System Viewer scan. It also verifies whether or not it can scan network volumes with host discovery credentials.

Keep in mind the following:

- This feature only works with CIM extensions version 5.1 and later.
- To scan network-mounted drives on a host running Windows, sure a user is logged onto the Windows host. The user must have permission to mount the network drives. Network drives

mounted on Windows 2000 hosts are not visible as storage volumes on the Navigation tab or in the topology.

To perform a test File System Viewer scan:

1. Select **Configuration > File System Viewer**.
2. Verify that the File Servers tab is selected, and then click **Test** in the Test Scan column of the File Servers table.

After you click the **Test** button, the management server attempts to access the server and perform a test File System Viewer scan.

## Importing User Information from LDAP and Active Directory Servers

You can enable the automatic population of user details from Active Directory and/or Light weight direct access protocol (LDAP) servers, so at least the following information is retrieved from directory services:

- User Name
- Full Name
- Email ID
- Department Number
- User Quota
- User Status\* – for example, Active or Disabled
- Manager\*
- Home Directory
- Owner

\*The User Status and Manager columns are populated when information is imported from an LDAP server. Users cannot add this information from within HP Storage Essentials.

HP Storage Essentials enables you to import user data from two types of servers:

- **Exchange servers** – If you already discovered Exchange servers, you can select the servers from which HP Storage Essentials will import user data. Exchange servers are considered as LDAP servers in the LDAP Users Collection table.
- **LDAP servers** – Discover LDAP servers from which you want HP Storage Essentials to import user data.

You can specify how often user information from the servers listed in the LDAP Users Collection table is updated.

### LDAP Users Collection Table

The LDAP Users Collection table lists the servers that are designated to be scanned by HP Storage Essentials for user data. The table provides the following information about an LDAP server:

- **Domain** – The domain in which the LDAP server resides
- **Domain controller name** – The name of the controller name for the LDAP server
- **Next Scheduled Run** – When HP Storage Essentials will scan the LDAP server again for updated user information
- **Interval in Minutes** – How often the scan is scheduled to run
- **Enabled** – Checked if collectors are running. Collectors must be running for a scan to run.
- **Collection status** – Lets you know if a scan is currently taking place or if the scan is complete.

You can also do the following:

- Edit discovery information for an LDAP server.
- Edit the scan schedule for an LDAP server.
- Delete an LDAP server from the table. When an LDAP server is deleted from the table, HP Storage Essentials no longer scans the LDAP server for user information.

## Importing User Information from a Discovered Exchange Domain Server

To import user data from a previously discovered Exchange Domain Server:

1. Select **Configuration > File System Viewer > LDAP Servers** and click **Add Active Directory Domain Controller(s)**.
2. Select the discovered Exchange Domain Server that contains the user data you want to appear in HP Storage Essentials.
3. Click **Add** and **OK**. The Exchange Domain server is designated as an LDAP server.



To add a new domain controller:

1. Select **Configuration > File System Viewer > LDAP Servers** and click **Add Active Directory Domain Controller(s)**.
2. In the **Domain** box, enter the domain name.
3. Click the **Add New Domain Controller** link.
  - a. In the **Domain Controller Name** box, enter the fully qualified DNS name for the domain controller.
  - b. In the **User Common Name** box, enter the Windows logon name or the Common Name (CN) of the Active Directory User for accessing the Microsoft Exchange server.
  - c. In the **Domain Password** box, enter the corresponding password for accessing the Microsoft Exchange server.
  - d. In the **Verify Password** box, re-enter the password for verification.

- e. Click **Add New Domain Controller**. The domain controller is added to the table.
  - f. Click **OK**.
4. Repeat steps (2) and (3) for each domain controller that you want to add.

## Modifying the Collection Schedule for LDAP Servers

To modify how often user information is gathered on an LDAP server:

1. Select **Configure > File System Viewer > LDAP Servers**.
2. Select the LDAP server for which you want to modify the schedule.
3. Click the **Edit Schedule** () button.
4. Click the calendar icon, .
5. In the Time box, enter the time in 24-hour format with the hour and minutes separate by a colon; for example, 22:15. Click the date on which you want the task to run. Today's date is highlighted in pink. Click **Set**.


The date and time appear in the Next Scheduled Run box in the yyyy-mm-dd hh:min format.

If you change the date in the box to a date that does not exist in a month, the software automatically calculates the date to the next month. For example, if you enter 2010-11-31, the software assumes the date is 2010-12-01.

6. In the Interval box, enter an interval. Select one of the following units from the list:
  - **Second(s)**
  - **Minute(s)**
  - **Hour(s)**
  - **Day(s)**
  - **Week(s)**
7. Click **OK**.

## Editing Discovery Information of LDAP Servers

To edit discovery of LDAP servers:

1. Select **Configure > File System Viewer > LDAP Servers**.
2. Select the LDAP server you want to edit and its corresponding **Edit** () button.
3. Modify the user name and password.
4. Click **OK** and then click **OK** again. The product imports user data from the LDAP server.

## About Reports for File System Viewer

Report Optimizer provides a variety of detailed reports for file servers.

Data collectors gather information for reports. If you stop a data collector, its reports are not updated. You might want to verify that a collector is running if you are having difficulty viewing a report or you believe the report is not displaying the latest information. See the user guide for more information.

You can configure File Server SRM to gather specific information by adding rules, deleting rules, editing rules, and mapping volumes to the rules.

You can create multiple schedules for a single file server, and add and remove volumes to schedules. A schedule cannot contain volumes (details) for more than one file server, but each file server can have more than one schedule.

After a successful file server scan, the upload process starts. During this time, extensions, aging and size groups, and other details are collected. After that, the File Server SRM custom report data collection begins.

The first part of the process enumerates all rules for the given volume. The process then executes according to the rules specified.

The reporter reads the results to display the information according to the display criteria specified.

The management server provides reports that display performance information in a variety of formats:

- **HTML** (default) – The software displays the report in a Web page by default.
- **PDF** – The software displays the report in Adobe Acrobat, a good option if you need to print the report. The software assumes you already have Adobe Acrobat Reader installed on your computer. To obtain a copy of Adobe Acrobat Reader, go to <http://www.adobe.com>.
- **Excel** – The software displays the report in Microsoft Excel, providing you have a copy of Microsoft Excel already installed.
- **XML** – The software displays the report in the XML format.

Reports could be made of files not accessed in the past  $n$  years, files with specific file extensions, files that exceed a given size, and so on. For example, File Server SRM can group the file extensions into different categories, so that users can generate reports for the different applications, such as office-related files (\*.doc, \*.ppt, \*.xls) or music-related files (\*.mp3, \*.avi). Supported reports can be used by external reporting tools.

Report information can be filtered. UNIX Global Permissions allows users to filter files into the report according to rwx permissions. Files with other permissions are present in the report if they satisfy the selection. For example, the report corresponding to global write permission could contain files with global execute permission, provided the files also have the global write permission.

The Windows Attributes option enables users to filter files into the report according to a selected set of attributes. Only the files that have the selected attributes are collected against the rule (irrespective of the state of the other attributes). For example, selecting Archive and Encrypted attributes filters all files that have these attributes. Some of the files in the report might contain files of other attributes (that is, Hidden), if they have the archive and encrypted attributes.

Non-ANSI text—for example, Asian characters and the Euro symbol—included in a comma-separated values file is not displayed properly by Microsoft Excel. Excel replaces the non-ANSI text with a question mark (?).

## Creating Policies for File System Viewer Users

You can create a utilization policy that generates an event, sends an email, or runs a custom command when an element is being overused. For example, you can configure Policy Manager so you receive an email message when the amount of free space on a server decreases to a specified level.

If you plan to use email notification with your policy, first assign an SMTP server from which the management server can send its email notifications.

To create a utilization policy for a file server:

1. Access Policy Manager by clicking the Policy Manager icon in the left pane.
2. Expand the Policy Manager tree so it displays File Server Users and the users beneath the node.
3. Do one of the following:
  - To apply the policy to all File System Viewer users, select the File Server Users node.
  - To apply the policy to only one File System Viewer user, select that user.
4. In the right pane, select **Add**.
5. Select a policy, and then select **Next**.
6. In the Name box on the Policy Properties tab, modify the name of the policy or keep the default.
7. In the Description box, modify the description for the policy or keep the default.
8. In the Re-arm Period box, specify a re-arm period in minutes.

The re-arm period is the amount of time after the policy executes before it can execute again. It is useful for limiting the number of times the same actions will execute.

You can specify shorter periods for important applications.

9. To the right of the comparison operator menu, enter a percentage or an amount in gigabytes (GB), depending on the box name displayed.
10. For trending policies, enter the number of days in the Historic period box (min=7; max=180) and Projection period box (min=1; max=180).
11. Select an action to occur when the policy condition is fulfilled by selecting one or more of the following buttons (more than one action can be assigned to a policy):
  - **Send E-mail** – Policy Manager sends an email when the condition is fulfilled.

Enter a comma-separated list of email addresses, and then select **OK**.

- **Generate Event** – Policy Manager generates an event of the specified event type. The event appears in Event Manager.

Select one of the following event types:

- **Unknown** – The severity level is not known.
- **Informational** – An example of an informational event is a progress report event for firmware download operation currently in progress.
- **Warning** – An example of a warning is when one or more new physical fabric objects (device port, switch, or fabric) have appeared.
- **Minor** – An example of a minor event is when a physical fabric object (switch port or fabric) has changed state.
- **Major** – An example of a major event is when one or more physical fabric objects (device port, switch, or fabric) have disappeared.
- **Critical** – An example of a critical event is Brocade switches that have a failed firmware download and the failure reason code for each respective switch.

Because the severity level for an element is set by the manufacturer, the meanings of the severity levels vary. It is best to view the description of the event.

After you select an event level, select **OK**.

12. **Execute a Custom Command** – Policy Manager executes a custom command on the management server when the condition is fulfilled. Enter a command that will execute the script in the box, and then select **OK**.

The software assumes you are in the `[Install_Dir]` `\JBossandJetty\server\appiq\remotescripts` directory on the management server when the script is executed. You can use environment variables in your script, such as `POLICY_NAME` and `POLICY_DESCRIPTION`. `POLICY_NAME` provides the policy name and `POLICY_DESCRIPTION` provides the policy description. See “Software Environment Variables for Scripting” in the *User Guide*.

Prefix the command with `start` if the custom command triggers a UI component, such as a program that uses the UI (such as Microsoft Internet Explorer) or a command prompt window. For example, assume you want the custom command to open a command prompt window and list the contents in the directory. You would create the following command:

```
start dir
```

13. Select **Finish**.
14. To test a policy, select the **Test** button in the Utilization Policy table.

For more information about editing, deleting, and emailing policies, see the *User Guide*.

## Enable the Scanning of Reparse Points

Reparse points (junctions) for file servers on Microsoft Windows are scanned. For example, assume you create a junction named `C:\DDrive` that points to the root of the D drive. The content of the D drive is available under `C:\DDrive`. After a scan, information on capacity and amount used is



displayed for the C drive; however, the sum of the file sizes on the C drive also includes the junction (C:\DDrive), which points to the root of the D drive.

To enable the scanning of reparse points on Windows file servers:

1. Select **Configuration > Product Health**, and then select **Advanced** in the Disk Space tree.
2. Select **Show Default Properties** at the bottom of the page.
3. Copy the **fileSrm.disableReparsePointsScan** property. How you copy the text depends on your Web browser. If you are using Microsoft Explorer or Netscape Navigator, select the text, right-click the selected text, and then select **Copy**.
4. Return to the Advanced page (**Configuration > Product Health**) and select **Advanced** in the Disk Space tree).
5. Paste the copied text into the Custom Properties box. How you paste the text depends on your Web browser. If you are using Microsoft Explorer or Netscape Navigator, right-click the box and select **Paste**.
6. Change the value assigned to the fileSrm.disableReparsePointsScan property to **false** in the Custom Properties box.

```
fileSrm.disableReparsePointsScan=false
```

7. When you are done, select **Save**.
8. Restart the AppStorManager service for your changes to take effect.

## Working with Rules for Gathering File Server Information

You can create specific rules for the kind of information the system gathers and reports about file server volumes and directories (rule-based reporting). You do this by adding, deleting, and assigning rules to selected file server volumes and directories. In addition, you can edit previously created rules to accommodate changing reporting needs.

The Report Rules tab in the File System Viewer (**Configuration > File System Viewer**) provides the user interface and wizards to create and modify these rules.



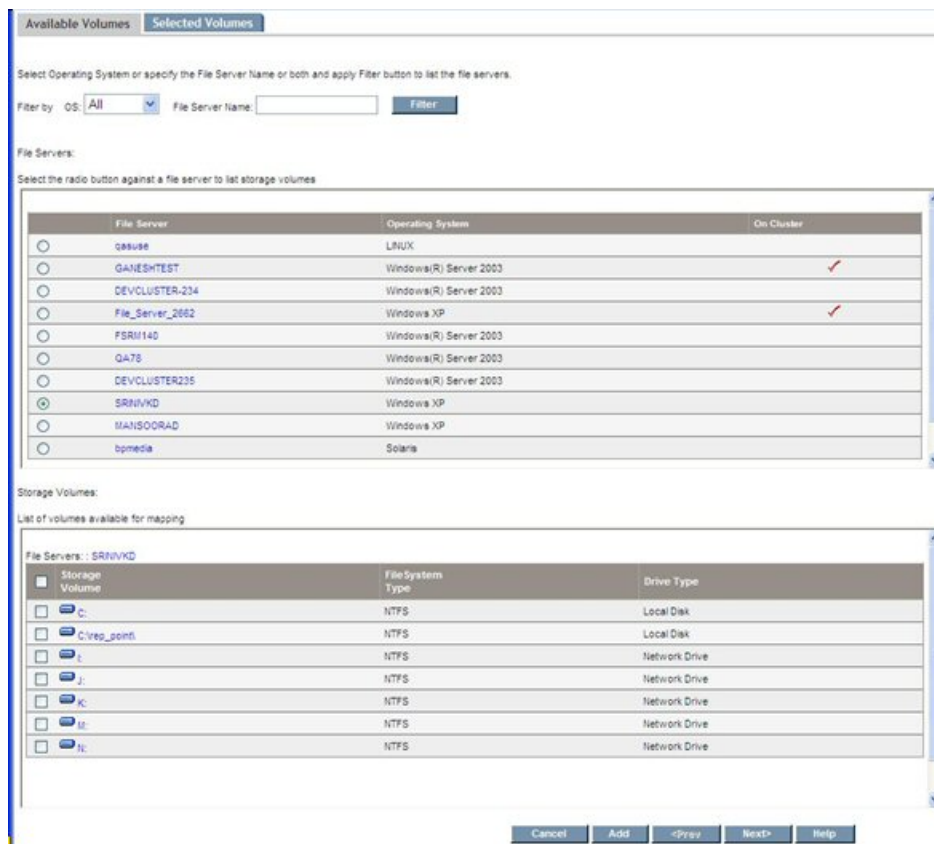
Using the buttons and check boxes on this screen, you can Add, Delete, and Edit rules, Add/Remove volumes associated with the rules, Refresh File Server Reports Cache, and Clear Data.

