HP StorageWorks

Command View XP User Guide

for XP Disk Arrays

Legal and notice information

Command View XP for XP Disk Arrays User Guide

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About this guide

This guide provides information about:

- Using administration features to manage:

  - User profiles and disk array sessions

  - Applications installed on Command View management station

  - Disk arrays added to Command View

- Viewing recent disk array events and error conditions

- Displaying identity and status information about disk arrays

- Accessing additional help and support information

- Managing the HP StorageWorks XP Disk Array XP48, XP128, XP512, XP1024, XP10000 and XP12000

Intended audience

This guide is intended for customers and HP authorized service providers experienced with the following:

- Disk array hardware and software

- Storage systems

Prerequisites

Prerequisites for using this product include:

- Install or upgrade to most recent version of Command View XP

- Set up the HP StorageWorks XP disk arrays

- Install Path Connectivity

- See the `readme.txt` file on the CD for last-minute announcements

Related documentation

In addition to this guide, please refer to other documents for this product:

- *HP StorageWorks Command View XP Installation Guide*

- *HP StorageWorks Command View XP Path Connectivity User Guide*

- *HP StorageWorks Command View XP Path Connectivity Command Line Interface (CLI) Reference Guide*

- *HP StorageWorks Command View XP Command Line Interface (CLI) Reference Guide*

These and other HP documents can be found on an HP web site: http://www.hp.com/support/. Online help is also available for this product by clicking on the help icon located on the Command View management station.

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Medium blue text: Figure 1	Cross-reference links and e-mail addresses
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	• Key names • Text typed into a GUI element, such as into a box • GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
Italics font	Text emphasis
`Monospace font`	• File and directory names • System output • Code • Text typed at the command-line
`Monospace, italic font`	• Code variables • Command-line variables
`Monospace, bold font`	Emphasis of file and directory names, system output, code, and text typed at the command-line

⚠ **CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.

📝 **IMPORTANT:** Provides clarifying information or specific instructions.

📝 **NOTE:** Provides additional information.

💡 **TIP:** Provides helpful hints and shortcuts.

HP technical support

Telephone numbers for worldwide technical support are listed on the HP web site:
http://www.hp.com/support/.

Collect the following information before calling:

- Technical support registration number (if applicable)

- Product serial numbers

- Product model names and numbers

- Applicable error messages

- Operating system type and revision level

- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign-up online using the Subscriber's choice web site at
http://www.hp.com/go/e-updates.

- Subscribing to this service provides you with email updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.

- After signing-up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-345-1518

- Elsewhere, visit http://www.hp.com and click **Contact HP** to find locations and telephone numbers

Helpful web sites

For third-party product information, see the following vendor web sites:

- http://www.hp.com

- http://www.hp.com/go/storage

- http://www.hp.com/support

1 Getting started

HP StorageWorks Command View XP is a Web-based storage management platform that monitors and configures the HP StorageWorks Disk Array XP family of products. You can access Command View from remote locations using the Internet and a Web browser, which allows you to manage the disk arrays from any location worldwide.

Command View is part of a total Storage Area Network (SAN) solution and runs on a Windows-based workstation, which is called the Command View management station. Disk array control from the management station is accomplished over the corporate LAN.

NOTE: HP StorageWorks XP256 is not supported by Command View 2.2 except as external storage.

Host agents

Command View is distributed with Path Connectivity. If you are using the Path Connectivity module, you can install small portions of the Command View software (host agents) on host systems in the SAN that consume disk storage space.

Command View host agents use the network to send statistics about disk array consumption to the Command View management station. Because of this, Command View provides reports that describe disk consumption per host system. To access this information, click the **Path Connectivity** icon on the Command View main window.

Host operating systems

Command View host agents run on the following host operating systems:

- Windows Server 2003, Enterprise Edition (32- and 64-bit)
- Windows Server 2003, Enterprise/Datacenter Edition (64-bit)
- Windows 2000 Service Pack 4
- HP-UX 11.00, 11.11, 11.23, and 11.23 PI
- Solaris 8 and 9
- Red Hat Enterprise Linux Advanced Server 2.1, kernel 2.4.9 (32-bit)
- Red Hat Enterprise Linux 3.0, kernel 2.4.21 (32-bit)
- UnitedLinux 1.0 (SLES8), kernel 2.4.19/2.4.21 (32-bit)
- IBM AIX 5.1 or 5.2

Integrating with other applications

Command View can be integrated with any management platform that supports Web applications. For example, Command View integrates with the HP OpenView Network Management platform and HP OpenView Storage Area Manager.

You can also integrate optional "snap-in" application modules. As shown in Figure 1, HP StorageWorks Application Policy Manager and HP StorageWorks Performance Advisor XP are integrated with Command View.

NOTE: Application Policy Manager is not supported for XP10000/XP12000. For similar functionality, refer to HP Performance Control XP on page 429.
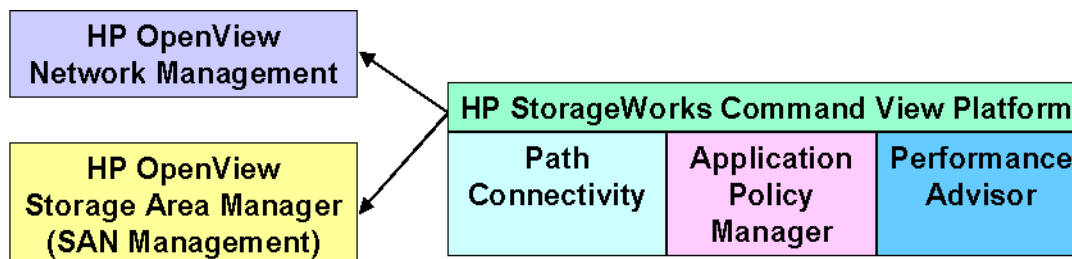
Figure 1 Command View integrated with other management platforms and application modules

Features

Table 2 Command View features

Feature/module	Description
Array Manager	Controls access to the Command View management station and the disk arrays and provides device and session administration.
Event management and history	Archives and distributes traps to configured SAN management stations. Trap messages are converted into readable error messages and are stored in log files for viewing.
Systems management and history (XP10000/XP12000 only)	Provides information about the equipment and the port status of the connected arrays.
Disk array status monitoring	Monitors every aspect of disk array operation.
Path Connectivity	Monitors and reports the connection paths between the disk array and hosts consuming disk space. Diagnoses the "health" of connections. Path Connectivity is included with Command View.
Performance Control (XP128/XP1024/XP10000/ XP12000 only)	Allows you to set the priority of disk arrays, monitor I/O rates and transfer rates, and limit the performance of less-critical arrays. Requires the purchase and installation of HP StorageWorks Performance Control XP.
LUN configuration	Provides LUN configuration and management. Requires the purchase and installation of HP StorageWorks LUN Configuration Manager XP (XP48/XP512) or HP StorageWorks LUN Configuration and Security Manager XP - LUN Manager (XP128/XP1024/XP10000/XP12000).
Disk array security at the disk array controller and LUN level	Manages disk array security at the disk array controller level and the port/LUN level. Requires the purchase and installation of HP StorageWorks Secure Manager XP (XP48/XP512) or HP StorageWorks LUN Configuration and Security Manager XP - Volume Manager (XP128/XP1024/XP10000/XP12000).

Table 2 Command View features (continued)

Feature/module	Description
Advanced LUN management (XP128/XP1024/XP10000/ XP12000 only)	Protects data in your disk arrays from I/O operations performed on open system hosts. Requires the purchase and installation of HP StorageWorks LUN Security XP Extension.
Configuration File Loader (XP128/XP1024/XP10000/ XP12000 only)	Sets the disk arrays to have the same configuration by applying a configuration definition file that can be edited. Is available preloaded from the factory, and requires the purchase and installation of HP StorageWorks LUN Configuration and Security Manager XP to manage LUN configuration files.
Cache LUN configuration	Manages the placing of data from LUNs into cache memory to improve data access speeds. Requires the purchase and installation of HP StorageWorks Cache LUN XP.
Auto LUN configuration (XP128/XP1024/XP10000/ XP12000 only)	Manages and optimizes the disk array's storage by performing manual and automatic migration operations. Requires the purchase and installation of HP StorageWorks Auto LUN XP.
Business Copy (XP128/XP1024/XP10000/ XP12000 only)	Maintains internal copies of user data on the disk array for purposes such as data backup or duplication. Business Copy is used for open system data. Requires the purchase and installation of HP StorageWorks Business Copy XP.
Continuous Access and Continuous Access Extension (XP128/XP1024/XP10000/ XP12000 only)	Creates and maintains duplicate copies of user data from a local disk array on a remote disk array. These copies are useful for data duplication, backup, and disaster recovery. Continuous Access is used for open system data. Requires the purchase and installation of HP StorageWorks Continuous Access XP and XP Extension.
Direct Backup Engine (XP128/XP1024/XP10000/ XP12000 only)	Combined with a backup application installed on a host server, provides server-free backup between the disk array and the backup devices connected to the host server. Requires the purchase and installation of HP StorageWorks Direct Backup Engine XP.
External Storage XP (XP10000 /XP12000 only)	Connect different types of HP or non-HP external storage devices to an HP StorageWorks XP12000 disk array, and map and access Logical Units (LUs) on external devices as if they were part of the XP12000 array.
Hitachi ShadowImage for z/OS® and Hitachi FlashCopy (XP128/XP1024/XP10000/ XP12000 only)[1]	Hitachi ShadowImage for z/OS® provides local copy for mainframe volumes. Requires the purchase and installation of Hitachi ShadowImage for z/OS (included with HP StorageWorks Business Copy XP). Hitachi FlashCopy requires the purchase and installation of both ShadowImage XP and Hitachi FlashCopy.
Hitachi TrueCopy and TrueCopy Asynchronous for z/OS® (XP128/XP1024/XP10000/ XP12000 only)[1]	Provides remote copy for mainframe volumes. Requires the purchase and installation of Hitachi TrueCopy and TrueCopy Asynchronous for z/OS (included with HP Continuous Access XP and HP Continuous Access XP Extension).
Hitachi Parallel Access Volumes for z/OS® (XP128/XP1024/ XP10000/XP12000 only)[1]	Allows a mainframe host system to issue multiple I/O requests in parallel to logical devices on the disk array. When Hitachi Parallel Access Volumes is used, the mainframe host has substantially faster access to the data stored on the disk array. Requires the separate purchase and installation of Hitachi Parallel Access Volumes.
Hitachi LDEV Guard for z/OS® (XP128/XP1024/XP10000/ XP12000 only)[1]	Protects data in your disk arrays from I/O operations performed on mainframe hosts. Requires the purchase and installation of Hitachi LDEV Guard for z/OS.

Table 2 Command View features (continued)

Feature/module	Description
Hitachi SANtinel for z/OS® and SANtinel Port Security Option (XP128/XP1024/XP10000/ XP12000 only)[1]	Applies security to logical volumes to prevent specified mainframe hosts from reading and writing to the specified logical volumes. Requires the purchase and installation of Hitachi SANtinel for z/OS. The Port Security Option provides port-level security. SANtinel Port Security Option requires the purchase and installation of both Hitachi SANtinel for z/OS and Hitachi SANtinel Port Security Option.

[1]Mainframe features are addressed in the *HP StorageWorks Command View XP for Mainframes User Guide*, which can be found on the product CD.

Communicating with the disk arrays

The Command View platform uses Remote Method Invocation (RMI) and Simple Network Management Protocol (SNMP) to communicate with the disk arrays and host agents.

SNMP operation varies slightly when working with different members of the XP disk array family.

XP128/XP1024/XP10000/XP12000

Communication with the disk array is through the RMI interface. The RMI server resides on the disk array.

XP48/XP512

Communication with the disk array is through FTP/SNMP. The SNMP agent resides on the disk array. The disk array sends SNMP traps to the Command View management station. The license key for the SNMP agent must be installed on the disk array.

Starting Command View from a browser

1. Start the browser and enter the Command View management station's host name or IP address as the URL.
   or
   Point your browser directly at the array public IP address (for example, http://123.45.67.890).

   The Command View initial window appears.

   A login dialog box appears.

2. Enter the user name and password, and click **OK**. See "Default user names and passwords" on page 16 for additional information.

3. After the user name and password are verified, the Command View main window appears.

Default user names and passwords

When you start Command View for the first time, log in with one of the default user names. Use the Security functions to add new users and set their access privileges (see "Security system" on page 31).

Default administrator

- User name: administrator

- Password: administrator

This login provides both modify and view-only access.

Default user

- User name: user

- Password: user

This login provides view-only access for the default user. A user with view-only access cannot make configuration changes.

Default storage administrator

- User name: storageadmin

- Password: storageadmin

This login provides modify access for the default storage administrator for array configuration operations and view-only access for framework operations.

Specifications and restrictions for logon operations

The specifications and restrictions shown in Table 3 apply to the XP128/XP1024/XP10000 /XP12000 unless otherwise stated.

Table 3 Specifications and restrictions for logon operations

Item	Specification
Maximum number of concurrent users	The XP10000/XP12000 supports up to 32 concurrent users, but only one user can be in Modify mode at a time. **NOTE:** The maximum number of concurrent users for accessing Auto LUN and executing the Export Tool is two.
Logging in to the same array management server more than once concurrently	The same user (ID) may not have multiple concurrent sessions with the same array management server.
Login history	All login information, including user IDs and login and logoff times, is recorded in the login history, which can be viewed by a user belonging to the Administrators group. This information is accessed from the Control Panel.
Automatic logoff operation	Any user who cannot perform Command View operations for a specific period of time because of a network error will be automatically logged off from the array. The default is 60 minutes; however, a user belonging to the Administrators group can specify a different amount of time. To change the time, edit the SESSION_TIMEOUT_PLAN value in the `CommandView.properties` file (see "Changing the session timeout value" on page 30 for more information).

Starting Command View from Storage Area Manager

HP OpenView Storage Area Manager discovers Command View and formulates the required disk array management URL for each disk array managed by Command View. Refer to the HP OpenView Storage Area Manager documentation for information about Storage Area Manager operations.

Command View main window

The Command View main window is the first window that appears when you log into Command View.

The left pane provides a list of Command View features, including optional installations. For example, Path Connectivity is an optional installation and will only be available if it was installed with Command View. Performance Advisor and Application Policy Manager will only be available if these products were purchased separately and installed.

The right pane, associated with the Array Manager feature, includes three tabs: Device Launcher, Device Administration, and Session Administration.

To launch an XP array, select the array you want to manage from the list in the Device Launcher pane.

See "Array manager" on page 21 for more information about Array Manager, including guidelines on setting up and managing arrays.

Using the backup utility

Use the Backup Utility to back up Command View data, settings, and preferences. You can also use this tool to migrate data from an existing management station to a new management station. This tool preserves your data and configuration preferences by saving your existing settings. If needed, you can restore the backup on an existing management station or a new management station.

To use the Backup Utility, both management stations must have Command View 2.0 or later installed. This tool is not compatible with earlier versions of Command View.

Saving data

1. Click **Start > Programs > HP StorageWorks Command View XP > Backup Utility**. The Backup Utility window appears.

2. Click **Backup**. The Open File dialog box appears.

3. Choose a location, such as a network drive or shared file system, to save the backup file and click **Open**. A confirmation dialog box appears.

4. Click **Yes**. The Backup Progress status window appears.

5. When the backup process is done, the **Finished** button becomes available. Click **Finished**. A confirmation message appears.

6. Click **OK**.

Restoring data

1. Click **Start > Programs > HP StorageWorks Command View XP > Backup Utility**. The Backup Utility window appears.

2. Click **Restore**. The Open File dialog box appears.

3. Navigate to the location of the backup file and click **Open**. A confirmation dialog box appears.

4. Click **Yes**. The Restore Progress status window appears.

5. When the restore process is done, the **Finished** button becomes available. Click **Finished**. A confirmation message appears.

6. Click **OK**.

Saving or restoring data from the Windows command line

- To save your files, enter `%HPSS_HOME%\bin\backup` *target-path*. The *target-path* is the location, such as a network drive or shared file system, to where you want to save the backup file.

- To save your files, enter `%HPSS_HOME%\bin\restore` *target-path*. The *target-path* is the location of the backup file.

2 Array manager

Array Manager is the default feature that is displayed when you log on to Command View. Array Manager provides the following operations:

- "Device Launcher" on page 21
- "Device Administration" on page 22
- "Session Administration" on page 27

NOTE: The figures in this chapter do not necessarily reflect the array you are managing. Slight differences are displayed in Command View, depending on the type of array being managed. Differences are noted in the text.

Device Launcher

The Device Launcher pane appears when you initially log on to Command View. This pane provides a list of disk arrays that Command View is set up to manage (disk arrays that are added using the *Device Administration Add Array* function [page 24]).
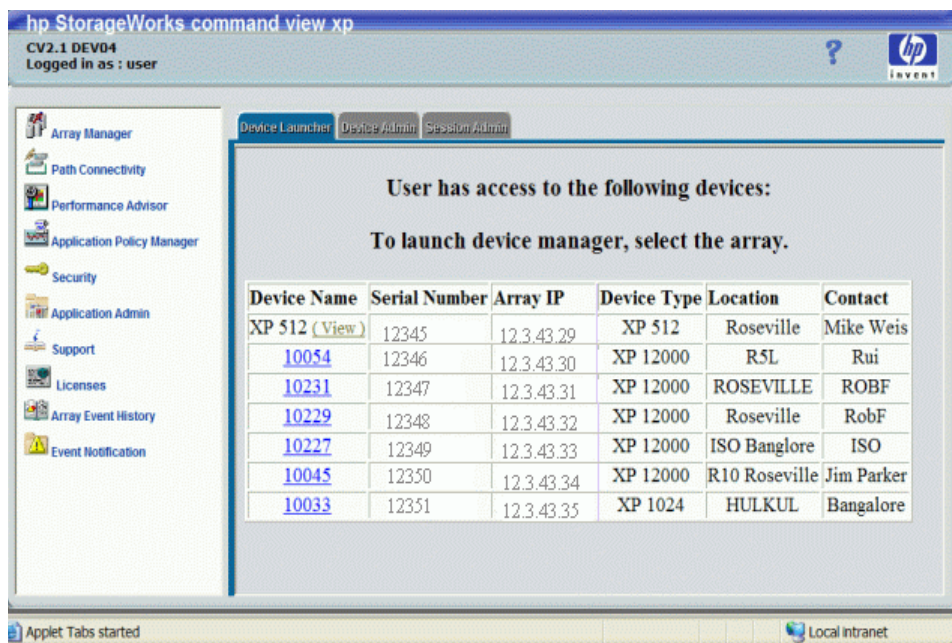
Figure 2 Device Launcher pane

This pane lists the following items:

- **Device Name**: User-defined nickname that identifies a disk array. It also serves as a link to manage disk arrays. You can create or change this name using the Device Administration functions.