Data collected for the rules is reflected in reports according to the reports refresh schedule. The Refresh File Server Cache button refreshes the reports cache immediately with data acquired using latest rules for gathering the data.

The Clear Data button deletes the data collected against a Rule. Clearing the data for a Rule, then refreshing the reports cache using the Refresh File Server Reports Cache button also removes the rule's earlier data from the reports cache.

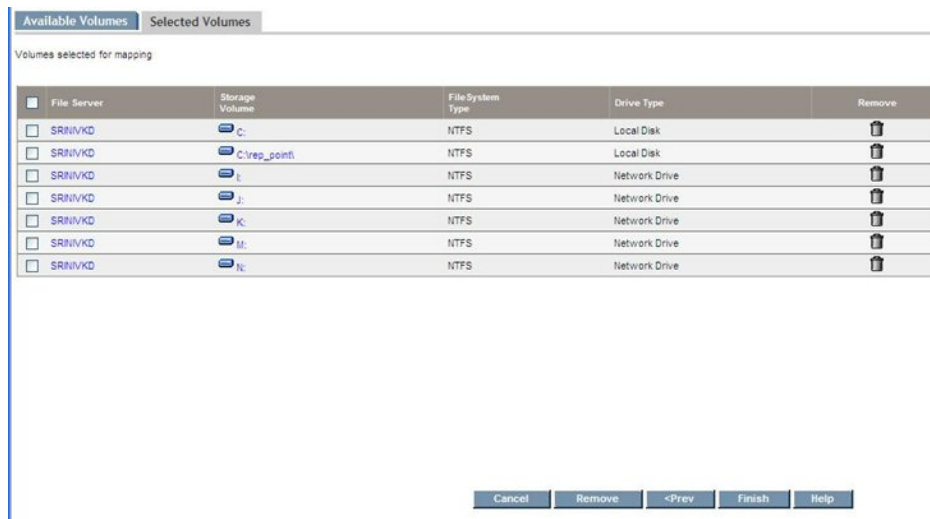
## Add/Remove Volumes

The Add/Remove volumes icon starts a wizard that enables you to map volumes to rules (or remove them). The wizard has two tabs, Available Volumes and Selected Volumes.



From the Available Volumes tab display, use the Filter button to display a list of file servers. Select the radio buttons to select the volumes from those available for mapping the rules. After making your selections, click the **Add** button to confirm the choices selected. You can repeat the process for other file servers in the table, or click the **Filter** button to populate a new list.

Select the **Next** button to open the Selected Volumes tab.



This wizard helps you map volumes on multiple file servers at the same time. To edit your selections, select the **Prev** button. When you are finished, select the **Finish** button to map volumes to a rule, or select the **Remove** button to remove them.

## The Create Rule Wizard

The Create Rule Wizard lets you create a file server report rule in just a few steps.

- "Step 1 – Create File Server Report Rule" below
- "Step 2 – Add Volumes to the File Server Report Rule" on page 37

### Step 1 – Create File Server Report Rule

The Create Rule wizard helps you create report rules for files. The Create Rule wizard opens a page similar to the following.

### Create File Server Report Rule

Step 1 of 2: Specify Report Rule

Specify report rule properties and criteria. Click **Next** to continue.

**Properties**

Rule Name \*  Description

**Criteria**

Apply this rule to :  Files  Duplicate Files  Directories

Rule criteria :

Select corresponding checkboxes to include the criterion in the rule. Where a range is allowed, leaving the lower limit blank would be deemed as no lower limit and leaving the upper limit blank would be deemed as no upper limit.

<input type="checkbox"/> File Size	> <input type="text"/>	bytes	< <input type="text"/>
<input type="checkbox"/> Last Accessed	> <input type="text"/>	day(s)	< <input type="text"/>
<input type="checkbox"/> Last Modified	> <input type="text"/>	day(s)	< <input type="text"/>
<input type="checkbox"/> Created	> <input type="text"/>	day(s)	< <input type="text"/>
<input type="checkbox"/> Owned by	<input type="text"/> (Example: Administrator,guest)		
<input type="checkbox"/> Include extensions	<input type="text"/> (Example: txt,exe)		
<input type="checkbox"/> Include directories	<input type="text"/> (Example: Windows,/bash/core)		
<input type="checkbox"/> Windows Attributes	<input type="checkbox"/> Read Only <input type="checkbox"/> Hidden <input type="checkbox"/> System <input type="checkbox"/> Archive <input type="checkbox"/> Device <input type="checkbox"/> Normal <input type="checkbox"/> Temporary <input type="checkbox"/> Sparse File <input type="checkbox"/> Reparse point <input type="checkbox"/> Compressed <input type="checkbox"/> Offline <input type="checkbox"/> Not Content Indexed <input type="checkbox"/> Encrypted		
<input type="checkbox"/> Unix Global Permissions	<input type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Execute		
<input type="checkbox"/> Limit Rows	<input type="text"/>		

Limit Rows - If limit rows is checked then only the number of rows specified will be fetched.

\* required fields

**Next**

To create rules for files, use the radio buttons to select the files or directories to which the rules will be applied.

Keep in mind the following:

- Select corresponding check boxes to include the criteria in the rule.
- Rule name is mandatory.
- Select the appropriate text box before entering a value; otherwise, text box is disabled.
- By default, all check boxes are unchecked.
- A description is optional.
- Select at least one check box in addition to RULENAME and Limit Rows.

- Maximum value must be greater than the minimum value; for example, File Size  $\geq 5$  and  $\leq 4$  is invalid.
- In the “Owned by” text field, you can set single user or multiple users, separated by commas.
- In the “Include directories” text field, you can set single directory or multiple directories, separated by commas.
- Enter a value in the “Limit Rows” field to limit the number of rows in the result of rule, such as 100. Otherwise, a generic rule could return a very large number of rows. If no value is entered, all data is returned. Limit Rows fetches the Top “n” largest from the total result set.
- Drop-down choices for sizes shows units for bytes, KB, MB, and GB. The maximum number of digits allowed is five.
- Drop-down choices for days shows units for days, weeks, months, and years. The maximum number of digits allowed is five. The field accepts a maximum of 43,800 days (120 years) only after converting the units (weeks, months, years) into days.
- Windows Attributes only affects Windows file servers even if a Report Rule is mapped to a UNIX-type file server.
- UNIX Global Permissions only affects UNIX-type servers even if a Report Rule is mapped to Windows file servers.
- When you click **Next**, the rule is created for all the fields whose check boxes are selected. At the time of information gathering, the associated rules are applied to the gathering process to collect the data prescribed by the rule, and to store the data in the database.

When you are done, click **Next**. See "[Step 2 – Add Volumes to the File Server Report Rule](#)" below for information on how to add and remove volumes from a file server report rule.

## Step 2 – Add Volumes to the File Server Report Rule

Select the items in the available volumes table and add them to the report rule volumes table. Then, click **Finished**.

To add volumes to a report rule:

1. Click the **Show Filter** link if the filter is not displayed.
2. In the Select OS field, select the operating system for the file server or select all to display all file servers. The file servers meeting the criteria of the Select OS field are displayed in the Select File Server window.
3. In the Select File Server window, select a file server. The name of the file server is displayed in the File Server Name field.
4. Click **Go**. HP Storage Essentials displays the volumes on the selected file server in the pane below.
5. Select the volumes you want to add and click **Add Selected Volumes to Report Rule**. The selected volumes are displayed in the Selected Volumes table.

To remove volumes from a report rule:

1. Select the volumes in the Report Rule Volumes table.
2. Click **Remove Selected Volumes from Report Rule**.
3. Click **Finish**.

## Edit Rule Wizard

You can modify the file server report rules by using the Edit Rule wizard.

- "Edit Rule" below
- "Add or Remove Volumes from a File Server Report Rule" below

## Edit Rule

To modify a file server report rule:

1. Click **Configuration > File System Viewer**.
2. Click the **Report Rules** tab.
3. Click the corresponding Edit (✎) button for the file server report rule you want to edit.

The Edit Rule screen lets you change the Rule Criteria and description.

The Rule Name value is disabled. You cannot change the rule name for any report.

The "Apply this rule to" radio buttons are also disabled. You cannot change the Files, Duplicate Files, or Directories rule types.

The remaining criteria to enter are the same as described previously to create a rule for duplicate files.

4. Click **Next**. See "Add or Remove Volumes from a File Server Report Rule" below for more information on how to remove and add volumes from a rule.

## Add or Remove Volumes from a File Server Report Rule

Add or remove volumes from a file sever report rule:

To add volumes to a report rule:

1. Click the **Show Filter** link if the filter is not displayed.
2. In the Select OS field, select the operating system for the file server or select all to display all file servers. The file servers meeting the criteria of the Select OS field are displayed in the Select File Server window.
3. In the Select File Server window, select a file server. The name of the file server is displayed in the File Server Name field.
4. Click **Go**. HP Storage Essentials displays the volumes on the selected file server in the pane below.
5. Select the volumes you want to add and click **Add Selected Volumes to Report Rule**. The selected volumes are displayed in the Selected Volumes table.

To remove volumes from a report rule:

1. Select the volumes in the Report Rule Volumes table.
2. Click **Remove Selected Volumes from Report Rule**.
3. Click **Finish**.

## Enabling Rules

To enable the rules, use the screen displayed with the Report Rules tab.

Using Enable Rule feature, you can enable the rules which are currently in disabled state. On enabling a rule the system gathers data, based on the conditions specified in the rule, for the volumes to which the rule is mapped with.

**Note:** By default, all the rules created in the system are in enabled state.

To enable, select the rules and click **Enable Rule(s)** button.

## Disabling Rules

To disable the rules, use the screen displayed with the Report Rules tab.

Using Disable Rule feature, you can disable the configured rules without deleting them from the system. All the disabled rules are ignored during gathering of the data for the volumes they are mapped with. Disabling rules also results in faster scanning of volumes, as the system does not filter the data based on conditions specified in the rule.

To disable, select the rules and then click **Disable Rule(s)** button.

## Deleting Rules

To delete rules, use the screen displayed with the Report Rules tab. The following is a representative screen display.



You can select the **Delete** button to delete multiple rules (those with checked boxes next to the rule name), or you can delete individual rules using the Delete icon for the specific rule.

The result of removing (deleting) rules depends on whether or not the rule is mapped to a volume, and whether data was collected for that rule.

- If you remove a rule that is not mapped to a volume, the rule is deleted directly.
- If you remove a rule that is mapped to a volume AND the data is not collected, the system deletes both the rule and the mapping data.
- If you remove a rule that is mapped to a volume AND the data is collected, the system deletes the rule, the mapped data, and also the collected data (report).
- When you select the **Clear Now** button, the system clears the data related to the rule.

## Viewing Results in Report Tree

When the system gathers data for a volume, it checks to see if any rules are mapped to that volume. If rules are mapped to that volume, the system collects the data according to the parameters defined in the rule and stores this information in the data tables. The collected information can then be viewed from the Reporter tree (**Reporter > System > File Server**).

Sometimes the File System Viewer report data might not be visible immediately after the rule executes because the report's cache has not yet been updated. To refresh the File System Viewer-related report cache data, select the **Refresh FSRM Reports Cache Now** button. The button is on the Custom Reports tab screen, and is located next to the **Add** and **Delete** buttons in the upper right part of the screen.

## Enabling the Collection of Access Control Entry Data Collection for Directories on Windows Servers

Access Control Entries for directories can be collected on Windows file servers. You must enable the collection of Access Control Entry Data to view information in the Trustee view.

To enable the collection of Access Control Entry Data:

1. Change the global property `fileSrm.collectACL` from false to true:
  - a. Click **Configuration > Product Health**.
  - b. Select **Advanced** from the Disk Space tree.
  - c. Change the value of `fileSrm.collectACL` from false to true by pasting the following in the Custom Properties field:

```
fileSrm.collectACL=true
```
  - d. Click **Save**.
  - e. Restart the service for HP Storage Essentials, AppStorManager.
2. Select the Collect ACL option for a scan of a volume on a Windows server:
  - a. Click **Configuration > File System Viewer**.
  - b. On the File Server tab, select **Windows** in the Select OS Type menu and click **Filter**.
  - c. Click **Add Schedule**.



- d. In the top pane, select the storage volumes you want to add and click **Add**.
- e. In the lower pane, select the Collect ACL option. You can select the option for specific volumes or for all of the volumes at once. The following example shows the Collect ACL option being selected for all of the volumes on a file server by selecting the option in the heading.

#### Available Volumes

<input checked="" type="checkbox"/>	Storage Volume	File System Type	Drive Type
-------------------------------------	----------------	------------------	------------

Add

#### Selected Volumes

<input checked="" type="checkbox"/>	Storage Volume	File System Type	Drive Type	<input checked="" type="checkbox"/> Collect ACL	<input type="checkbox"/> Collect Owner Info	<input type="checkbox"/> Map User To Owner	Exclude Directories
<input checked="" type="checkbox"/>	C:	NTFS	Local Disk	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RECYCLER, snapshot, ~sr

3. Click **OK**.
4. Select **Scan Now**.

HP Storage Essentials starts gathering ACL data. To view the ACL data for all of your file servers, access the Trustee view, as described in "[Trustee View](#)" on page 67.

When the collection option is enabled, the file scan process collects each directory's Discretionary ACL information, governed by the following considerations:

- The process collects only the information allowed by the access rules and ignores the information denied by the access rules.
- The process considers allowing access based upon all the related rules, whether directly assigned on the directory or whether they are inherited from one of the parent directories.
- The trustees corresponding to the Well Known SIDs as defined by Microsoft (<http://Support.microsoft.com/kb/243330>) are excluded from being listed in the output.
- The effective permissions for each trustee are designated as Full Access, Write Access, or Read Access.
  - Write Access is the combination of the rights: List Directory, Traverse Directory, Add File, Add Subdirectory, Write Directory, Traverse Directory, Read Attributes, and Read Permissions.
  - Read Access is a combination of rights: List Directory, Traverse Directory, Read Attributes, and Read Permissions.
  - Full Access is the combination of rights as defined by "Full Control by Windows."

- Data Collection treatment is similar for both individual users and groups, that is, groups are not drilled down to get a list of individual users.
- The collection attempts to get the name of the various security entries from the corresponding security ID (SID). The name resolution from the SID could fail if the SID is from a different host or domain from the file server through which the file system is being scanned. In such cases, the SID itself is listed as the trustee instead of the name.
- The collected data is sent to a file on the disk along with other scan data files. The data file created by the process is then transferred to the management server along with other scan files. On the management server, the data is parsed to extract the effective usage by each trustee.

The process can have a performance impact during the scan. If the Access Control Lists are extracted, the scan times can be larger than they would be otherwise.

## About the FileSRMProvider.properties File

The FileSRMProvider.properties file resides in the conf directory of installed CIM Extensions. It contains the following properties:

- **com.appiq.fsrn.dataDir** – Defines the directory in which FSRM data and log files are written. The default is the <CIM EXTN root>/xData directory. If there is an error with the directory specified, the default directory is used. When you change the property, you must restart the CIM extension for the new value to take effect.
- **com.appiq.fsrn.chunkSize** – Defines the chunk size (in KB) used to transfer FSRM data to the management server. Typically, it does not need modification by the user.
- **com.appiq.fsrn.StatusPollInterval** – Defines how often (in seconds) the management server retrieves the state of the current scan from the native FSRM process. The default interval is 60 seconds. Increasing the frequency of status polling (decreasing the polling interval) could increase the length of time required by the scan.

## Defining UNC Volumes

You can use UNC shares to discover file system data from a server. To scan UNC volumes, you must define them in a UncShares.xml file.

To create the UncShares.xml file on a Windows host:

1. Confirm that a CIM extension is installed on the Windows host.
2. Go to the <Installation\_Directory>\CimExtensions\conf directory.
3. Open the UncShares.xml-sample file in a text editor.
4. Identify the host through which the UNC shares' scan is planned. This is the host through which you will be scanning UNC shares from a different/remote host.
5. Add the host name and shared directory to the following line:

```
<!-- <UNC_SHARE PATH=""/> -->
```

Here is an example:

```
<UNC_SHARE PATH=""\\RemoteSystem\MyShare1"/>
```

In this instance, RemoteSystem is the name of the host and MyShare is the name of the shared directory.

Repeat for all your shares; for example:

```
<UNC_SHARE PATH="\\RemoteSystem\MyShare1"/>
```

```
<UNC_SHARE PATH="\\RemoteSystem\MyShare2"/>
```

```
<UNC_SHARE PATH="\\RemoteSystem\MyShare3"/>
```

6. Save the file as UncShares.xml.
7. Restart the CIM Extension service on the managed host.
8. Update the element details for the host from the management server by running a Get Details.
9. Edit the File System Viewer configuration page for the host selecting the desired UNC shares to scan.

The username and password combination you used for discovering the host should have at least read only permissions on the file shares that need to be scanned. In most cases, this would be a service account that you can have created in the active directory. This service account should be an admin on the proxy FSV host and should have read only (at least) access to the UNC share.

You can use the IP address of the host instead of the name.

With management server versions earlier than 6.0, to discover multiple UNC shares that have different credentials, you must use different proxy FSV hosts. This is because for these earlier versions, you can use only use one login / password pair. Each UNC share has its own associated login / password.

For management server version 6.0 and later, this restriction does not exist. You can specify different credentials for each UNC Share or volume by using the **Credentials** option.

## Known Issues

- Limitation of File Server Users in Policy Manager with Firefox. Firefox 3.5.3 (and likely other versions of Firefox) will not load the Policy Manager tree if there is a large number of File Server Users to be shown. Internet Explorer is able to load the Policy Manager tree under these conditions.
- File Manager Exclude Directory might not Contain the Underscore. Scanning file detail information fails if the custom property fileSrm.excludeDirectories is set to a value that contains the underscore (“\_”) character.
- File System Viewer Event “Starting transfer of data file” is Not Sent. The “Starting transfer of data file” event from File System Viewer usually seen in the Event Manager is not sent. You will not be able to trigger a Policy using this event.
- Start File Manager Scan only after the Host Scan has Completed. It is possible to attempt to start a File System scan before a scan of the host has been completed. The File System scan will not run. Wait until the host has been completely scanned before attempting to start a File System scan to gather file detail data.
- Directory Accessed/Modified Rules and Unix File Servers. An artifact of the Unix operating system changes the Accessed and Modified dates for directories on Unix file servers when the

directories are scanned by File System Viewer. Therefore, a File System Viewer Report Rule that specifies either the directory Accessed or Modified date will appear not to function properly.




## Chapter 2

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# Viewing File System Information Across the Enterprise

Use File System Viewer to obtain detailed information about the file servers enterprise wide, a specific file server or volumes.

File System Viewer displays information from file servers in views, which are accessible by

clicking **File System Viewer** (  ) in the left pane and then setting a context, as described in "Setting a Context" on the next page.

File servers and their hosts must be in the same organization for File System Viewer to work properly.

This section consists of the following topics:

- "Setting a Context" on the next page
- "Saving a View" on the next page
- "Dashboard Information for the Enterprise" on page 48
- "Properties of the File Servers" on page 50
- "Extension View" on page 51
- "Providing Expressions for the Filter Fields" on page 51
- "Viewing Extension Groups" on page 52
- "Aging View for the Enterprise Context" on page 53
- "Sizes View for the Enterprise Context" on page 54
- "Managing Users on a File Server - Properties of Users" on page 55
- "Policies for a User" on page 63
- "Viewing Security and User Identifiers for All File Servers" on page 65
- "Trustee View" on page 67
- "Scan Status" on page 69
- "Scan Schedule" on page 70
- "Viewing Attribute Details" on page 70

## Setting a Context

If you do not see any file servers listed, verify that you have set up File System Viewer, as described in "Setting up File System Viewer" on page 12.

Use the Set Context feature in File System Viewer to specify which elements you want File System Viewer to scan.

To set a context for File System Viewer:

1. Select one of the following:
  - **Enterprise:** All file servers or elements are included in the scan.
  - **File Server:** All file servers, selected file servers or only one file server is selected in the scan.
  - **Volume:** All volumes, selected volumes or only one volume is selected in the scan.

If you selected:

- **Enterprise**, see step 2.
  - **File Server**, follow these steps in order:
    - i. Select all or one of the operating systems from the Select OS Type menu.
    - ii. (Optional) Enter all or part of a file servers name in the Filter by File Server Name field. Wild cards (\*) are accepted. For example, if you want to scan all file servers that begin with California, you would enter the following: California\*
    - iii. Select file servers from the Select File Server field.
  - **Volume**, follow these steps in order:
    - i. Select all or one of the operating systems from the Select OS Type menu.
    - ii. Enter all or part of a file servers name in the Filter by Volume Name field. Wild cards (\*) are accepted. For example, if you want to scan all volumes that begin with Sacramento, you would enter the following: Sacramento\*
    - iii. Select file servers from the Select Volume field.
2. Click **Go**. File System Viewer scans the specified elements and provides the information in the lower half of the page.

To reset the context to Enterprise, click the **Reset** button.
  3. Select the view you want.

## Saving a View

File System Viewer enables you to save a view, so you can quickly access the information again without selecting a context.

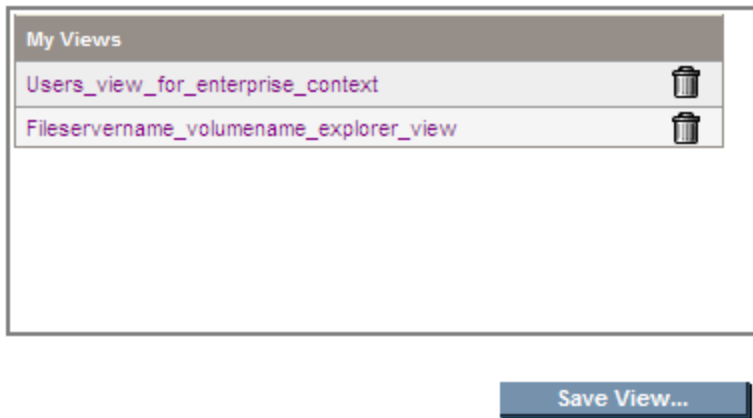
For example, assume you have a volume that periodically fills up with data. You could save the Sizes view for a volume so you can quickly access the view again to determine if the space is being taken up by several very large files or many small files.

To save a view:

1. Select a context as described in ["Setting a Context" on the previous page](#).
2. Select a view.
3. Click **Save View**.
4. Provide a name for the view.

If you are saving the name of a view that includes information about a file server or volume, include the name of the file server and/or volume as well as the name of the view.

File System Viewer saves the view in the My Views table:



Wait for the current page to complete loading before clicking a saved view in the My Views table; otherwise, you might see an error when you click a saved view.

## Dashboard Information for the Enterprise

The dashboard page of the management server provides an overview of the status of all file servers in your network. The dashboard provides the following four panes.

As the file sizes grow, the units switch from megabytes to gigabytes.

### Summary

- A graph displaying the top five file servers by scanned space
- A table listing:
  - Number of file servers
  - Volumes
  - Scanned space in megabytes



- Users - The number of users
- Users space - The amount of space in megabytes being consumed

To see a full-page view, access the File Servers view for the Enterprise context, as described in ["Properties of the File Servers" on the next page](#).

#### **Top ten extensions by size**

Displays the top 10 file extensions that take up the most space in gigabytes. To see a full-page view, access Extensions view for the Enterprise context, as described in ["Extension View" on page 51](#).

#### **Aging**

Displays, in gigabytes, the size of files that have been modified or used within the following periods:

- 0-30 days
- 30-60 days
- 60-90 days
- 90-180 days
- 180 days-1 year
- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the last 30 to 60 days, 6 GB would be displayed for the 30-60 day label.

#### **Sizing**


Displays the number of files modified within the following period:


- 0-30 days
- 30-60 days
- 60-90 days
- 90-180 days
- 180 days-1 year
- 1-2 years
- 2-3 years

- 3-4 years
- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the last 30 to 60 days, two would be displayed for the 30-60 day label.

To access the dashboard:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu. The Enterprise option tells File System Viewer to scan for all file servers on the network.
3. Select **Dashboard** from the Select View menu.
4. Click **Go**. The four panes are displayed.

To refresh data in a pane, click the **Refresh** button (  ) in the upper-left corner of the pane.

## Properties of the File Servers


The File Servers view provides the same information as the Summary pane in the dashboard, in addition to a table that lists all the file servers and their properties.

You can view the following information when you select the File Servers view for an Enterprise context:

- A graph displaying the top five file servers by scanned space
- A table listing:
  - Number of file servers
  - Volumes
  - Scanned space in megabytes
  - Users (number of users)
  - Users space (amount of space being consumed)
- A table displaying the following information for each of the file servers:
  - Volumes
  - Scanned space
  - Number of users
  - Amount of space

As the file sizes grow, the units switch from megabytes to gigabytes.

To access information about file servers:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **File Servers** from the Select View menu.

## Extension View

The Extensions view for the Enterprise context provides the following information for file extensions:


- A graph displaying the top 10 file extensions by:
  - **Usage** – Total size of all the files with the particular extension
  - **Count** – Number of files with the particular extension
- A table displaying the following information for each file extension:
  - **Usage** – Total size of all the files with the particular extension
  - **Count** – Number of files with the particular extension

To filter the information for one or more file servers, provide the name of the file extension or provide an expression in the Filter field and then click **Submit**. For more information about expressions, see ["Providing Expressions for the Filter Fields" below](#).

To view information about extension groups, select Extension Group from the Filter menu or provide an expression. You must create extension groups before seeing any information, see ["Viewing Extension Groups" on the next page](#).

Data less than 1 MB is not displayed in the charts. This could result in an empty chart if all data points are less than 1 MB.

To access the Extension view for the Enterprise context:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Extensions** from the Select View menu.

## Providing Expressions for the Filter Fields

File System Viewer provides filter fields throughout the various windows. Use expressions such as the wildcard (\*) to narrow your view to a particular set of items.

All of the filters work the same. For example, even though the following examples are for file extensions, the same expressions would work for any other item you want to filter, such as file servers.

- d\* returns all extensions starting with d
- \*d returns all extensions ending with d

- `*d*` returns all extensions with d in the extension

## Viewing Extension Groups

Create extension groups to determine how groups of file extensions are being used. For example, to understand how much space graphic files are using and how often they are being used, you could create a discovery group that contains file extensions for gif, png, and jpg graphic files.

After you create your extension groups, you can view the following information about them:


- A graph displaying the top 10 file extension groups by:
  - **Usage** – Total size of all the files with the particular extension
  - **Count** – Number of files with the particular extension
- A table displaying the following information for each extension group:
  - **Extensions** – File extensions that make up the extension group
  - **Usage** – Total size of all the files with the particular extension
  - **Count** – Number of files with the particular extension

To display a reduced set of information, provide the name of the extension group or an expression in the Filter field and then click **Submit**. For more information about providing expressions in the Filter field, see "[Providing Expressions for the Filter Fields](#)" on the previous page.

Data less than 1 MB is not displayed in the charts. This could result in an empty chart if all data points are less than 1 MB.



## Creating Extension Groups

To create an extension group:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Extensions** from the Select View menu.
4. Select **Extension Group** from the Filter menu.
5. Click **New Extension Group**.
6. Enter a name for the extension group in the **Extension Group Name** field; for example, Graphic files.
7. Enter the extensions to include in the group in the Extensions field. Separate each file extension with a comma. For example, if you want the discovery group to track file extensions for gif, png, and jpg files, enter the following in the Extensions field:  
  
`gif, png, and jpg`
8. Click **Finish**.