  - **Modify link**: (XP48/XP512 only) (*Administrators only*) Click this link to make changes to a disk array's configuration. For example, when you are in Modify mode, you can delete a LUN from the disk array.

- **View link**: (XP48/XP512 only) Click this link to access the disk array without modification permissions. While in View-only mode, you cannot make changes to the disk array.

- **Serial Number**: Serial number of the disk array. It is filled in automatically when you enter the IP address of the disk array in the Add Array operation under Device Administration.

- **Array IP**: Disk array's IP address

- **Device Type**: Disk array's product name, such as XP12000

- **Location**: Physical location of the disk array. Change this value at any time using the Device Administration pane.

- **Contact**: Person to contact regarding issues with the disk array. You can change this value using the Device Administration pane.

Launching a disk array

Two methods are provided for launching a disk array, depending on the type of array(s) you want to manage:

- For an XP48/XP512, click the **Modify** or **View** link. Click the **Modify** link if you want to make changes to the selected disk array or view additional features. Click the **View** link to view information about the selected disk array.

- For an XP128/XP1024/XP10000/XP1200, click the serial number of the disk array. This will launch the Identity pane, where you can modify or view the selected disk array, depending on the user group you belong to. For more information, see "Security system" on page 31.

NOTE: For an XP128/XP1024/XP10000/XP12000, the Web console GUI can be launched directly (without Command View XP) by using the following URL: http://<SVP IP Address>. Please note that online help is not available in the Web console GUI.

NOTE: Only users belonging to the Administrators and StorageAdmins groups are permitted to make modifications to arrays. For more information about the security features and different user groups in Command View, see "Security system" on page 31.

Device Administration

Use the Device Administration functions to perform the following operations:

- Add a disk array (page 24)

- Delete a disk array (page 25)

- Modify disk array parameters (page 25)

- Set SNMP IP security (page 26)

NOTE: Only a user belonging to the Administrators group can perform these operations.

Accessing Device Administration

To access Device Administration, click **Array Manager** in the left pane and then the **Device Administration** tab. The Device Administration pane appears.
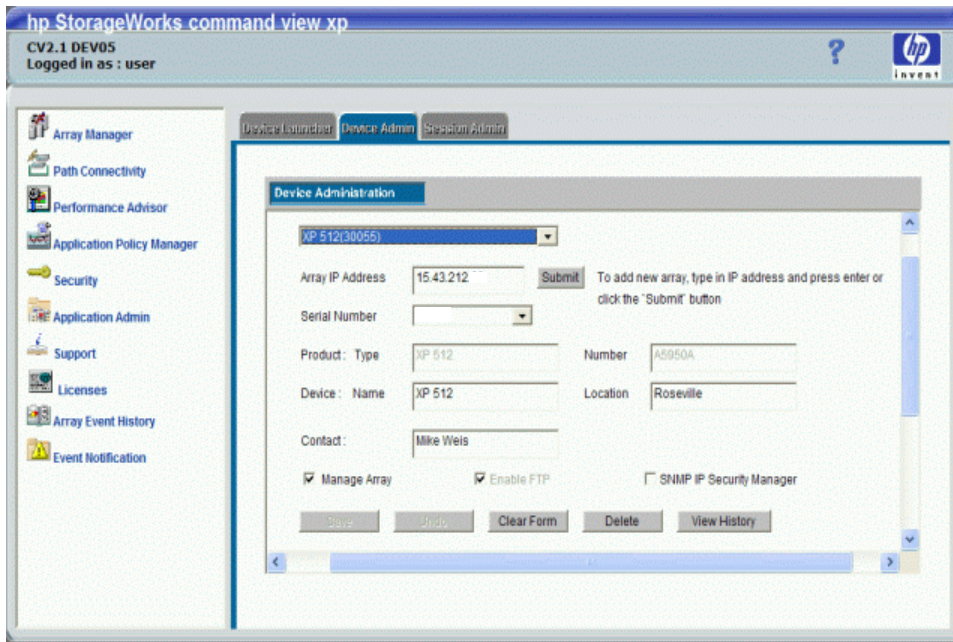
Figure 3 Device Administration pane

Display

This pane lists the following items:

- **Device list**: Disk arrays known to Command View. The disk array information is a combination of the serial number and user-assigned name. If you are adding a new disk array, ignore this box. It will display the new disk array after you enter its IP address and name. This is described in "Adding or registering a disk array" on page 24.

- **Left DKU Type** (XP1024 only): Type of DKUs to the left of the disk controller unit (DKC). An XP1024 may have an XP512 DKU installed in this position.

- **Right DKU Type** (XP1024 only): Type of DKUs to the right of the disk controller unit (DKC). An XP1024 may have an XP512 DKU installed in this position.

- **Array IP Address**: Disk array's IP address

- **Serial Number**: Serial number of the disk array. It is filled in automatically when you enter the IP address of the disk array in the Add Array operation under Device Administration.

- **Product Type** and **Number**: Product type will be XP48, XP128, XP512, XP1024, XP10000 or XP12000. Product number is the HP product designation. When you are adding a new disk array, these boxes are automatically updated when you type the IP address.

- **Device Name**: User-defined nickname that identifies a disk array

- **Location**: Physical location of the disk array

- **Contact**: Person to contact regarding issues with the disk array

NOTE: You can enter a device name, location, or contact person using up to 180 alphanumeric characters (ASCII codes), except for some symbols, such as ";", ":", and "~".

- **Enable FTP** check box (XP48/XP512 only): Check box is selected by default. Clear this check box to disable the FTP option. By default, FTP will be used for data retrieval.

- **Manage Array** check box: Check box is selected by default. Select this check box to indicate whether or not the disk array will be managed by Command View. If it is not selected, the device will be added to a Command View list of disk arrays, but it will not be managed by Command View. No configuration data will be retrieved. Information about managed disk arrays can be used by other storage management platforms such as Path Connectivity.

- **SNMP IP Security Manager** check box (XP48/XP512 only): When selected, displays the IP Security Manager pane

- **Buttons:**

  - **Save**: Saves disk array information

  - **Undo**: Removes any changes made to the device information displayed, but only those made before you click Save

  - **Clear Form**: Clears data from all the boxes

  - **Delete**: Removes the disk array from the list of devices

  - **View History**: Displays the Device History pane which lists recent device administration events

  - **RMI Server Status** (XP128/XP1024/XP10000/XP12000 only): Provides a message indicating whether the RMI server on the array is operational or not

Adding or registering a disk array

When adding an XP128/XP1024/XP12000, all users belonging to the Administrators group and the default user belonging to the User group are automatically added to the array. For this procedure to be successful, a lock on the array is required. If the addition of all users is successful, then the **Save** button is enabled and the device is created after clicking **Save**. If another user is holding a lock on the array (making any modifications to the array), an error message will appear, and the operation will need to be repeated after obtaining the lock.

To add or register a disk array:

1. From the Device Administration pane, enter the disk array's IP address in the **Agent IP Address** box.

2. Press **Enter** or click **Submit**.

   The **Serial Number**, **Product Type**, and **Product Number** boxes are filled in automatically.

3. If the **Device Name** box is blank, enter a name for the disk array.

4. For the XP1024 only, select the left DKU type and right DKU type from the lists.

5. If the **Contact** and **Location** boxes are blank, enter a contact name and a location.

6. Select the **Manage Array** check box. This check box is selected by default. If it is not selected, the disk array is added to Command View's list, but it will not be managed by Command View. No configuration data will be retrieved.

7. For the XP128/XP1024/XP10000/XP12000 only, click **Save**. A box will appear with two text fields of which one is non-editable and has the value "administrator." The other field will ask for a password. The password needed is the one that corresponds to the "administrator" account when launching the Web GUI directly from the array. It will be the same as that for the "administrator" account of the last Command View management station used to actively manage the array. If the array has never been

managed by Command View, the password will be the same as the Command View default password. If adding device is successful, Command View administrator's password will replace the password that was used to add the device.

8. Click **OK** after providing the password.

Deleting or unregistering a disk array

You cannot delete or unregister a device that is in use. If the device is in use, go to the Session Administration pane, select the disk array, and click **End Session**. When the device is no longer in use, return to the Device Administration pane.

To delete or unregister a disk array:

1. From the Device Administration pane, select the disk array you want to delete from the **Device** list.

2. Clear the **Manage Array** check box. A managed disk array cannot be deleted.

3. Click **Save**.

4. Select the disk array again.

5. Click **Delete**.

6. A dialog box will display a confirmation message. Click **OK** to delete the device or click **Cancel** to return to the Device Administration pane.

📝 **NOTE:** When an array is deleted, the users who were assigned to that array will be unassigned and the database will be updated; however, users registered in the SVP for the XP128/XP1024/XP10000/XP12000 will not be deleted.

Changing disk array parameters

To change the disk array parameters:

1. From the Device Administration pane, select the disk array that has information you want to modify from the **Device** list.

2. Modify the parameters (name, location, contact name, and so on). To clear all the boxes, click **Clear Form**. To cancel all your changes, click **Undo**.