## Editing Extension Groups

To edit a discovery group:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Extensions** from the Select View menu.
4. Select **Extension Group** from the Filter menu.
5. Click Edit (  ) for the extension group you want to edit.
6. Modify the extensions that should belong to the group in the Extensions field.
7. Click **Finish**.

## Deleting Extension Groups

To delete an extension group:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Extensions** from the Select View menu.
4. Select **Extension Group** from the Filter menu.
5. Click **Delete** (  ) for the extension group you want to remove.

## Aging View for the Enterprise Context

The Aging view provides the following information about the file servers in your environment:

- A graph displaying the size of files that were modified or used within the following time periods:
  - 0-30 days
  - 30-60 days
  - 60-90 days
  - 90-180 days
  - 180 days-1 year
  - 1-2 years
  - 2-3 years
  - 3-4 years


- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the past 30 to 60 days, 6 GB is displayed for the 30-60 day label.

- A table displaying the number of files and their size that were accessed, modified, and created in the specified time periods, which are the same as those listed in the graph. To view this table, click the plus sign (+) to the left of the Show/Hide Aggregated Summary Details text.
- A table displaying, by file server, the number of files and their size in megabytes that were created, modified, or accessed within the specified time period. To determine which type of information to display in the table, select **Accessed**, **Modified**, or **Created** from the Age Distribution menu, and then click **Submit**.

As the file sizes grow, the units switch from megabytes to gigabytes.

To access the Aging view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Aging** from the Select View menu. The Aging view is displayed.

## Sizes View for the Enterprise Context


The Sizes view can help you understand if space on a server is being taken up by a few very large files that are never used.

The Sizes view displays the following information:

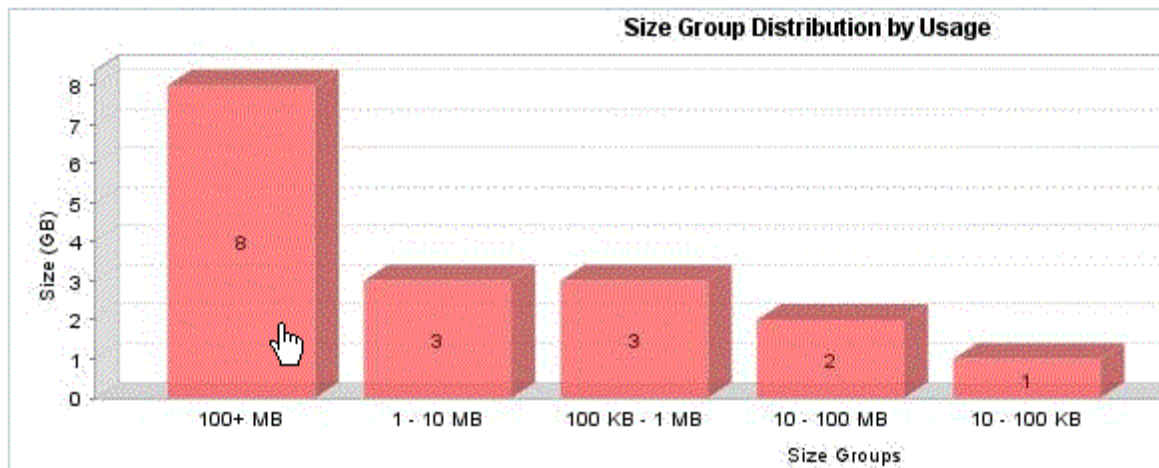
- A graph displaying the distribution of files by usage or by count within the following size groups:
  - 0 Bytes
  - 0-10 KB
  - 10-100 KB
  - 100 KB-1 MB
  - 1 10 MB
  - 10-100 MB
  - 100+ MB
- A table displaying by file server the number of files and their size that fall within the specified size groups.

As the file sizes grow, the units switch from megabytes to gigabytes.

To access the Sizes view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Sizes** from the Select View menu. The Size view appears.

To view additional information about the files within a size group, click one of the size groups in the graph, as shown in the following example.



The following are displayed:

- A pie chart showing the sizes of the files with the size group on each server.
- A pie chart showing the number of files with the size group on each server.
- A table showing the number of files with the size group on each server and the amount of space they occupy.

Data less than 1 MB is not displayed in the graphs. This could result in an empty graph if all the data points are less than 1 MB.

To view more information about the size group on a volume, click a file server in the File Server column in the table.


The following are displayed:

- A pie chart showing the sizes of the files with the size group on each volume
- A pie chart showing the number of files with the size group on each volume
- A table showing the number of files with the size group on each volume, the amount of space they occupy, and the collection time

## Managing Users on a File Server - Properties of Users

The Users tab enables you to see the properties of the user accounts assigned to file servers.

To access the properties:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.

The user account names displayed on this page are obtained by the following methods:

- The management server scanning the file servers.
- Information imported through LDAP servers. For more information about importing users through LDAP, see "[Importing User Information from LDAP and Active Directory Servers](#)" on page 27.
- Users created through the Create User tool in File System Viewer. For more information about creating users in File System Viewer, see "[Adding File System Viewer Users](#)" on the next page.

The page displays the following:

- A graph showing the top five users by usage and the amount of space they use.
- A summary table to the right of the graph displaying the following:
  - **Users** – The number of users assigned to all of the file servers monitored.
  - **Users Size** – The amount of space the users use.
  - **Largest User** – The user who uses the most space.
  - **Largest User Size** – The amount of space the largest user uses.
- A table below the graph displaying the users and the following properties:
  - **User ID** – The ID of the user
  - **User Name** – The name of the user
  - **Home Directory** – The home directory of the user. The home directory is assigned to a user by the user's organization. By default, the user has full access rights (read, write, execute) to the home directory. A user can have multiple home directories.
  - **Owner** – The owners who are associated with the user. A user can have multiple owners.
  - **Department Number** – The number of the department to which the user is assigned. The department number was entered when the department was created in Chargeback.
  - **User Status\*** – The user's status. User Status information will be displayed for users retrieved from Active Directory; however, the Edit option will not be displayed for them.
  - **Manager\*** – The name of the user's manager.
  - **Quota** – The amount of space the user is allocated.
  - **Used** – The amount of space the user is using.
  - **Instances** – The number of file servers on which the user's home directory is present.

\*The User Status and Manager columns are populated when the information is imported from an LDAP server. Users cannot add this information from within HP Storage Essentials.




To display the properties of just one user account or provide a wild car, enter the full name in the Filter box, and then click **Submit**.

## Viewing Details for a File System Viewer User

You can view detailed information about a File System Viewer user, such as the following:

- Department
- Quota
- Total Used by Owners
- Total Used by Directories

To view details of a File System Viewer user:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Under the User ID column, click the link for the user you want to know more about.

You are shown detailed information about the user, such as the following:

- Which volumes and file servers the user is taking up space on and the amount
- Any policies assigned to the user

## Adding File System Viewer Users


File System Viewer provides data about users on the file servers, including:

- The amount of space the users are using
- The user who is using the most amount of space and the amount of space being used

It obtains information about its users from the file scans of the servers. You can also provide user information through this tool.

This tool simulates the creation of a user account. To obtain information about users, you must first add them in File System Viewer. These users differ from the users for the management server. When you add a File System Viewer user, you are making File System Viewer aware of that user for monitoring. That user is not granted access to the management server.

To add a File System Viewer user

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click the **New User** button located under the graph.

5. In the ID box, enter the user ID.
6. In the Name box, enter the name for the user.  

Provide the domain name for users on servers running Windows; for example, mydomain\username. The domain name is case sensitive.
7. In the Directories box, specify a user's home directory. Home directories are assigned to users by their organization. A user can have multiple, comma-separated home directories.  

Directory paths are case sensitive and must be fully qualified paths. Map a user's usage to the home directory when configuring a file server scan.
8. In the Owners box, enter the owners that are associated with the user.  

Separate multiple owners with a comma. The owner name should be similar to what the OS reports; for example, the domain\username on Windows.

Information must be entered into either the Directories box or the Owners box. Entering information into both boxes is accepted, but not required.
9. In the **Department No** menu, select a department number corresponding to the department to which the user belongs. The department number was assigned to the department when the department was added by using Chargeback Manager
10. In the E-mail box, enter the user's e-mail address.
11. In the Quota box, enter the maximum amount in megabytes the user can use.  


Entering **0** in the Quota box grants unlimited storage capacity to the selected user.
12. Click **OK**.


## Modifying File System Viewer Users

You can modify the following properties for a File System Viewer:

- **Name**
- **Directories**
- **Owners**
- **Department Number**
- **E-mail**
- **Quota**

The following procedure applies only to modifying a File System Viewer user, not a user account for the management server:



1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.

4. In the table below the graphic, click the **Edit** () button corresponding to the user you want to modify.
5. Modify one or more of the properties.
6. Click **OK**. The File System Viewer user is updated.

## Deleting File System Viewer Users

The following steps modify a File System Viewer user, not a user account for the management server. They do not affect access to the management server or the file server.


To delete a File System Viewer user:

1. Click **File System Viewer** () in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Do one of the following:
  - To delete one user at a time, click the **Delete** () button corresponding to the user you want to remove. When you are asked if you want to delete the user, click **OK**.
  - To delete multiple users at once, select the users in the far left column and click the **Delete** button located above the table. When you are asked if you want to delete the users, click **OK**.

## Exporting a List of Users

After you add your users, export the list of users in case you need to reinstall the management server. The user list is saved as a comma-separated values file, which can be opened in a text editor such as Notepad. You can add to the comma-separated list as described in "[Modifying a List of Users](#)" below.

To export the list of users:

1. Click **File System Viewer** () in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click **Export Users**.
5. When asked if you want to save the comma-separated values file, click **Save** and designate a location to save the file.

## Modifying a List of Users

After you export a list of users, you can easily add to it. The attributes for each user appear on a row for that user. The format of a user's record is as follows:

```
<User ID>,<User Name>,<Home Directory(s)>,<Department>,  
<E- Mail>,<Quota><Owner(s)>
```

Assume you have a user with the following attributes:

- **User ID** – JS
- **User Name** – John Smith
- **Home Directory** – Program Files
- **Department** – Engineering
- **E-Mail** – jsmith@companyname.com
- **Quota** – 500
- **Owner** – jsmith

The information for the user would appear as follows in the list:

```
JS, John Smith, \Program  
Files, Engineering, jsmith@companyname.com, 500, jsmith
```

A list with multiple users would appear as follows:

```
JS, John Smith, \Program  
Files, Engineering, jsmith@companyname.com, 500, jsmith  
  
JD, John Doe, \Program Files, Engineering, jdoe@companyname.com, 500, jdoe  
  
DD, David Double, \Program  
Files, Engineering, jdouble@companyname.com, 500, ddouble
```

The record for a user with multiple home directories would appear as follows:

```
JS, John  
Smith, "\jsmith, \home\jsmith", Engineering, jsmith@companyname.com, 500
```

The record for a user with multiple owners would appear as follows:

```
Adm, Administrator, , , netadmin@mycompany.com, , "root, bin, adm, uucp, nobody,  
Administrator"
```

The owner can be omitted if the home directory is provided, and the home directory can be omitted if the owner is provided.

The following boxes must be valid. Failure of any of these conditions causes the management server to log that record as an error and continue to the next record:


- <User ID>
- <Home Directory> or <Owner>
- *(Optional)*: <Department> – If you provide a department, the department must exist on the management server. The department can be empty.
- *(Optional)*: <Quota>
- *Optional*: <E-Mail>

**Restrictions for User Boxes**

Box	Condition
User ID	Required box. Cannot include the following: <ul style="list-style-type: none"> <li>• More than 64 characters</li> <li>• Single quote (')</li> <li>• Double quote (")</li> <li>• Forward slash (/)</li> <li>• Back slash (\)</li> </ul>
User Name	Required box. Cannot include more than 64 characters.
Home Directory	Required if the owner is not specified. List of one or more directories separated by commas, with each directory name not more than 4000 characters. Individual directory names should not contain commas.
Department	Null or an existing department.
E-Mail	Null or a string of up to 253 characters.
Quota (Megabytes)	Null or 0 to indicate unlimited, or a rational decimal number less than 999999999999. Value is in MBs.
Owner	Required if the home directory is not specified. List of one or more owner names separated by commas, with each individual owner name not exceeding 256 characters. Individual owner names should not contain commas.

## Viewing Detailed Information for a User

To view the amount of space being used on a volume and other information for a user:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Owners** tab.

The following information is displayed for the user:

- File server name
- Volume name
- Size used
- Owner


## Importing a List of Users

You can import a list of users from a comma-separated values file. For information on how to add to the current list of users in File SRM, see ["Exporting a List of Users" on page 59](#) and ["Modifying a List of Users" on page 59](#).

The management server provides two ways to import a list of users:

- **Full Import** – Replaces all current users in the list with the users in the import file
- **Partial Import** – Updates existing users and adds new users

To import a list of users:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click **Import Users**.
5. Click **Browse** to select the list of users you want import.
6. Select **Full Import** or **Partial Import**.
7. Click **OK**.


When you perform a partial or full import, you are provided with a report with the following information:

- Number of records read
- Number of users created
- Number of users updated
- Number of users that could not be created
- Format errors
- Directory and owner both unspecified
- Directory already mapped to a user
- Owner already mapped to a user

- Invalid departments
- Multiple entries for users

## Policies for a User


To view the policies for a user:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Policies** tab. File System Viewer displays the policies assigned to the user.

Policy Manager can automatically send an e-mail, generate an event, or run a custom script when the file server is being overused. For example, you can configure Policy Manager so you receive an email message when the amount of free space on a file server decreases to a specified level.

## Adding Policies

To add the policies for a user:



1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Policies** tab.
6. Click **Add** in the right corner.
7. In the Name box on the Policy Properties tab, enter a name for the policy or keep the default.
8. In the Description box, modify the description for the policy or keep the default.
9. In the Re-arm Period box, specify the amount of time (in minutes) after the policy executes before it can execute again. The re-arm period is useful for limiting the number of times the same actions execute. You can specify shorter periods for important applications.
10. In the Condition menu, specify a comparison operator.
11. To the right of the Comparison Operator menu, take the following action, depending on the box displayed:
  - Enter a percentage.
  - Enter an amount in gigabytes (GB).
  - Type the number of available media that will trigger an alert.

12. For trending policies, enter the number of days in the Historic period box (7 to 180 days) and Projection period box (min=1; max=180). The Historic period is the number of days in the past that meet the condition.
13. For trending policies, enter the number of days in the future that will meet the condition in the Projection period box (1 day to 360 days).
14. Select an action to occur when the policy condition is fulfilled. For more information, see “Actions Available for When a Policy Condition is Fulfilled” in the *User Guide*.
15. Click **Finish**.

For more detailed information, see the Managing Policies chapter in the *User Guide*.


## Editing Policies

To edit a policy:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Policies** tab.
6. Click the **Edit** (  ) button corresponding to the policy you want to modify.
7. In the Name box, change the name for the policy.
8. In the Description box, change the description for the policy.
9. Select or deselect the **Active** option to activate or de-activate the policy.
10. In the Re-arm Period box, specify the amount of time (in minutes) after the policy executes before it can execute again. The re-arm period is useful for limiting the number of times the same actions will execute. You can specify shorter periods for important applications.
11. In the Condition menu, change the conditions of the policy.
12. For trending policies, change the number of days in the Historic period box (min=7; max=180) or Projection period box (min=1; max=180).
13. Select an action to occur when the policy condition is fulfilled. For more information, see “Actions Available When a Policy Condition is Fulfilled” in the *User Guide*.
14. Click **OK**.

## Testing Policies

To test a policy:




1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.



3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Policies** tab.
6. Click the **Test** button for the policy.

## Deleting Policies

To delete a policy:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Users** from the Select View menu.
4. Click a **User ID** in the User ID column.
5. Click the **Policies** tab.
6. Do one of the following:
  - **Delete just one policy** – Click the **Delete** (  ) button corresponding to the policy you want to delete.
  - **Delete several policies at once** – Select the check boxes next to the policies you want to delete. To select all of the policies, select the check box next to the **Name** heading, and click the **Delete** (  ) button.


The policies are deleted.

## Viewing Security and User Identifiers for All File Servers

The Ownership tab displays owner-related details. It enables you to determine how many files the owner is using on the file server.

The Ownership tab is disabled by default for file servers running on Microsoft Windows. To view the Ownership tab, set the fileSrm.collectWindowsSID property to true as described in "[Enabling the Ownership Tab on Windows](#)" on the next page. You can also view it by selecting the Collect Ownership Information checkbox when configuring a file server scan.

To access the Ownership tab:


1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Ownership** from the Select View menu.

You will see the following:

- A graph showing the top 10 owners that use the most in megabytes
  - A table that lists:
    - **Ownership** – The security identifier (Windows) or user identifier (UNIX)
    - **Files** – The files the security identifier or user identifier uses
    - **Size** – The total size of the files the security identifier or user identifier uses
4. To filter by owner or by expression, enter the information in the Filter field, and click **Submit**. For more information, see "Providing Expressions for the Filter Fields" on page 51.

## Viewing Detailed Information About an Owner

To view detailed information:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Ownership** from the Select View menu.
4. To learn more about an owner, click the owner's name.

The following are displayed:

- A pie chart showing the sizes of the files with the owner on each server
- A pie chart showing the number of files with the owner on each server
- A table showing the number of files with the owner on each server and the amount of space they occupy

Data less than 1 MB is not displayed in the graphs. This could result in an empty graph if all the data points are less than 1 MB.

## Enabling the Ownership Tab on Windows

The Ownership tab is disabled by default for file servers running on Microsoft Windows. To view the Ownership tab, you must set the `fileSrm.collectWindowsSID` property to true.

To set the `fileSrm.collectWindowsSID` property to true:

1. Select **Configuration > Product Health** and click **Advanced** in the Disk Space tree.
2. Click **Show Default Properties** at the bottom of the page.
3. Copy the `fileSrm.collectWindowsSID` property.

How you copy the text depends on your Web browser. If you are using Microsoft Explorer or Netscape Navigator, select the text, right-click the selected text, and select **Copy**.

4. Return to the Advanced page (**Configuration > Product Health** and click **Advanced** in the Disk Space tree).

5. Paste the copied text into the Custom Properties box.  
How you paste the text depends on your Web browser. If you are using Microsoft Explorer or Netscape Navigator, right-click the box, and select **Paste**.
6. Make your changes in the Custom Properties box.
7. Change the value assigned to the fileSrm.collectWindowsSID property to true.  
`fileSrm.collectWindowsSID=true`
8. When done, click **Save**.
9. Restart the AppStorManager service for your changes to take effect.


## Trustee View

If you do not see information in the Trustee View, check that ACL data collection is enabled (see "Enabling the Collection of Access Control Entry Data Collection for Directories on Windows Servers" on page 40).

The Trustee view provides the following:

- A graph listing the top 10 trustees by size
- A table listing the following for each trustee:
  - Size
  - Directories

To access the Trustee view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select **Enterprise** from the Select Context menu.
3. Select **Trustee** from the Select View menu.
4. To filter the information for one or more trustees, provide the name of the trustee or provide an expression in the Filter field and then click **Submit**.

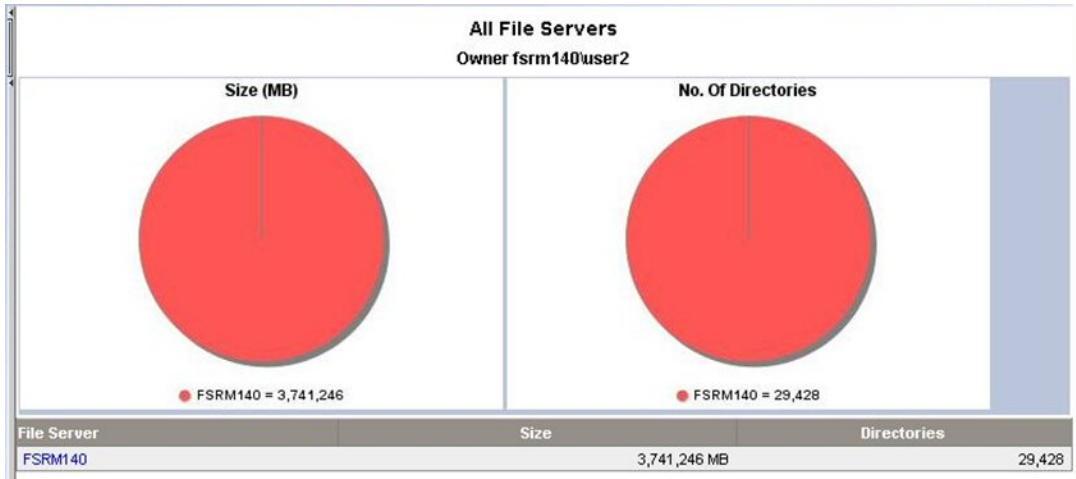
For more information about expressions, see "Providing Expressions for the Filter Fields" on page 51.

## Viewing Detailed Trustee Data

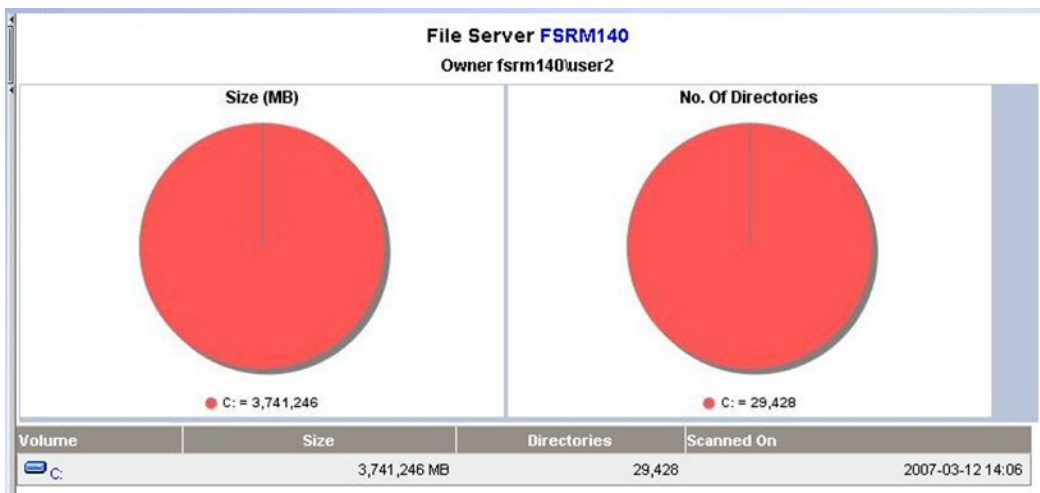
To view detailed information for a trustee, click the name of a trustee in the Trustee view. You are then shown two pie charts:

- Size associated with the trustee in megabytes
- Number of directories associated with the trustees

Below the pie charts is a table listing the size in megabytes and directories for each file server associated with the trustee. The following is an example:



Here is an example of Selected Trustee Drill-down at the file server level:



To obtain even more detailed information about the directories associated with the trustee, click one of the pie charts or a file server listed in the table.

A table is provided with the following information for each directory associated with the trustee:

- Size of the current directory in megabytes
- Size of the current directory including subdirectories
- Number of trustees
- Trustee's share
- Attributes – See "[Viewing Attribute Details](#)" on page 70 for more information about the meaning behind the letters.
- Permissions – The letters in the Permissions column have the following meaning:

- **R** – Read
- **W** – Write
- **F** – Full

## How Data is Calculated in the Trustee View

On the management server, the data is parsed to extract the effective usage by each trustee. This is calculated by the summation of effective usage by the trustee on each directory has permission to access. The following shows how the effective space calculations are determined for the statistics shown in the example.

### Directory Statistics

Directory Name	Full Size	Own Size	Trustee	Rights
A	10 GB	8 GB	X	F
			Y	R
			Z	–
B	18 GB	12 GB	X	–
			Y	F
			Z	W
C	14 GB	6 GB	X	F
			Y	F
			Z	F

The following is the effective space calculation:

- X: From A + From B + From C =  $(8/2) + 0 + (6/3) = 6\text{GB}$
- Y: From A + From B + From C =  $(8/2) + (12/2) + (6/3) = 12\text{GB}$
- Z: From A + From B + From C =  $0 + (12/2) + (6/3) = 8\text{GB}$

The “own” size of a directory is considered for calculation and not the full size (which includes the size of its subdirectories), because the subdirectories are being calculated separately anyway.

User interface screens are available to display the ACL information at various levels, including the Enterprise level (all file servers), a selected file server, and a Volume level, for all the trustees. In addition, drill-down is available for selected trustees at various levels.

## Scan Status

The Scan Status view displays detailed information from the scans. This information is also available from the Scan Status tab, which you can access by selecting **Configuration > File System Viewer**. For detailed information about scan status information, see ["Scan Status Tab"](#) on page 25.

## Scan Schedule

The Scan Schedule view displays the scheduled scans. This information is also displayed in the Scheduled Scan tab accessible from the **Configuration > File System Viewer** menu. For more detailed information about scan schedules, see "[Scheduling Single and Multiple Scans](#)" on page 15.

## Viewing Attribute Details

In several of the views, attribute information is provided as a letter or several letters in the Attribute column. The attributes have the following meaning.

Letter	Detail
R	Read Only
H	Hidden
S	System
D	Directory
A	Archive
V	Device
N	Normal
T	Temporary
P	Sparse File
J	Reparse Point
C	Compressed
O	Offline
I	Not Content Indexed
E	Encrypted



## Chapter 3

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### Individual File Server Details

This section consists of the following topics:

- "Dashboard Information for a File Server" below
- "Properties for a File Server" on page 74
- "Finding Volume Details" on page 75
- "Type of Files on a File Server" on page 76
- "Aging Properties of Files on a File Server" on page 79
- "Size Group Distribution Information" on page 80
- "Users for a File Server" on page 81
- "Ownership Information for a File Server" on page 82
- "Trustee Information for a File Server" on page 82
- "Events for a File Server" on page 83
- "Viewing Topology for a File Server" on page 91
- "Scan Status for File Servers" on page 91
- "Scan Schedule for File Servers" on page 92

### Dashboard Information for a File Server

The dashboard displays the following information for file servers.

#### Summary

- A graph displays the top five volumes by usage on the file server. The amounts for free space and used space are shown. Data less than 1 MB is not displayed in the graph. This could result in an empty graph if all data points are less than 1 MB.
- A summary table to the right of the graph shows:
  - **Volumes** – Number of volumes on the file server
  - **Capacity** – Size of all volumes on the file server
  - **Used** – Amount of used space on all volumes on the file server
  - **Free** – Amount of free space on all volumes on the file server




- **Used Percent** – Amount of used space on all volumes on the file server
- **Free Percent** – Amount of free space on all volumes on the file server
- **Users** – Number of users assigned to one or more of the volumes on the file server
- **Users Space** – Amount of space the users use on the file server.
- **Top ten extensions by size** displays the top 10 file extensions that take up the most space in gigabytes.
- **Aging** displays the (gigabyte) size of files modified or used within the following periods:
  - 0-30 days
  - 30-60 days
  - 60-90 days
  - 90-180 days
  - 180 days-1 year
  - 1-2 years
  - 2-3 years
  - 3-4 years
  - 4-5 years
  - 5+ years


For example, if two 3-GB files were modified within the past 30 to 60 days, 6 GB would be displayed for the 30-60 day label.

- **Sizing** displays the number of files modified within the following period:
  - 0-30 days
  - 30-60 days
  - 60-90 days
  - 90-180 days
  - 180 days-1 year
  - 1-2 years
  - 2-3 years
  - 3-4 years
  - 4-5 years
  - 5+ years

For example, if two 3-GB files were modified within the past 30 to 60 days, two would be displayed for the 30-60 day label.


To access the dashboard:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select **Dashboard** from the Select View menu.
4. Click **Go**.

To refresh data in a pane, click the **Refresh** button (  ) in the upper-left corner of the pane.

## Properties for a File Server

To view the properties for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select **Properties** from the Select View menu.