3. To save all changes, click **Save**.

Viewing device history

To view recent device administration events:

1. From the Device Administration pane, select the disk array whose history you want to view from the **Device** list.

2. Click **View History**. The Device History pane appears.
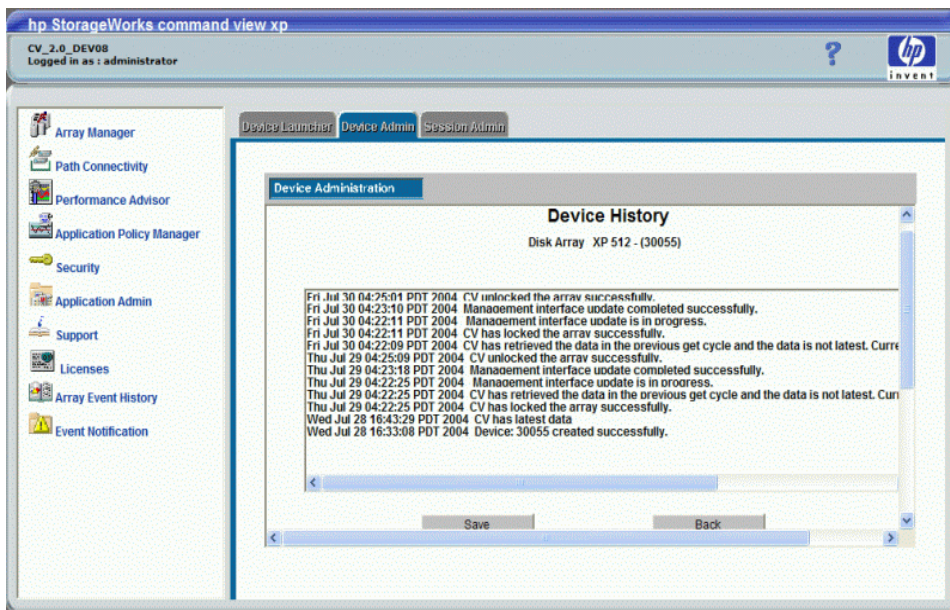
Figure 4 Device History pane

3. To save the device history to a text file, click **Save** and complete the required steps to save the file to your computer.

4. When you finish viewing events, return to Device Administration pane by clicking **Exit**.

Setting SNMP IP Security (XP48/XP512 only)

SNMP IP Security is a facility for managing SNMP IP Security from Command View. It is a tool for controlling which SNMP managers can access a disk array.

Limiting disk array access to specified SNMP managers reduces the possibility that unauthorized persons can access the disk arrays. It makes SNMP communication safer over the network.

Using SNMP IP Security, only registered IP addresses can access the disk array via SNMP. Otherwise (the default condition), the SNMP interface is open to all management stations that "speak" SNMP. The registered IP addresses are stored on the disk array. The disk array keeps a list of up to 32 IP addresses to which it can send SNMP messages.

Use SNMP IP Security to perform the following tasks:

- Display a list of SNMP manager IP addresses registered in the disk array (page 27)

- Add SNMP managers to the disk array's list (page 27)

- Delete SNMP managers from the disk array's list (page 27)

Disabling SNMP IP Security

Disabling SNMP IP Security gives all SNMP Managers access to the MIB database on the disk array. To do this, first delete all the other SNMP Managers. Then, delete the Command View SNMP Manager's IP address.

Note that if at least one SNMP manager is registered, then the IP Security function is ON and does not allow any other SNMP manager to access the MIB.

Accessing SNMP IP Security

To access SNMP IP Security:

1. From the Device Administration pane, click an existing disk array or add a new disk array.
2. Select the **SNMP IP Security Manager** check box. The IP Security Manager pane appears.

The list box on this pane will display all IP addresses registered in the disk array.

Note that IP security applies only to the disk array selected. Perform this operation for each disk array requiring IP security.

Adding SNMP IP Security

To add SNMP IP Security:

1. From the IP Security Manager pane, enter the IP Address in the **SNMP Manager's IP Address** box. The IP address of the Command View management station always needs to be included when security is being enabled.
2. Click **Add**. The IP address is added to the list in the list box.
3. Click **OK** to add the address to the list. A confirmation dialog box appears.
4. Click **OK** to confirm and return to the Device Administration pane.
5. After the operation has been completed, a confirmation dialog box appears.
6. Click **OK** to continue.

Removing SNMP IP Security

To remove SNMP IP Security:

1. From the IP Security Manager pane, click an address in the list box.
2. Click **Delete**. A confirmation dialog box appears.
3. Click **OK**.
4. To return to the Device Administration pane, click **OK**. A confirmation dialog box appears.
5. Click **OK** to confirm and return to the Device Administration pane.
6. After the operation has been completed, a confirmation dialog box appears.
7. Click **OK** to continue.

Session Administration

Use Session Administration to view information about disk array CLI and GUI sessions and to end user sessions.

Multiple users can access a disk array simultaneously. Only one user is allowed to be in Modify mode, but there can be many view-only users.

Modify or view-only status is determined by user permissions (set using the Security feature). Only users belonging to the StorageAdmins and Administrators groups can make modifications. To make modifications, these users will need to obtain a lock on the array and be in modify mode (using the Identity pane).

If a session is inactive after a certain period of time because a user has not used the system, Command View automatically terminates the session. The default is 60 minutes, which can be changed. To change the value, edit the SESSION_TIMEOUT_PLAN value in the `CommandView.properties` file (see "Changing the session timeout value" on page 30 for more information).

Accessing Session Administration

To access Session Administration, click **Array Manager** in the left pane and then the **Session Administration** tab. The Session Management pane appears.
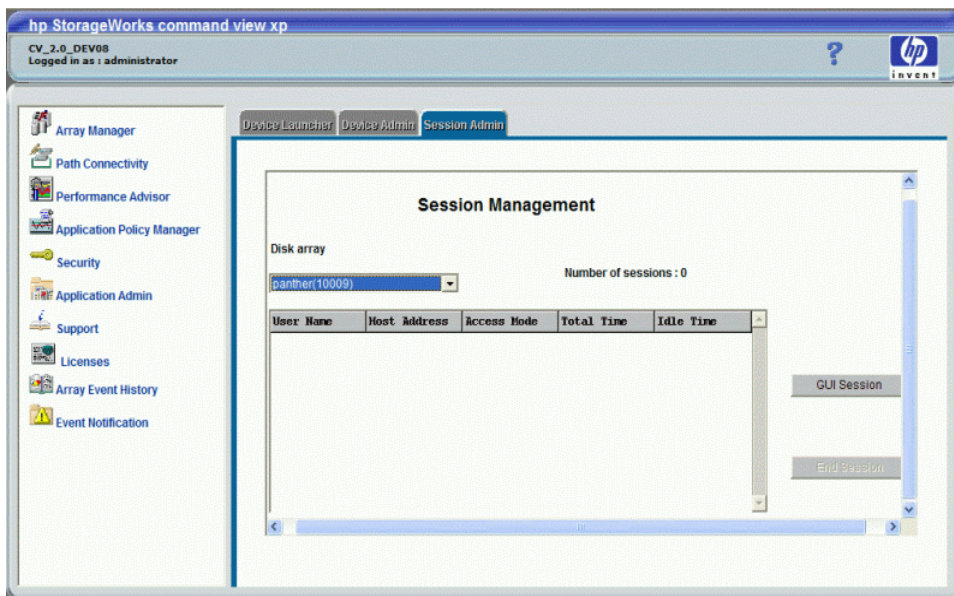
Figure 5 Session Management pane

Display

This pane lists the following items:

- **Disk Array**: List of disk array names

- **Number of Sessions**: Number of GUI or CLI sessions in progress for the selected disk array

- **User Name**: Names of users who are in session with the disk array

- **Host Address**: IP address of the user's workstation

- **Access Mode**: "Modify mode" or "View mode"

- **Total Time**: Time the user has been in session with the disk array

- **Idle Time**: Time that has elapsed since the user has executed a command

- Buttons:

  - **GUI Session** (XP128/XP1024/XP10000/XP12000 only): View GUI sessions for the selected disk array

  - **End Session**: Ends the session for a selected user

GUI and CLI sessions

When you first open the Session Management pane, both CLI and GUI sessions will be shown for the XP48/XP512. Only CLI sessions will be displayed for the XP128/XP1024/XP10000/XP12000. To access GUI sessions for these arrays, click the GUI Session button, which will display after an XP128/XP1024/XP10000/XP12000 array has been selected. A new window will display, listing GUI sessions.

The GUI Session pane consists of the following items:

- **User Name**: Names of users who are in session with the disk array

- **SLPR #**: SLPR number of the user's session. Please see note, below.

- **Host Address**: IP address of the user's workstation

- **Access Mode**: "Modify Mode" or "View Mode"

- **Time**: Time the user has been in session with the disk array

> **NOTE:** The SLPR# column in the GUI Session pane provides the SLPR number of the user's session. Because users belonging to different partitions can concurrently lock their portion of XP12000 arrays, the partition number will be displayed for each session. If the session is for users having full array access, the SLPR column will have the value "All." The SLPR# column will also appear for XP128/XP1024 arrays; however, because partitioning is not currently supported for these arrays, the value of that column will always appears as "All."

Viewing GUI sessions (XP128/XP1024/XP10000/XP12000)

1. From the Session Administration pane, click a disk array from the list. Both **GUI Session** and **End Session** buttons will display.
2. Click **GUI Session**.
3. A message appears, asking if you want to display all GUI sessions for the array. Click **OK** to access a new pane showing all GUI sessions or Click **Cancel** to return to the Session Administration pane.

Ending a session (XP48/XP512)

> **NOTE:** Only users belonging to the Administrators group can end CLI and GUI sessions.

1. From the Session Administration pane, click a disk array from the list. All sessions for that disk array are displayed.
2. Click the session you want to end.
3. Click **End Session**. A confirmation message appears.
4. Click **OK** to end the session.

When you end a user's session, the user must log in again to access Command View.

Ending a session (XP128/XP1024/XP10000/XP12000)

> **NOTE:** Only users belonging to the Administrators group can end CLI and GUI sessions.

1. From the Session Administration pane, click a disk array from the list. All sessions for that disk array are displayed.
2. Click the session you want to end.
3. Click **End Session**. A confirmation message appears.
4. Click **OK** to end the session.

When you end a user's session, the user must log in again to access Command View.

To end a GUI session:
1. From the Session Administration pane, click a disk array from the list. Both GUI Session and End Session buttons will display.

2. Click **GUI Session**. A message appears, asking if you want to display all GUI sessions for the array. Click **OK** to access the GUI Session pane.

3. Select the session you want to end.

4. Click **End Session**. A confirmation message appears.

5. Click **OK** to end the session.

Changing the session timeout value

The session timeout value determines how long a session lasts after a user in Modify mode has not used the browser. The default is set to 60 minutes. You cannot change the session timeout value using the Session Administration pane, but you can change the value by editing the `CommandView.properties` file. To do so, follow these instructions:

To change the session timeout value

1. Locate the `CommandView.properties` file in the `C:\hpss\dm\tomcat\webapps\hpstmgmt\webroot\Stormgmt` directory.

2. Use a word processor or text editor to open the file. Look for the SESSION_TIMEOUT_PLAN setting by locating the following line:

   `SESSION_TIMEOUT_PLAN=ONCE:60`

3. Replace `60` with the number of minutes you want a session to last before it times out due to inactivity (the minimum number of minutes is `10`). This setting is applicable to all XP disk arrays.

4. If you are managing an XP128/XP1024/XP10000/XP12000, also consider changing `ONCE` to `ALWAYS`. The default is `ONCE:60`.

   Most users will want to choose the `ONCE` setting. Using this setting means that Command View checks the `CommandView.properties` file only once, when someone adds a device or restarts the server, and then sets the session timeout value at that time.

   Certain users may find they need the flexibility of the `ALWAYS` setting, which ensures that Command View always determines the timeout value. Using this setting means that Command View checks the `CommandView.properties` file every time a user in Modify mode connects to an XP128/XP1024/XP10000/XP12000 array through the CLI. (This setting is not available when launching the array management screen in the GUI.) You may want to consider using this setting if you or someone else needs to change the timeout value on the array, but you want to override that when using Command View. This setting will add an additional delay of approximately 45 seconds when loading a new window.

   If you are managing an XP48/XP512, Command View ignores the `ONCE` or `ALWAYS` setting because the `ALWAYS` setting is not available.

5. Save and close the file.

6. Restart Command View XP Services by clicking **Start > Programs > HP StorageWorks Command View XP > Restart Services**.

3 Security system

Command View's integrated security system provides the capability to authenticate and authorize Command View users. Each user is provided with a user name and assigned to a user group, which determines the tasks the user can perform.

Depending on the user group you are assigned to, you will be able to perform some or all of the following tasks using the security feature:

- "Viewing and modifying users" on page 36
- "Changing a user's password" on page 37
- "Determining or modifying array/partition membership" on page 38
- "Viewing and modifying groups" on page 38

NOTE: Only users belonging to the Administrators group can add or delete users and change the passwords of others.

Accessing security

To access the Security functions, click **Security** in the left pane. The Security pane appears.

The pane consists of two tabs. Users belonging to the Administrators group can select the **Users** and **Groups** tabs to view and modify security information. Other users can view security information but cannot make modifications.

Default users

Command View is installed with three default users:

- user
- administrator
- storageadmin

Each of these users belongs to a specific user group, as specified in Table 4. The group membership of these users cannot be changed, and these users cannot be deleted. Only a user belonging to the Administrators group can create additional users in any group.

Table 4 shows the predefined users and their default properties.

Table 4 Predefined User Properties

User Name	Default Password	User Group
user	user	Users

Table 4 Predefined User Properties (continued)

User Name	Default Password	User Group
administrator	administrator	Administrators
storageadmin	storageadmin	StorageAdmins

User groups

All users of Command View belong to one of the three user groups that have been established in the Command View security system:

- *Users*: Members of this group have read-only access to array management for the arrays assigned to them. They also have read-only access to the Command View framework.

- *Administrators*: Members of this group are administrators of the Command View management station and can perform all tasks related to Command View and the arrays.

- *StorageAdmins*: Members of the group have read/write access to array management for the arrays assigned to them and to snap-in applications. They also have read-only access to the Command View framework.

Users can access the arrays through the GUI or CLI after they have been assigned access by an administrator.

When a user belonging to the *Administrators* group has logged in, all buttons will be enabled, whereas, when a user belonging to the *StorageAdmins* or *Users* group has logged in, only the **Change Password** and **Array/Partition Membership** buttons are enabled.

When a user is created in the *Administrators* group, a lock on the HP StorageWorks XP128/XP1024/XP10000/XP12000 array is required. If an array is offline or if another user is making modifications to an array, thereby holding a lock on the array, then an error message is displayed and this operation needs to be repeated after making sure that no other user is making modifications.

NOTE: If a lock with a red background is displayed in the upper right corner of the Command View window, this signifies that either you or another user has a lock on the array.

When users are created in the *StorageAdmins* or *Users* group, a lock on the arrays is not required because no device is assigned to the users by default. For a detailed description of the roles and responsibilities assigned to each user group, see Table 5.

Table 5 Group name properties

Group name/Role	Properties
Users Read-only users	This group represents all users who have read-only permissions. Only administrators from the Administrator group can add or delete users from this group. This group and its members are governed by the following rules: • Only the default user with the user ID of "user" is a permanent member of this group. All other users belonging to this group can be deleted. • Read-only access is provided by default to the Command View platform, including user administration, device administration, session administration, and administration of any snap-in applications (Performance Advisor XP and Application Policy Manager XP). • Members of this group do not have access to the arrays by default; however, read-only access can be assigned. • The default user with a user ID of "user" will have access to all the arrays and full array access in the case of a partitioned XP10000/XP12000, by default. • Read-only access to the arrays is assigned to members of this group by users belonging to the Administrators group. • No group-level permission assignments to the arrays are permitted; therefore, access to the arrays must be assigned to each individual user. • Users belonging to this group can change their own passwords.

Table 5 Group name properties (continued)

Group name/Role	Properties
Administrators Command View management station administrators (a local group)	This group represents all users who are Command View administrators. This group and its members are governed by the following rules: • Only the default user with the user ID of "administrator" is a permanent member of this group. All other users belonging to this group can be deleted. • Modify access is provided to the Command View platform, including device administration, session administration, user administration, license administration, and the administration of any snap-in applications (Performance Advisor XP and Application Policy Manager XP). • Modification privileges are provided for all arrays (and, by default, to all partitions in the case of partitioned XP10000/XP12000 arrays) added to Command View. • Modification privileges are provided for assigning or unassigning array membership and partitions. • Privileges cannot be modified for individual administrators; in other words, the privileges of the members of this group are fixed and cannot be changed. • Users belonging to this group can change the passwords of all users in any group except the password of the default "administrator" user.

Table 5 Group name properties (continued)

Group name/Role	Properties
StorageAdmins Storage Administrators (users of the storage system)	This group represents all users who are storage-only administrators. This group and its members are governed by the following rules: • Only the default user with a user ID of "storageadmin" is a permanent member of this group. All other users belonging to this group can be deleted. • Read-only access is provided by default to the Command View platform, including user administration, device administration, and session administration. For snap-in applications (Performance Advisor XP and Application Policy Manager XP), users belonging to this group have read/write access. • Modification privileges to Command View cannot be assigned to members of this group. • Members of this group do not have access to the arrays by default. • Access to particular arrays (including partitions of XP10000/XP12000 arrays), allowing modification privileges, can only be assigned to individual users in this group by users belonging to the Administrators group. • No group-level permission assignments to the arrays are permitted; therefore, access to the arrays must be assigned to each individual user. • Whenever a user in this group is given access to an array, his/her user name and password are added to the web console of the array. • Users belonging to this group can only change their own password.

Rules for user names and passwords

User accounts and passwords are governed by the following rules:

• User name and password boxes cannot be empty

• User name cannot have more than 16 characters

• Password cannot have more than 32 characters

• User name and password cannot contain any special characters, colons, semicolons, or spaces

• When changing your own password, the new password cannot be the same as the old password.

• User name or password cannot contain any spaces or the following special characters: ", \, ;, :, ,, $,_,*, ?, <, >, |, ~, /, ^, &, and %.

NOTE: Only a user belonging to the Administrators group can create user accounts.

Viewing and modifying users

Click the **Users** tab to access the Users pane and view or make modifications to individual users.

> **NOTE:** Only users belonging to the Administrators group can make modifications to individual users; however, all users can change their own passwords.

This pane lists the following items:

- **Name**: User name assigned to the user (administrator, storageadmin, or user)

- **Group Membership**: Group the user has been assigned to (Administrators, StorageAdmins, or Users)

- **Array/Partition Membership**: Serial number of the array[s] assigned to the user

- **Buttons**:

    - **New...**: Add a new user

    - **Delete**: Delete a user

    - **Change Password**: Change the password of the selected user

    - **Array/Partition Membership**: View the array and partition membership of the selected user

When a user is assigned to more than three arrays, the **Array/Partition Membership** column appears as a scrollable list for that row.

If no arrays are added to the Command View management station, the **Array/Partition Membership** column appears as a blank non-editable text field and the button is disabled.

All buttons are enabled for users belonging to the Administrators group. Only the **Change Password** and **Array/Partition Membership** buttons are enabled for users belonging to the StorageAdmins and Users groups. For a detailed description of the roles and responsibilities assigned to each user group, see Table 5 on page 33.

> **NOTE:** An error message appears if you attempt to make modifications to an array when the array is off-line or in modify mode. Make sure the array is online and that no other user is making modifications to the array whenever you are adding or deleting a user, changing a password, or making modifications to array and partition membership.