The Properties page displays the following information

- **Business Cost** – The cost impact of the application on the network. The currency displayed depends on the standards and formats setting on the management server. In the Business Cost field, type an amount; for example, 35.25, and then click **OK**.
- **Custom Name** – A unique name for the file server. The custom name is displayed for the File System Viewer application instead of the file server's default name. The unique name helps in distinguishing this File System Viewer instance from the actual server. To create a unique name, type the name in the Custom Name field and click the **Save** button.
- **Vendor\*** – The vendor that created the file server
  - The only symbol you can enter in front of the number is the dollar sign (\$).
  - You can enter a number with decimal points, such as 30.50.
- **Contacted\*** – The last time the software contacted the file server
- **Record Created\*** – When a record was created for the file server
- **Discovery Status\*** – The status of the last discovery. If the element was just discovered, the status is at "created."
- **Install Date** – When the file server was installed
- **Name Detected\*** – The name of the file server detected
- **OID** – The Object Identifier


- **Description\*** – Information about the type of element. In this instance, it would display FileServer.
- **Target Operating System\*** – The operating system of the file server
- **IdentificationCode** – The identification code of the file server
- **Product Name\*** – The product name of the file server
- **Serial Number** – The serial number of the file server
- **Build Number** – The build number of the file sever
- **Version** – The version number of the file server
- **Host\*** – The name of the host
- **Business Cost (per hour)** – The business cost that was set at the top of this page

\*Populated fields. By default, the rest are blank.

To update the data by doing a Get Details, click **Update Element Data**. Get Details could take a while.

## Finding Volume Details

To view the properties of the volumes on a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server (see "Setting a Context" on page 47).
3. Select **Volumes** from the Select View menu.

You can view additional information on volumes that have had file server collection.

This page displays the following:

- A graph that shows the top five volumes by usage on the file server, including the amounts for free space and used space.

Data less than 1 MB is not displayed in the graph. You might see an empty graph if all data points are less than 1 MB.


- A summary table to the right of the graph that shows:
  - **Volumes** – The number of volumes on the file server
  - **Capacity** – The size of all volumes on the file server
  - **Used** – The amount of used space on all volumes on the file server
  - **Free** – The amount of free space on all volumes on the file server
  - **Used Percent** – The amount of used space on all volumes on the file server

- **Free Percent** – The amount of free space on all volumes on the file server
- **Users** – The number of users assigned to one or more of the volumes on the file server
- **Users Space** – The amount of space the users use on the file server
- A table below the graph that shows the volumes and the following properties:
  - **Capacity** – The size of the volume
  - **Used** – The amount of space used on that volume
  - **Used%** – The percentage used on the volume
  - **Users** – The number of users assigned to that volume
  - **Users Space** – The amount of space the users use

## Type of Files on a File Server

The Extensions view provides information about the types of files on a file server. For example, it can let you know how many mp3s are stored on a file server and their file size. In the extensions tab, there is a drop-down menu to select Extension Groups, in which files are grouped by file type.

To view information about file extensions on a server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server (see ["Setting a Context" on page 47](#)).
3. Select **Extensions** from the Select View menu. The following are displayed:
  - A graph that shows the top 10 extensions and their size
  - A table below the graph that shows the extension and its properties:
    - Size** – The size of all the files with that extension. This property lets you see which types of files are using the most space on a file server.
    - Count** – The number of files with this extension.
4. To filter by extension, enter the extension name and click the **Submit** button (see ["Providing Expressions for the Filter Fields" on page 51](#)).
5. Click an extension in the Extension column in the table. You can see the following:
  - A pie chart that shows the sizes of the files with the extension per volume.
  - A pie chart that shows the number of files with the extension per volume.
  - A table that lists the number of files with the extension per volume and the amount of space they occupy.

Data less than 1 MB is not displayed in the graph. This could result in an empty graph if all data points are less than 1 MB.

- To view a listing of the files with the extension on the volume, click a volume in the Volume column in the table. The largest N and most aged N files with the extension are listed in the tabs “Largest Files” and “Aged Files.” The filename with path, size, and the accessed, modified, and created time are provided.
- You can save the extensions for a volume in a comma-separated list by clicking the **Save Extension Detail** button in the right pane. The extensions for that volume are saved in a comma-separated list (CSV file).

Excel can only handle a limited number of records. If the file will not open in Excel, it may be necessary to bring the CSV file into a database. Another option is to break the CSV file into smaller pieces that Excel will be able to handle.

## Extension Groups

The following example shows the Extensions tab selected and the drop-down menu choices for selecting Extension Groups.



Select **Extension Groups** to display a screen showing the extension groups along with the extensions. A screen similar to the following displays.



You can edit or delete extension groups using the Edit or Delete icons. To create a new extension group, select the **New Extension Group** button, and a screen similar to the following is displayed.



You can enter the new extension group name and the extensions separated by commas. After extension groups are created, extension group detail information appears in the Extensions tab when the extension group is selected from the drop-down menu.

From the volume level extension groups chart page, you can go to an intermediate page before a final drill-down page. The intermediate page lists constituent extensions with hyperlinks to the drill-down page to that specific extension. Here is an example.



Extension	Size	Count
<a href="#">jar</a>	319 MB	805
<a href="#">zip</a>	517 MB	138
<a href="#">war</a>	2 MB	5

The display lists constituent extensions with hyperlinks to the drill-down page for that specific extension.

## Filtering Files


Filters use the following expressions:

- d\* returns all extensions starting with d
- \*d returns all extensions ending with d
- \*d\* returns all extensions having d in the extension

You can enter a list of extensions separated by a comma.

## Aging Properties of Files on a File Server

To find information about the aging properties of the files on a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select the **Aging** view in the right pane.

Save the aging details to a comma-separated list (CSV file).

By default the page displays the following information:

- A graph displaying in gigabytes the size of files that have been modified or used within the following time periods:
  - 0-30 days
  - 30-60 days
  - 60-90 days


- 90-180 days
- 180 days-1 year
- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the last 30 to 60 days, 6 GB is displayed for the 30-60 day label.

- A table displaying the number of files (and their size in megabytes) that were accessed, modified, and created in the specified time periods, which are the same as those listed in the graph. To view this table, click the plus sign (+) to the left of the Show/Hide Aggregated Summary Details text.
- A table displaying, by volume, the number of files (and their size in megabytes) that were created, modified, or accessed within the specified time period. To determine which type of information to display in the table, select **Accessed**, **Modified**, or **Created** from the Age Distribution since last menu, and then click **Submit**.

## Size Group Distribution Information

To view size information for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select the **Sizes** view.

The page displays the following:

- A bar chart displaying the size group distribution by usage or by count depending on the option selected.
    - **Usage**: Total size of all the files with the particular extension.
    - **Count**: Number of files with the particular extension.
  - A table listing the number of files and the total size for each size group on each volume.
4. To obtain more detailed information about a size group, click its corresponding heading in the table. The following are displayed:
    - A pie chart showing the sizes of the files with the size group per server.
    - A pie chart showing the number of files with the size group per server.



- A table showing the number of files with the size group per server and the amount of space they occupy.


Data less than 1 MB is not displayed in the graphs. This could result in an empty graph if all the data points are less than 1 MB.

5. To view a listing of the oldest files with the size group on the volume, click a volume in the Drive column in the table.

You can save the files with the size group for a volume in a comma-separated list (CSV file) by clicking **Export Files to CVS**.

## Users for a File Server

To view user information for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select **Users** from the Select View menu.

The user account names displayed on this page are obtained by the following methods:

- The management server scanning the file servers.
- Information imported through LDAP servers (see "Importing User Information from LDAP and Active Directory Servers" on page 27).
- Users created through the Create User tool in File System Viewer (see "Adding File System Viewer Users" on page 57).

The page displays the following:

- A **graph** showing the top five users by usage and the amount of space they use
- A **summary table** to the right of the graph displaying the following:
  - **Users** – The number of users assigned to all of the file servers monitored
  - **Users Size** – The amount of space the users use
  - **Largest User** – The user who uses the most space
  - **Largest User Size** – The amount of space the largest user uses
- A **table** below the graph displaying the users and the following properties:
  - **User ID** – The ID of the user
  - **User Name** – The name of the user
  - **Home Directory** – The home directory of the user. The home directory is assigned to a user by the user's organization. By default, the user has full access rights (read, write, execute) to the home directory. A user can have multiple home directories.
  - **Owner** – The owners who are associated with the user. A user can have multiple owners.


- **Department Number** – The number of the department to which the user is assigned. The department number was entered when the department was created in Chargeback.
- **User Status\*** – The user's status. User Status information will be displayed for users retrieved from Active Directory; however, the Edit option will not be displayed for them.
- **Manager\*** – The name of the user's manager
- **Quota** – The amount of space the user is allocated
- **Used** – The amount of space the user is using
- **Instances** – The number of file servers on which the user's home directory is present

\*The User Status and Manager columns are populated when the information is imported from an LDAP server. Users cannot add this information from within HP Storage Essentials.

To display the properties of just one user account or provide a wild card, enter the full name in the Filter box, and then click **Submit** (see "Providing Expressions for the Filter Fields" on page 51).

## Ownership Information for a File Server

To view ownership information for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select **Ownership** from the Select View menu. The following are displayed for the file server:
  - A graph showing the top 10 owners who use the most in megabytes (MB)
  - A table showing:
    - **Ownership** – The security identifier (Windows) or user identifier (UNIX)
    - **Size** – The total size of the files the security identifier or user identifier uses
    - **Files** – The files that the security identifier or user identifier uses
4. To filter by owner or by expression, enter the information in the Filter field, and click **Submit**.

For more information about filtering by expressions, see "Providing Expressions for the Filter Fields" on page 51.

## Trustee Information for a File Server


If you do not see information in the Trustee View, check that the ACL data collection was enabled (see "Enabling the Collection of Access Control Entry Data Collection for Directories on Windows Servers" on page 40).

The Trustee view provides the following:

- A graph listing the top 10 trustees by size
- A table listing the following for each trustee:

- Size
- Directories

To access the Trustee view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "[Setting a Context](#)" on page 47.
3. Select **Trustee** from the Select View menu.


To filter the information for one or more trustee, provide the name of the trustee or provide an expression in the Filter field and then click **Submit**. For more information about expressions, see "[Providing Expressions for the Filter Fields](#)" on page 51.

For information about how the trustee data is collected, see "[How Data is Calculated in the Trustee View](#)" on page 69.

## Events for a File Server

The Events view lists the events that involve the file server. It provides the following information about the events for a file server.

To access the Events tab:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "[Setting a Context](#)" on page 47.
3. Select the **Events** view in the right pane.

Events listed on this page might not be attributed to the correct source until Getting Details completes.

## Setting up a Filter

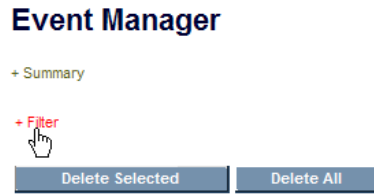
The management server provides several types of event filters that enable you to specify the events you want Event Manager to display.

You can use all of the following event filters at once or just one of them:

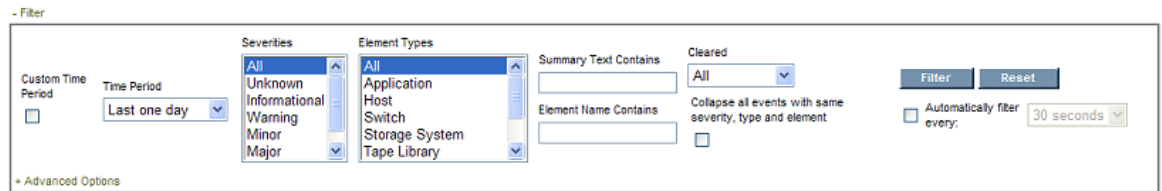
- Time period
- Severity level
- Element type
- Summary text
- Element name
- Cleared status
- Specific element

To set up a filter:

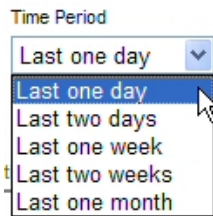
1. Click the Filter heading at the top of the page:



The following filtering feature is displayed:



2. Select a time from the **Time Period** combo box. You can also select a customized time as described in "Selecting a Custom Time Period" on page 86.



3. Select which events of a severity type you want displayed. Use the Control and Shift keys to select multiple severities. The following options are provided:
  - **All** – Events of all severities are displayed.
  - **Unknown** – Only events of the severity type, unknown, are displayed.
  - **Informational** – Only events of the severity type, informational, are displayed.
  - **Warning** – Only events of the severity type, warning, are displayed.
  - **Minor** – Only events of the severity type, minor, are displayed.
  - **Major** – Only events of the severity type, major, are displayed.
  - **Critical** – Only events of the severity type, critical, are displayed.
4. Select which events of an element type you want displayed. Use the Control and Shift keys to select multiple severities. The following options are provided:
  - **All**
  - **Application**

- **Host**
  - **Switch**
  - **Storage System**
  - **Tape Library**
  - **Fabric**
  - **Other**
  - **HP Storage Essentials**
5. To set the filter by summary text, enter the text for the filter in the **Summary Text Contains** field.  
You can use this option when you are seeing several events that span over several elements or severity levels. For example, to determine if someone else is logging into the management server as admin, you can find how often the admin user has logged into the management server over the last few days by entering the following text in the **Summary Text Contains** field:  

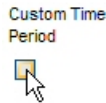
```
User admin logged in
```
  6. To set the filter by element name enter text in the **Element Name Contains** field.  
This feature can be helpful if you are interested in events from elements that have similar names. For example, assume you have a naming convention for hosts, where all hosts that belong to the engineering group begin with engineering. Event Manager can display only events from those hosts when engineering is entered in the **Element Name Contains** field.
  7. To set a filter by cleared status, select one or more of the following by using the Control and Shift keys:
    - **All** – All events regardless of their clear status
    - **All But Clear** – All events except for those marked clear
    - **Clear** – Only events marked clear
  8. To merge all events together, select **Collapse all events with same severity, type and element**.  
This feature is very useful when numerous events of the same severity, type, and element are being picked up by the management server. If you select the option **Collapse all events with same severity, type and element**, the management server displays just unique events with a total count in front of them, rather than list all of the events individually.
  9. To have Event Manager filter elements automatically at a set interval, select the **Automatically filter every** option and select one of the following:
    - 30 seconds
    - 1 minute
    - 5 minutes
    - 10 minutes
  10. When done setting your options, click the **Filter** button.  
You can update the events displayed by clicking the **Filter** button.

## Selecting a Custom Time Period

You can select a custom time period for the filter when troubleshooting an issue.

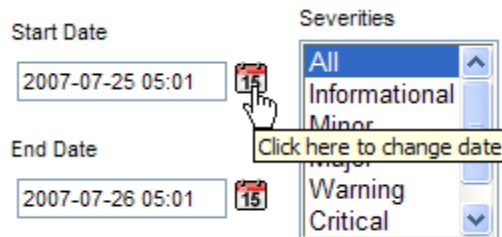
To select a custom time period:

1. Select the **Custom Time Period** option.

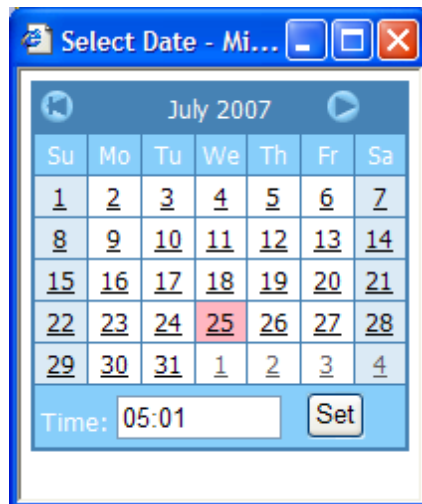


Event Manager only displays events that occur after the start date and time and before the end date and time.

2. Click the Calendar icon to the right of the **Start Date** field:



3. In the Calendar, select the start date:



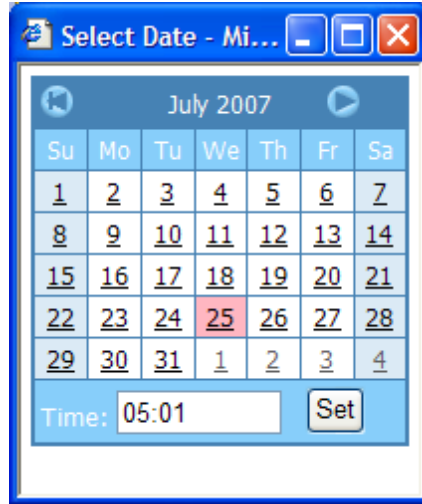
4. In the **Time** field, enter the start time.

The time is based on a 24-hour clock. For example, to have Event Manager display events occurring after 8 p.m. on the specified date, enter 20:00.

5. When you are done setting the start time and date, click **Set**.

You can set the end date and time for the filter. Event Manager only displays events that occur after the start date and time and before the end date and time.

1. Click the Calendar icon to the right of the **End Date** field.
2. In the Calendar, select the end date:



3. In the **Time** field, enter the end time.

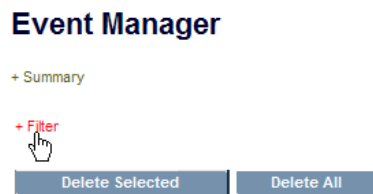
The time is based on a 24-hour clock. For example, to have Event Manager display events occurring before 8 p.m on the specified date, enter 20:00.

4. When done setting the end time and date, click **Set**.

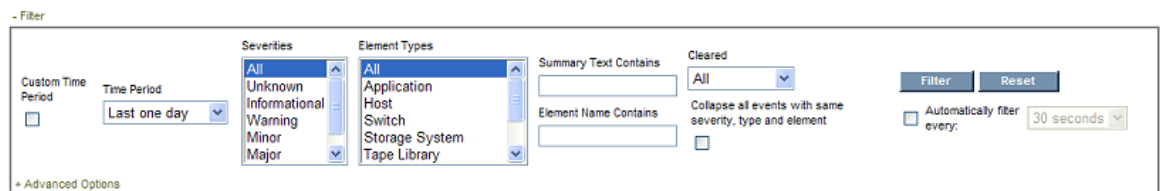
## Resetting a Filter

To revert to the default settings for the filter:

1. To access the filter for Event Manager, click the Filter heading at the top of the page:



The filtering feature is displayed:



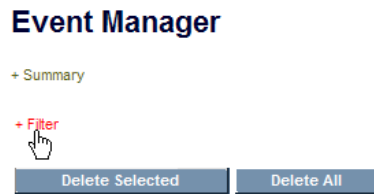
2. Click the **Reset** button. The filter is reset.

## Setting up Advanced Filtering

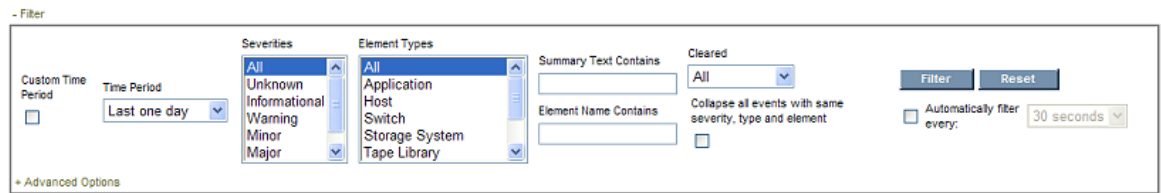
Event Manager provides an advanced filtering feature that enables you to determine detailed information for filtering.

To set up advanced filtering:

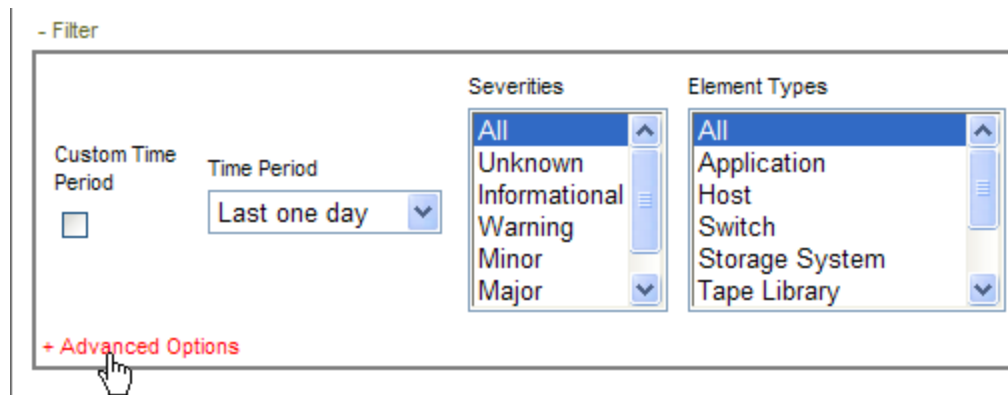
1. To access the filter for Event Manager, click the **Filter** heading at the top of the page:



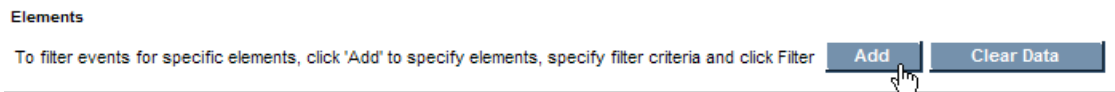
The filtering feature is displayed:



2. Expand the **Advanced Options** heading. Once the Advanced Options heading is expanded, the Element Name Contains field becomes inactive. Any values entered in the Element Name Contains field are ignored while the Advanced Options heading is expanded.



3. Click the **Add** button:



4. Select the element type you want to add and click **Next**.



- Select one or more elements you want to add to the filter and **Next**. Only the elements of the type you specified in the previous window are displayed. For example, if you selected hosts in the previous window, only hosts are displayed in this screen.

If the element you are looking for does not appear on the first page of the table, use the navigation tools at the top of the table to page through the list of elements.

The hosts you select are listed in the navigation filter. In the following example, Host\_13081 and Host\_10380 were selected for advanced filtering, so they are listed under the Advanced Filtering heading:

## Event Manager

+ Summary

- Filter

- Verify that the **Advanced Options** heading is expanded as shown in the following figure, or advanced filtering will not work.

- Advanced Options

- Click the **Filter** button. Event Manager displays the elements specified under **Advanced Options**.

## Clearing Advance Filtering Options

You can clear the filtering set for advanced options, by clicking the **Clear Data** button under the Advanced Options heading.

## Viewing Event Details

To access event details, click the link for the event under the Summary Text column. You can also right-click an event and select **Event Details** from the drop down menu.

The Event Details pane provides information on one or more of the following:


- **Serial Number** – The number assigned to the event
- **Summary Text** – A brief explanation of the event
- **Element** – The source of the event. An element can be a switch, host, application, fabric, or anything else on the network. If this field is blank, the event did not come from an element.
- **Source** – If the event came from an element, the name of the element is provided.
- **Time Reported** – The time the event was reported to the management server
- **Probable Cause** – An explanation of a probable cause.
- **Recommended Actions** – Recommendations
- **Event Type** – Describes the event
- **Correlated Indications** – Information obtained from the provider
- **Severity** – The severity level, which can be one of the following:
  - Clear
  - Unknown
  - Informational
  - Warning
  - Minor
  - Major
  - Critical

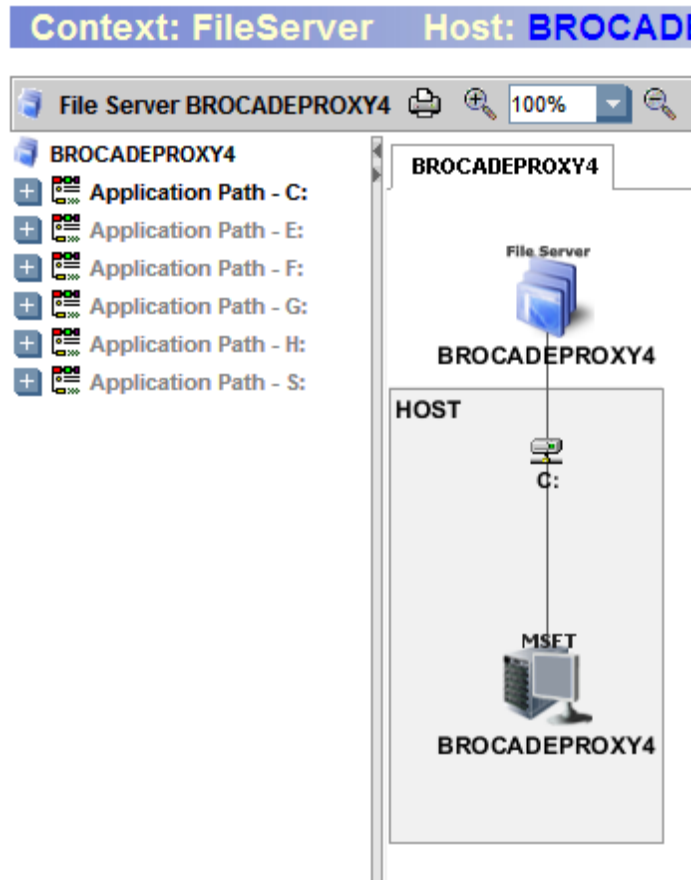
## Sorting Events

To sort events, click the column title corresponding to the attribute you want to sort the event. For example, to sort events by time, click the Time heading on the table on the Events tab. The events are sorted by time on the Events page.

## Viewing Topology for a File Server

To view the topology for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select the **Topology** view in the right pane.




**Note:** You cannot view the topology for a file server created on host clusters. The following message is displayed when you access the Topology view: There are no paths.

## Scan Status for File Servers

The Scan Status view displays detailed information from the scans for a file server. This information is also available from the Scan Status tab, which you can access by selecting **Configuration > File System Viewer**. You can also see information for other file servers. For detailed information about scan status information, see "Scan Status Tab" on page 25.


To view the scan status for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select the **Scan Status** view.

## Scan Schedule for File Servers

The Scan Schedule view displays the scheduled scans for a file server. This information is also displayed in the Scheduled Scan tab accessible from the **Configuration > File System Viewer** menu. You will also see information for other file servers. For more detailed information about scan schedules, see "Scheduling Single and Multiple Scans" on page 15.

To view the scan status for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a file server, as described in "Setting a Context" on page 47.
3. Select the **Scan schedule** view.



# Chapter 4

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## Individual Volume Details

This section consists of the following topics:

- "Dashboard Information for a Volume" below
- "Properties for a Volume" on page 96
- "File System Details for a Volume" on page 97
- "Extensions on Volumes" on page 99
- "Aging Information for a Volume" on page 100
- "File Sizes on a Volume" on page 101
- "Users on a Volume" on page 102
- "Ownership Information for a Volume" on page 103
- "Trustee Information for a Volume" on page 104
- "Scan Status for Volumes" on page 104
- "Explorer View" on page 105
- "Directory Dashboard Details on a Volume" on page 106

## Dashboard Information for a Volume

The dashboard displays the following information for volumes.

### Summary

- A graph is represented in one of the following ways:
  - If all large directories are less than 1 MB, the pie chart has only two sectors, Free and Used.
  - If there are several large directories with a size larger than 1 MB, the pie chart has one sector for Free, eight sectors for the top eight directories, and one sector for Used (Rest).
- A summary table to the right of the graph displays:
  - **Total Storage**– The capacity of the volume.
  - **Used** – The amount of used space on the volume.
  - **Free** – The amount of free space on the volume.
  - **Scanned Space** – The total size of the files that are scanned by File System Viewer.

- **Capacity** – The size of the volume.
- **Used %** – The percentage of used space on the volume.
- **Free %** – The percentage of free space on the volume.
- **File System** – Type of the file system on the volume.
- **Number of Files** – Total number of files on the volume.
- **Number of Directories** – Total number of file on the volume.

**Top ten extensions by size** displays the top 10 file extensions that take up the most space in gigabytes. To see a full-page view, access Extensions view for the Enterprise context, as described in ["Extensions on Volumes" on page 99](#).

**Agging** displays the (gigabyte) size of files modified or used within the following periods:

- 0-30 days
- 30-60 days
- 60-90 days
- 90-180 days
- 180 days-1 year
- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years
- 5+ year

For example, if two 3-GB files were modified within the last 30 to 60 days, 6 GB would be displayed for the 30-60 day label.


**Sizing** displays the number of files modified within the following period:


- 0-30 days
- 30-60 days
- 60-90 days
- 90-180 days
- 180 days-1 year
- 1-2 years
- 2-3 years

- 3-4 years
- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the last 30 to 60 days, two would be displayed for the 30-60 day label.