Adding a user

Only a member of the Administrators group can add users. Other users can only view this pane.

To add a new user:

1. Click **Security** in the left pane.
2. Click the **Users** tab.
3. Click **New...** The New User box appears.
4. In the User Name box, enter the name of the user.

5. In the Description box, enter a description of the user's privileges or any other information you would like to retain for the user. For example, a description for a user with administrative privileges could be "Privileged account with read/write access to everything." This box can be left blank.

6. In the New Password box, enter a new password for the user.

7. In the Confirm Password box, enter the password again.

8. Click **Next**. A new box appears.

9. Click to highlight the user group that you want to assign the user to.

10. Click the right-facing arrow to enter the user group name in the right pane.

11. Click **OK**. The **Group Membership** tab appears. The list in the left pane of the box shows the groups the user does not belong to.

12. Select a group in the list to assign to the new user.

13. Click the right-facing arrow to add the user to the group membership list that appears in the right pane. Please note that a user can only be assigned to one group.

14. Click **OK**. The box will close and the details of the added user are reflected in the Users' list.

Changing a user's password

Users can change their own passwords. Only members of the Administrators group can change another user's password, with the exception of the password for the default user "administrator", which cannot be changed.

NOTE: Password inconsistencies can arise as a result of one or more arrays being offline or being modified by another user. Make sure that the array(s) assigned to the user is online and that no modifications to the array(s) are being made prior to changing a password.

To change a user's password:

1. Click **Security** in the left pane.

2. Click the **Users** tab.

3. Click to highlight the user whose password you want to change.

4. Click **Change Password**. The Change Password box appears.

5. In the Old Password box, enter the password previous assigned to the user.

6. In the New Password box, enter the new password. (See the rules for user names and passwords on page 35.)

7. In in the Confirm Password box, enter the password again.

8. Click **OK**.

Deleting a user

Only a member of the Administrators group can delete users. Other users can only view this pane.

To delete a user:

1. Click **Security** in the left pane.

2. Click the **Users** tab.

3. Click to highlight the user you want to delete.

> **NOTE:** Default users cannot be deleted.

4. Click **Delete** and the Confirm Delete User box appears.
5. Click **Yes** to delete the user or click **No** to cancel the operation.

Determining or modifying array/partition membership

The Array/Partition Membership pane is used to view or change the arrays assigned to specified users. Only a member of the Administrators group can modify array and partition membership.

> **NOTE:** Partitioning is only supported for XP10000/XP12000. Also the HP XP Disk/Cache Partition license needs to be installed to enable this feature.

To view or change array/partition membership:

1. Click **Security** in the left pane.
2. Click the **Users** tab.
3. In the Users pane, click to highlight the row containing the name of the user you want to view array access for.
4. Click **Array/Partition Membership.** The Array/Partition Membership box appears.

The left pane of the Array/Partition box shows a list of arrays and partitions that are inaccessible, while the right pane lists arrays and partitions that are accessible to the user.

> **NOTE:** The partitions shown are not the partitions already created in the arrays, but represent all possible SLPRs (SLPR1 to SLPR31).

To change array/partition membership, continue with the following steps:

5. Click to highlight the array(s) or partition(s) you want to change access to.
6. Use either the right-facing or left-facing arrow to move the arrays or partitions to the appropriate pane.

> **NOTE:** A user can be assigned to only one partition in an array.

7. Click **OK** when you are satisfied with your changes. The new array or partition assignments are reflected in the **Array/Partition Membership** column in the Users pane.

Viewing and modifying groups

Groups tab

Click the **Groups** tab to access the Groups pane and view or make modifications to user groups.

This pane lists the following items:

- **Name**: List of group names

- **Description**: Shows group's capabilities, such as System Administrator

- **Properties button**: Click to display properties for selected groups.

For a detailed description of the roles and responsibilities assigned to each user group, see Table 5 on page 33.

To view group properties

1. Click **Security** in the left pane.
2. Click the **Groups** tab.
3. Click to highlight the row of the group you want to view properties for.
4. Click **Properties.**
5. The Properties box appears. It provides the group name and a description of the group you selected in step 3.
6. Click the **Members** tab to display the users who are members of the group you selected in step 3.
7. Click **Close** to return to the Groups pane.

4 Application administration

The Application Administration pane shows you the applications that are installed on the Command View management station. You can also use this pane to perform the following operations:

- "Adding Applications" on page 41

- "Deleting Applications" on page 42

- "Editing Application Information" on page 42

NOTE: Only users belonging to the Administrators group can add or delete an application or edit information about an application.

Accessing Application Administration

To access Application Administration, click **Application Admin** in the left pane. The Application Administration pane appears.

Display

Installed Command View Software section:

This section contains the following items:

- **Package Name**: Names of applications that are already installed on the Command View management station.

- **Version**: Version number of the installed software package.

- **Install Date**: Date the software package was installed. The date format is mm/dd/yyyy.

- **Install Time**: Time the software package was installed.

User-Defined Applications section:

This section lists details of user-added external applications to which links are provided on the Command View management station.

This section contains the following items:

- **Add New Applications**: Click to add one or more applications.

- **Delete**: Click to delete a user-added application.

- **Edit**: Click to modify a user-added application.

Adding Applications

1. Click **Add New Applications** in the Application Administration pane. The Add New Application pane appears.

NOTE: Only users belonging to the Administrators group can add new applications.

2. Enter the name of the application you want to add.

3. Enter the version number of the application.

4. Enter the URL where the application is located.

5. To add the application and return to the main Application Administration pane, click **OK**. To add another application click **Add Another**.

   Clicking **Reset** will reset the fields to blanks. Clicking **Cancel** will return you to the main Application Administration pane.

   When you return to the main Application Administration pane, the display will confirm that the application has been added.

Deleting Applications

1. From the Application Administration pane, select the check box beside the application you want to delete.

2. Click **Delete.** A message asks, `Delete Application Information?`

3. Click **OK** to confirm the deletion.

   When you return to the main Application Administration pane, the display will confirm that the application has been deleted.

Editing Application Information

1. Select the check box beside the application you want to edit.

2. Click **Edit**. The Edit Applications pane appears.

3. Modify the name or version of the application.

4. Click **OK** to confirm the changes. Click **Reset** to remove your changes without canceling the operation.

   When you return to the main Application Administration pane, the display will confirm that the application information has been changed.

5 Support

The Support panes provide access to help information.

- "Accessing the Support pane" on page 43
- "Using the Support pane" on page 43

Accessing the Support pane

When you log on to Command View, the Main window opens by default.

Click **Support** to view the Contents and Support panes. By default, the Download Page appears in the Support pane.

Using the Support pane

Use the links in the Contents pane to access support information.

Table 6   Support pane links

Click:	To:
Download page	Access Command View and Path Connectivity CLI information and downloads, and Path Connectivity Host Agent downloads
FAQs	View frequently asked questions and answers about Command View operations
Reference documents	View additional Command View documentation
Integrating HP StorageWorks Command View XP with other products	Learn how to use Command View with HP OpenView Storage Area Manager and other products
Other HP Products	View information about other HP products and services

6 Licenses

Use the License Key Management pane to view, install, and uninstall license keys.

Managing license keys

Use the License Key Management pane to install license keys that enable disk array product features such as Business Copy and Continuous Access. License keys are e-mailed to you by the HP license server.

The License Key Management pane:

- Displays a list of software, showing which options do or do not have license keys installed

- Installs licenses

- Uninstalls licenses

Types of license keys

Three types of license keys are available:

- A *temporary key* is a 120-day trial key. When this key expires, it cannot be re-installed for 180 days.

- An *emergency key* is a 30-day key, used to continue operating a function until you obtain a permanent key, or to release a changed configuration after a temporary key expires. This key can be reinstalled.

- A *permanent key* does not expire. Permanent keys are purchased based on the capacity of your disk array.

Your HP account support representative can help determine which keys you need to purchase.

Accessing License Key Management

1. Click **Licenses** in the main window.

NOTE: This pane displays only those arrays for which the currently logged-in user has full array access permissions.

2. In the **Serial Number** column, click the disk array you want to access. The License Key Management pane appears.

This pane lists the following items:

- **Functionality Option**: List of software options. Note that not all options are supported.

- **Status**: Installation status of the option (`Installed` or `Not Installed`).

- **Key Type**: Type of key installed (`Temporary`, `Emergency` or `Permanent`). If no key is installed, the column displays `--`.

- **Days Left**: Number of days before the key expires (Temporary and Emergency keys only).

- **Licensed Capacity**: Capacity of the license (for Permanent keys) in terabytes (TB).

- **Used Capacity**: Used Capacity (TB) is valid for applications like Continuous Access (CA), Business Copy (BC), Continuous Access XP - Journal, and Open LDEV Guard. When the license key for CA, BC, Continuous Access XP - Journal, or Open LDEV Guard is installed, the Used Capacity column shows actual used capacity.

NOTE: With some features, this will display as 0. For XP48 and XP512 arrays, used capacity information is not available and Used Capacity (TB) is displayed as `0`.

- **Buttons**:

  - **Install**: Displays the License Key Management (Install) pane

  - **Uninstall**: Displays the License Key Management (Uninstall) pane

  - **Cancel**: Returns to the previous pane

Installing a license key

Use the License Key Management pane to install license keys. If an application is licensed with full capacity, its check box is disabled. Also, if "frame unlimited" appears for a feature in the "Licensed Capacity" column, the check box will be disabled in the License Key Management (Install) pane for that feature. If a feature is capacity-based and the permanent key installed is not frame unlimited, then the check box in the install screen will be enabled for that feature, allowing you to increment the licensed capacity further.