To access the dashboard:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Dashboard** from the Select View menu.
4. Click **Go**.

To refresh data in a pane, click the **Refresh** button (  ) in the upper-left corner of the pane.

## Properties for a Volume

To view the properties for a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Properties** from the Select View menu.

The Properties page displays the following information:

- **Contacted\*** – The last time the software contacted the file server.
- **File System Type\*** – The type of file system on the volume, such as New Technology File System (NTFS)
- **Block Size\***
- **Discovery Status\*** – The status of the last discovery. If the element was just discovered, the status is at "created."
- **Consumable Blocks**
- **Number of Blocks\***
- **Remote Storage\***
- **Record Created\*** – When a record was created for the file server
- **Device ID\***
- **Total Space\***
- **Data Organization**




- Description\*
- Access
- Host\* – The name of the host
- Business Cost (per hour) – The business cost that was set at the top of this page
- Disk Drives\* – The drive(s) associated with the volume
- Disk Partitions\* – Partitions on the volume

\*Populated fields. By default, the other fields are blank.

## File System Details for a Volume

To view the properties of the volumes on a file server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **File System Info** from the Select View menu.

The following are displayed.

A **chart**, which appears in one of the following ways:

- If all large directories are less than 1 MB, the pie chart has only two sectors: Free and Used.
- If there are several large directories with a size larger than 1 MB, the pie chart has one sector for Free, eight sectors for the top eight directories, and one sector for Used (Rest).

To the right of the chart, a **summary table** displaying:

- **Total Storage** – The capacity of the volume
- **Used** – The amount of used space on the volume
- **Free** – The amount of free space on the volume
- **Scanned Space** – The total size of the files that are scanned by File System Viewer
- **Capacity** – The size of the volume
- **Used %** – The percentage of used space on the volume
- **Free %** – The percentage of free space on the volume
- **File System** – Type of the file system on the volume
- **Number of Files** – Total number of files on the volume
- **Number of Directories** – Total number of file on the volume

Below the chart, the following **tabs**:

- **Largest Directories** – Lists the largest directories on the volume first.

File System Viewer provides the following for each directory: size of the directory, number of files in the directory, and number of subdirectories in the directory. This table lists only the files and directories directly contained in the directory in question and not those in the subdirectories. Click the hyperlink on the directory name to display a summary snapshot of the directory where the Aging, Extension, Size, Largest Files, and Aged Files information is presented.

- **Largest Files** – Lists the directories with the largest files on the volume first. File System Viewer displays the name of the file, its size, and the accessed, modified, and created time.
- **Aged Files** – Shows information about the age of the directories on the volume, including:
  - Name of the file
  - Its size
  - Owner
  - Last accessed
  - Last modified
  - Created
  - Attributes, as described in "[Viewing Attribute Details](#)" on page 70
- **Largest Temp Files** – Displays the largest temporary directories. File System Viewer provides the following information:
  - Name of the file
  - Its size
  - Owner
  - Last accessed
  - Last modified
  - Created
  - Attributes, as described in "[Viewing Attribute Details](#)" on page 70

The time and date the file was last accessed. If the table displays information, either the extension group TEMP does not exist or File System Viewer could not find any temporary files. If no TEMP extension group is found, you can create the extension group, name it TEMP, and map all temporary file extensions.

- **Duplicate Files** – Displays the following duplicate file data:
  - Name of file
  - Size of file
  - Owner

- Last accessed
- Last modified
- Created
- Attributes, as described in ["Viewing Attribute Details" on page 70](#)


If no duplicate file data is found for the volume, one of the following may have occurred:

- No rule was created.
- A volume was not mapped to the duplicate report rule.
- No duplicate file exists.

## Extensions on Volumes


The Extensions view provides information about the types of files on a volume. For example, it can let you know how many mp3s are stored on a file volume and their file size. In the extensions tab, there is a drop-down menu to select Extension Groups, in which files are grouped by file type.

To view information about file extensions on a server:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume (see ["Setting a Context" on page 47](#)).
3. Select **Extensions** from the Select View menu. The following are displayed:
  - A graph displaying the top 10 extensions and their size. Data less than 1 MB is not displayed in the graph. This could result in an empty graph if all data points are less than 1 MB.
  - A table below the graph displaying the extension and its properties:
    - **Size** – The size of all the files with that extension. This property shows you which types of files are using the most space on a volume.
    - **Count** – The number of files with this extension
4. To filter by extension, enter the extension name and click the **Submit** button. See ["Providing Expressions for the Filter Fields" on page 51](#) for more information.
5. To view the extension groups for a volume, select the **Extension Group** filter. See ["Viewing Extension Groups" on page 52](#) for more information about creating, viewing, and removing extension groups.
6. To view a listing of the files with the extension on the volume, click a volume in the Volume column in the table. The largest N and most aged N files with the extension are listed in the Largest Files and Aged Files tabs. The filename with path, size, and the accessed, modified, and created time are provided.

## Extensions at the File Level


To view extensions at the file level:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Extensions** from the Select View menu.
4. Click an extension in the table. File System Viewer displays Largest Files and Aged Files tabs, which provide the following information:
  - File name
  - Size
  - Owner
  - Last accessed
  - Last modified
  - Created
  - Attributes – See "Providing Expressions for the Filter Fields" on page 51.
5. To export the information to a comma, separated list, click **Export files to CSV**.

Excel can only handle a limited number of records. If the CSV file will not open in Excel, you might have to bring the CSV file into a database. Or you could break the CSV file into smaller pieces that Excel can handle.

## Aging Information for a Volume

To view aging information for a volume:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select the **Aging** view in the right pane.

By default, the page displays the following:

- A graph that displays the size of files (in gigabytes) that were modified or used within the following time periods:
  - 0-30 days
  - 30-60 days
  - 60-90 days
  - 90-180 days
  - 180 days-1 year
  - 1-2 years
  - 2-3 years


- 3-4 years
- 4-5 years
- 5+ years

For example, if two 3-GB files were modified within the past 30 to 60 days, 6 GB is displayed for the 30-60 day label.

- A table displaying the number of files (and their size in megabytes) that were accessed, modified, and created in the specified time periods, which are the same as those listed in the graph. To view this table, click the plus sign (+) to the left of the Show/Hide Aggregated Summary Details text.
- A table displaying, by volume, the number of files (and their size in megabytes) that were created, modified, or accessed within the specified time period. To determine which type of information to display in the table, select **Accessed**, **Modified**, or **Created** from the Age Distribution since last menu and then click **Submit**.


## Aging Properties for Individual Files

To view the aging properties for a particular file:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select the **Aging** view in the right pane.
4. Click the heading of an age group in the table. A table appears with the following information for the files in the age group:
  - Size
  - Owner
  - Last accessed
  - Last modified
  - Created
  - Attributes (see "Viewing Attribute Details" on page 70 for more information)
5. To save the aging details to a comma-separated list (CSV file), click **Export files to CSV**.

## File Sizes on a Volume

To view information about file sizes on a volume:


1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select the **Sizes** view in the right pane.

The page displays the following:

- A bar chart displaying the size group distribution by usage or by count depending on the option selected:
  - **Usage** - The total size of all the files with the particular extension
  - **Count** - The number of files with the particular extension
- A table listing the number of files and the total size for each size group on each volume

## Individual File Sizes

To view detailed information about individual file sizes on a volume:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "[Setting a Context](#)" on page 47.
3. Select the **Sizes** view in the right pane.
4. To obtain more detailed information about a size group, click its corresponding heading in the table.

A table is displayed showing the following information about each file in the size group:


- Size
- Owner
- Last accessed
- Last modified
- Created
- Attributes (see "[Viewing Attribute Details](#)" on page 70)

Data less than 1 MB is not displayed in the graphs. This could result in an empty graph if all the data points are less than 1 MB.

To save the details to a comma-separated list (CSV file), click **Export files to CSV**.

## Users on a Volume

To view information about users on a volume:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "[Setting a Context](#)" on page 47.
3. Select **Users** from the Select View menu.

The user account names displayed on this page are obtained by the following methods:

- The management server scanning the file servers
- Information imported through LDAP servers (see ["Importing User Information from LDAP and Active Directory Servers"](#) on page 27)
- Users created through the Create User tool in File System Viewer (see ["Adding File System Viewer Users"](#) on page 57).

The page displays the following:


- A **graph** showing the top five users by usage and the amount of space they use
- A **summary table** to the right of the graph displaying the following:
  - **Users** – The number of users assigned to all of the file servers monitored
  - **Users Size** – The amount of space the users use
  - **Largest User** – The user who uses the most space
  - **Largest User Size** – The amount of space the largest user uses
- A **table** below the graph displaying the users and the following properties:
  - **User ID** – The ID of the user
  - **User Name** – The name of the user
  - **Home Directory** – The home directory of the user. The home directory is assigned to a user by the user's organization. By default, the user has full access rights (read, write, execute) to the home directory. A user can have multiple home directories.
  - **Owner** – The owners who are associated with the user. A user can have multiple owners.
  - **Department Number** – The number of the department to which the user is assigned. The department number was entered when the department was created in Chargeback.
  - **User Status\*** – The user's status. User Status information will be displayed for users retrieved from Active Directory; however, the Edit option will not be displayed for them.
  - **Manager\*** – The name of the user's manager
  - **Quota** – The amount of space the user is allocated
  - **Used** – The amount of space the user is using

\*The User Status and Manager columns are populated when the information is imported from an LDAP server. Users cannot add this information from within HP Storage Essentials.

To display the properties of just one user account or provide a wild cars, enter the full name in the Filter box, and then click **Submit**. For more information, see ["Providing Expressions for the Filter Fields"](#) on page 51.

## Ownership Information for a Volume

To view ownership information for a volume:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Ownership** from the Select View menu.

The following is displayed for the file server:

- A graph showing the top 10 owners who use the most in megabytes (MB)
- A table displaying:
  - **Ownership** – The security identifier (Windows) or user identifier (UNIX)
  - **Size** – The total size of the files the security identifier or user identifier uses
  - **Files** – The files that the security identifier or user identifier uses

To filter by owner or by expression, enter the information in the Filter field, and click **Submit**.

For more information about filtering by expressions, see "Providing Expressions for the Filter Fields" on page 51.

## Trustee Information for a Volume

The Trustee view provides the following:

- A graph listing the top 10 trustees by size
- A table listing the following for each trustee:
  - Size
  - Directories

To access the Trustee view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Trustee** from the Select View menu.

To filter the information for one or more trustee, provide the name of the trustee or provide an expression in the Filter field and then click **Submit**. For more information about expressions, see "Providing Expressions for the Filter Fields" on page 51.

For information about how the trustee data is collected, see "How Data is Calculated in the Trustee View" on page 69.

## Scan Status for Volumes

The Scan Status view displays detailed information from the scans for a volume. This information is also available from the Scan Status tab, which you can access by selecting **Configuration > File System Viewer**. You can also see information at the level of the file server. For detailed information about scan status information, see "Scan Status Tab" on page 25.



## Explorer View

The Explorer view provides the following information.

A **table** with the following information about the directories on the volume:

- Current directory information:
  - Size of the current directory in megabytes
  - Number of directories in the current directory
  - Number of files in the current directory
- Current directory and subdirectories information:
  - Size of the current directory and its subdirectories in megabytes
  - Number of directories in the current directory and its subdirectories in megabytes
  - Number of files in the current directory and its subdirectories in megabytes
- When the current directory was created
- When the current directory was modified
- When the current directory was last accessed
- Attributes of the current directory (see "[Viewing Attribute Details](#)" on page 70)

A **table** listing the files at the top-level of the current directory, including:

- Size in megabytes
- Owner
- When the file was created
- When the file was last modified
- When the file was last accessed
- Attributes of the file (see "[Viewing Attribute Details](#)" on page 70)

On Windows, the file owner listed for an encrypted file is the account running the CIM extension service (usually the host's local administrator account).


To view the directory's files and subdirectories, click the name of the directory in the first table:

## Context: Volume File

Directories:


Name
.
/lost+found
/export
/dev
/etc
/lib
/mnt
/sbin
/system
/kernel
/platform

To access the Explorer view:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Explorer** from the Select View menu.

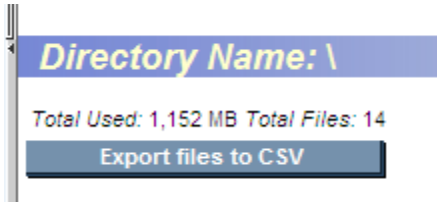
## Directory Dashboard Details on a Volume

To view directory dashboard details:

1. Click **File System Viewer** (  ) in the left pane.
2. Select a volume, as described in "Setting a Context" on page 47.
3. Select **Explorer** from the Select View menu.
4. Click the **Directory Dashboard Details** link located above the first table.

File System Viewer provides the following detailed information at your fingertips in the directory dashboard details page for files.

The Directory Dashboard provides the directory size and the number of files in the directory. This information can be found under the name of the directory:



When you access the Directory Dashboard, you are shown the following tabs:

- **Aging** – Displays the number of files and their size (in megabytes) that were accessed, modified, and created in the specified time periods, which are the same as those listed in the graph.
- **Extensions** – Displays the extension and its properties:
  - **Size** – The size of all the files with that extension. This property lets you see which types of files are using the most space on a volume.
  - **Count** – The number of files with this extension.
- **Sizes** – Lists the number of files and the total size for each size group on each volume.
- **Aged Files** – Lists the following properties of a file:
  - Size
  - Owner
  - When the file was last accessed
  - When the file was last modified
  - When the file was created
  - Attributes. See "[Viewing Attribute Details](#)" on page 70 for more information.

Files are listed by age with the oldest files displayed first.

- **Largest Files** – Lists the following properties of a file:
  - Size
  - Owner
  - When the file was last accessed
  - When the file was last modified
  - When the file was created
  - Attributes. See "[Viewing Attribute Details](#)" on page 70 for more information.

Files are listed by size with the largest files displayed first.

- **Trustee** – Lists the following for each trustee:

- Trustee's Share
- Permissions



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**Product name and version:** HP Storage Essentials, 9.70

**Document title:** File Servers Guide

**Feedback:**