1. From the License Key Management pane, click **Install**. The License Key Management (Install) pane appears.

2. Select the check box for each license key you want to install.

3. Enter the license key code(s). The length of the license key code(s) will vary, depending on the array. See Table 7.

Table 7 License key code length

Array Type	Key Length
XP10000/XP12000	48
XP1024/128/512/48	20

4. Click **OK** to install the license key and return to the License Key Management pane.

Uninstalling a license key

1. From the License Key Management pane, click **Uninstall.** The License Key Management (Uninstall) pane appears.

2. Select a check box for each license you want to uninstall. If an option is not licensed, its check box is disabled.

3. Click **OK** to uninstall the license key and return to the License Key Management pane.

7 Array event history

Use the Array Event History pane to view recent disk array events and error conditions. To use this feature, configure one or more XP disk arrays to forward traps to Command View's Trap Distributor, and then you can choose to set up Trap Distributor to forward SNMP traps. Only SNMP traps received by Trap Distributor are recorded in the Array Event History pane.

NOTE: For instructions on configuring an XP disk array to forward traps, refer to *Integrating HP StorageWorks Command View XP with Other Platforms* in the Support pane (page 43).

Array Event History is similar to Event Notification (page 51). The significant difference between Array Event History and Event Notification is that Array Event History events are asynchronous or live events, whereas Event Notification traps are synchronous. Event Notification automatically records events and generates notifications for any managed disk array and Path Connectivity without additional configuration steps. Use Trap Distributor to record events from managed and unmanaged disk arrays.

For information about integrating with other software products, click **Support** in Command View's main window, then click **Integrating HP StorageWorks Command View XP with other products**.

Using Array Event History

1. Click **Array Event History** in the Main window. The Array Event History pane appears.
2. Enter the date for which you want to view array events (yyyy/mm/dd), and click **Refresh**.

Display

The Array Event History pane includes the following items:

- **Date**: Date the information is requested

- **Time Stamp**: Date and time the event occurred

- **Array**: Serial number of the disk array that generated the error

- **Ref code**: Reference code provided for a Remote Service Information Message (R-SIM) to identify the error

- **Error**: An explanation of the error

- **Severity**: Error's severity level

- **Refresh button**: Click this button to receive updated information for the selected date or to refresh the display after entering a new date.

8 Event notification

Use Event Notification for the following tasks:

- Configure and dispatch notifications
- Configure the history log file
- View events and notification history
- Test notification dispatching

Event Notification also includes a history log of disk array events.

Event Notification is similar to Array Event History. The significant difference between Array Event History and Event Notification is that Array Event History events are asynchronous or live events, whereas Event Notification traps are synchronous.

Event Notification automatically records events and generates notifications for any managed disk array and Path Connectivity without additional configuration. Trap Distributor can be used to record events from managed and unmanaged disk arrays.

For information about integrating with other software products, click **Support** in Command View's main window, then click **Integrating HP StorageWorks Command View XP with other products**.

NOTE: Only users in the Administrators group can configure event notifications and log files.

Accessing Event Notification

To access Event Notification, click **Event Notification** in the main window.

To display the other Event Notification panes, use the navigation tree on the left. To display the most current event notification data, click **Refresh**.

Configuring event history settings

Event history data is saved in the history log file. Use the History Log Configuration pane to change event history settings such as file size and number of days events are saved. File size takes priority over the number of days, so the history log file will never exceed the maximum file size regardless of the number of days you set.

1. In the navigation tree, click **History** and then **Configuration**. The History Log Configuration pane appears.
2. Enter the maximum file size for the history log file (KB) in the Maximum Disk Utilization box.
3. Enter the maximum number of days to save events in the history log file in the Maximum Days To Keep Events box.
4. Click **Apply**.

Specifying the e-mail server for e-mail notifications

Before sending any e-mail notifications, you must specify the e-mail SMTP server that is used to send an e-mail notification.

1. In the navigation tree, click **Email Notification** and then **Configuration**. The Email Server Configuration pane appears.

2. Enter the server name or address in the Email Server box.

3. To specify an alternate server if the first one is not available, enter the server name or address in the Alternate Email Server box.

4. Click **Apply**.

Configuring e-mail notifications

Use the Email Notification pane to add, edit, or delete existing e-mail notifications. Event information is provided in the e-mail message body. The following is an example of an e-mail notification message:

```
Notification_Dispatch_Notice: Notification dispatch.
Notification_Name: My Email
Category: Array
Severity: Serious
Timestamp: 2003-10-21T10:00:56
Array_Serial_Number: 10033
Reference_Code: 54321
Message: Test Message
```

Adding an e-mail notification

1. In the navigation tree, click **Email Notification** and then **New**. The Email Notification pane appears.

2. In the Name box, enter the name of the notification for identification purposes.

3. Enter the e-mail addresses of the notification recipient and sender in the To and From boxes.

4. Enter the subject of the e-mail notification in the Subject box,

5. By default, the Enable check box is selected. If you want to create an inactive notification, clear the check box. Notifications will not be sent until this check box is selected.

6. Choose one or more severity levels by selecting the appropriate Severity check box(es). A notification will be sent only when it meets the severity level criteria.

7. In the Schedule list, select a previously created schedule or **None** if there are no schedule restrictions. If you select a schedule, a notification will be sent only for events that occurred during the set schedule. For more information, see "Managing the notification schedule" on page 55.

8. In the Event Category list, select **All Categories**, **Array**, or **Path Connectivity**. The default is All Categories. Only events that fall into the specified category will trigger a notification.

9. In the Array list, select a disk array or **All Arrays**. The default is All Arrays. Only events that occurred on the specified disk array will trigger a notification.

10. Click **Apply**.

Editing or deleting an e-mail notification

1. In the navigation tree, click **Email Notification** and then **Notification**. The Notification pane appears.

2. Click the name of the notification you want to edit or delete. The Email Notification pane appears.

3. Edit the notification and click **Apply**. To delete the notification, click **Delete**.

Configuring script notifications

Use the Script Notification pane to add, edit, or delete script notifications. Event information to the script is provided by the standard input stream.

Adding a script notification

1. In the navigation tree, click **Script Notification** and then **New**. The Script Notification pane appears.

2. In the Name box, enter the name of the notification for identification purposes (for example, MyScript).

3. In the Exec Path box, enter the absolute path of the script you want to run. Make certain the script file is placed on the machine running the Command View management station.

4. By default, the Enable check box is selected. If you want to create an inactive notification, clear the check box. Notifications will not be executed until this check box is selected.

5. Choose one or more severity levels by selecting the appropriate Severity check box(es). A notification will be executed only when it meets the severity level criteria.

6. In the Schedule list, select a previously created schedule or **None** if there are no schedule restrictions. If you select a schedule, a notification will be executed for events that occurred during the set schedule. For more information, see "Managing the notification schedule" on page 55.

7. In the Event Category list, select **All Categories**, **Array**, or **Path Connectivity**. The default is All Categories. Only events that fall into the specified category will trigger a notification.

8. In the Array list, select a disk array or **All Arrays**. The default is All Arrays. Only events that occurred on the specified disk array will trigger a notification.

9. Click **Apply**.

Editing or deleting a script notification

1. In the navigation tree, click **Script Notification** and then **Notification**. The Notification pane appears.

2. Click the name of the notification you want to edit or delete. The Script Notification pane appears.

3. Edit the notification and click **Apply**. To delete the notification, click **Delete**.

Configuring SNMP notifications

Use the SNMP Notification pane to add, edit, or delete SNMP notifications. A SNMP notification sends SNMP traps to other applications. The trap format is based on the NetCitizen MIB. The `NetCitizen2.mib` file is located in the `\hpss\subagent directory`.

The trap's description contains the following information:

Table 8 Information for configuring SNMP notifications (NetCitizen2.mib)

Event severity	Trap type
Acute	hpHttpMgNonRecoverableHealthTrap
Serious	hpHttpMgCriticalHealthTrap
Moderate or Service	hpHttpMgWarningHealthTrap
Information	hpHttpMgOKHealthHealthTrap

	Information included in the description
Trap Info:	community: public enterpriseOid: .1.3.6.1.4.1.11.2.36.1 trapType: 6 specificTrapType: hpHttpMgNonRecoverableHealthTrap (7), hpHttpMgCriticalHealthTrap (6), hpHttpMgWarningHealthTrap(5), or hpHttpMgOKHealthTrap (4) upTime: event time
Trap Variables:	hpHttpMgDeviceIndex: Always 0 (zero) hpHttpMgDeviceSysObjID: 1.3.6.1.4.1.11.10.2.1.14 hpHttpMgDeviceGlobalUniqueID: hostIpAddress_arraySn or hostIpAddress_PCApplication hpHttpMgDeviceManagementURL: http://hostIpAddress/hpstmgmt/servlet/MarsDm hpHttpMgDeviceManagementURLLabel: ArrayMgmt or PC hpHttpMgDeviceSpecificEventCode: Event Message hpHttpMgDeviceSpecificFRU: RefCode or FRU

Adding an SNMP notification

1. In the navigation tree, click **SNMP Notification** and then **New**. The SNMP Notification pane appears.
2. In the Name box, enter the name of the notification for identification purposes.
3. In the Address box, enter the target IP address for the SNMP trap.
4. In the Port box, enter the IP port number for SNMP. The recommended port number is 162.
5. By default, the Enable check box is selected. If you want to create an inactive notification, clear the check box. Notifications will not be sent until this check box is selected.
6. Choose one or more severity levels by selecting the appropriate Severity check box(es). A notification will be sent only when it meets the severity level criteria.
7. In the Schedule list, select a previously created schedule or **None**, which means there will be no schedule restrictions. If you select a schedule, a notification will be sent for events that occurred during the set schedule. For more information, see "Managing the notification schedule" on page 55.
8. In the Event Category list, select **All Categories**, **Array**, or **Path Connectivity**. The default is All Categories. Only events that fall into the specified category will trigger a notification.

9. In the Array list, select a disk array or **All Arrays**. The default is All Arrays. Only events that occurred on the specified disk array will trigger a notification.

10. Click **Apply**.

Editing or deleting an SNMP notification

1. In the navigation tree, click **SNMP Notification** and then **Notification**. The Notification pane appears.

2. Click the name of the notification you want to edit or delete. The SNMP Notification pane appears.

3. Edit the notification and click **Apply**. To delete the notification, click **Delete**.

Managing the notification schedule

You can create one or more schedules to restrict event notification to a specific day and time on a weekly basis. After creating a schedule, you can apply the schedule when creating or editing e-mail, script, and SNMP notifications.

You can also create schedules that span over two days. For example, if you set the start time to 10:00 p.m. and the duration to 5 hours, notification monitoring will end at 3 a.m. the following day.

You also edit or delete schedules. If you rename or delete a schedule currently in use, go to the notification and reselect the schedule or chose a new schedule, or the notification will not follow a schedule.

To update the Schedule pane, click **Refresh**.

Creating a notification schedule

1. In the navigation tree, click **Schedule** and then **New**. The Schedule pane displays a form.

2. Set the schedule by selecting the Enabled check box next to the day you want, selecting a start time in the Start Time list, and selecting the number of hours in the Duration list.

3. Click **Apply**.

Editing or deleting a notification schedule

1. In the navigation tree, click **Schedule** and then **Schedule**. The Schedule pane displays a list of existing schedules.

2. Click the name of the schedule you want to edit or delete. The Schedule pane displays the existing schedule.

3. Edit the schedule and click **Apply**. To delete the schedule, click **Delete**.

Viewing a list of configured notifications

Use the Notification pane to display the e-mail, script, and SNMP notifications that have been set. In this pane, you can sort the list or access additional panes to edit or delete a notification.

1. To display a list of configured notifications, do one of the following:

   • Click **Event Notification** to display the default pane, which is the Notification pane. The default pane shows all notifications.

   • From any other Event Notification pane, click **Notification** in the navigation tree to display the default pane.

   • To view a specific type of notification from the default pane, select **Email**, **Script**, or **SNMP** in the Notification Type list and click **Go**.

- To view a specific type of notification from any other Event Notification pane, click **Email Notification**, **Script Notification**, or **SNMP Notification** in the navigation tree. Then click Notification to display that type of notification.

2. To sort by column, click the column heading link.

3. To edit a notification, click the name of the notification.

4. To delete a notification, click the name of the notification and then click **Delete**.

5. To edit the schedule of a notification, click the name of the schedule.

6. To update the Notification pane, click **Refresh**.

Viewing event history

Use the Event History pane to view event messages with information about severity, when the event occurred, and whether a notification was sent. You can filter events by category and date, and sort by column.

You can also view the event notification history from the Notification History pane (see "Viewing notification history" on page 56).

1. In the navigation tree, click **History** and then **Event**. The Event History pane displays all the events that have occurred according to the settings specified in the History Log Configuration pane (see "Configuring event history settings" on page 51).

2. To create a more selective listing, apply any of the following filters:

   - To display disk array events only, select **Array** in the Category list and click **Go**. To narrow the list to a specific disk array, select the disk array in the Array list.

   - To display Path Connectivity events only, select **Path Connectivity** in the Category list and click **Go**.

   - To display events from a specific date range, enter the dates (mm-dd-yyyy) in the From and To boxes and click **Go**.

   - To display events of a specific severity level, select one or more Severity Filter check box(es) and click **Go**.

3. To sort by column, click the column heading link.

4. To show or hide notifications associated with an event:

   - To display notifications for a specific event, click **Show** next to the event you want to view.

   - To display notifications for all events, go the Notification History pane by clicking **History** and then **Notification** in the navigation tree (see "Viewing notification history" on page 56).

   - Click **Hide Notification** when you are done viewing the event notifications.

5. Click **Refresh** to update the Event History pane.

Viewing notification history

Use the Notification History pane to view a history of event notifications. The list shows who was notified, the type of notification, where and when it was sent, and the status. In addition, you can filter notifications by date and sort by column.

NOTE: Time stamp displayed for XP48/XP512 array events will not be accurate as it is not supported in the firmware.

You can also display the event notification history for a specific event from the Event History pane (see "Viewing event history" on page 56).

1. In the navigation tree, click **History** and then click **Notification**. The Notification History pane displays all the notifications that have occurred.

2. To display notifications during a specific date range, enter the dates in the **From** and **To** boxes (mm-dd-yyyy) and click **Go**.

3. To sort by column, click the column heading link.

4. To update the Notification History pane, click **Refresh**.

Deleting history events

In addition to deleting individual event entries, you can delete all events by clearing the event history log file. Deleting events deletes the notification history associated with those events.

Deleting individual events

1. In the navigation tree, click **History** and then **Event**. The Event History pane displays all the notifications that have occurred.

2. In the Select column, select the check box(es) next to the events you want to delete. To select all the check boxes, click the **All** link in the Select column heading. Clicking the **None** link clears all the check boxes.

3. Click **Delete Selected**. The Event History pane is updated and no longer shows the events you selected to delete.

Clearing the history log file

1. In the navigation tree, click **History** and then click **Clear History**. The Clear History pane appears.

2. Click **Apply** to clear the history log file. A confirmation message appears.

3. Click **OK** to confirm.

Testing event notification

The Array Test Event and Path Connectivity Test Event panes provide a diagnostic tool that administrators can use to test event notifications. To use the tool, create a test event to trigger a notification that is displayed in the Event History pane.

Testing array event notification

1. In the navigation tree, click **Test Events** and then **Array Event**. The Array Test Event pane displays a form.

2. Complete the form that triggers an event notification.

3. Click **Apply**.

4. Go to the Event History pane by clicking **History** and then **Event**.

5. Locate the event that you created.

6. Verify that a notification occurred by clicking **Show** next to the event.

Testing Path Connectivity event notification

1. In the navigation tree, click **Test Events** and then **Path Connectivity Event**. The Path Connectivity Test Event pane displays a form.
2. Complete the form that triggers an event notification.
3. Click **Apply**.
4. Go to the Event History pane by clicking **History** and then **Event**.
5. Locate the event that you created.
6. Verify that a notification occurred by clicking **Show** next to the event.

9 Identity

The Identity pane is an array-dependent feature and is the default pane that is shown after a disk array is selected in the Device Launcher pane.

NOTE: Values displayed in the Identity pane can be changed in the Device Administration pane. See "Device Administration" on page 22.

Accessing identity information

1. Click **Array Manager** in the left pane.

2. From the Device Launcher pane, click **Modify** or **View** for an XP48/XP512 or click an XP128/XP1024/XP10000/XP12000 link.

Display for XP48/XP512

This pane lists the following items:

• **Product**: HP product number for the disk array

• **Firmware Version**: Version of the firmware currently loaded on the disk array

• **Console Address**: IP address of the disk array

• **Device Name**: User-defined nickname that identifies a disk array

• **Device Location**: Physical location of the disk array

• **Contact**: Person to contact regarding issues with the disk array

NOTE: You can add or modify the Device Name, Device Location, and Contact by updating the information in the Device Administration pane (page 22).

• **Update** button (view mode only): Click this button to display the latest data from the disk array.

Display for XP128/XP1024/XP10000/XP12000

The Identity pane for the XP128/XP1024/XP10000/XP12000 includes the following items:

• **User**: The user ID of the current user

- Buttons and icons, shown above the Identity pane in the main window, provide several functions as described in the following table:

Table 9 Identity pane buttons and icons

Button or Icon	Description
Audit:Normal / Audit:Warning	The **Audit:Normal** button or the **Audit:Warning** button allows you to download the audit log file. When the amount of the data in the audit log file is under the threshold, the **Audit:Normal** button is displayed. When the amount of the data in the audit log file exceeds the threshold, the **Audit:Warning** button is displayed. For detailed information, see Audit Log file (XP10000/XP12000 only), page 62.
Option icon	The **Option** icon opens the User Control Panel, allowing the Administrator to edit user account lists, set Command View environment parameters, and download files containing log or configuration information. See Control Panel (XP128/XP1024/XP10000/XP12000), page 80 for additional information.
Status Lamp icons	The **Status Lamp** icon in the upper left corner of the main window indicates the error status of the array. Blue indicates normal; yellow indicates warning; and red indicates abnormal, according to the host SIM status. For details, check the Status pane.
Reset	The **Reset** button (Modify mode only) is at the top of the Identity pane. This feature provides a default time for the currently logged-in session. Click **Reset** to reset the time.
Lock icons	The **Lock** icon indicates the operation mode for all currently logged-in users. If all users are operating in View mode, the unlocked icon with the blue background is displayed. If a user is operating in Modify mode, the locked icon with the red background is displayed.
Mode-Switching icons	The **Mode-Switching** icon shows the current mode (View or Modify). Click this icon to change the mode of operation. The pen icon with the gray background represents View mode and the pen icon with the yellow background represents Modify mode. When you click the icon to change the mode of operation, a confirmation message asks: `Do you want to change the mode`. Click **Yes** to confirm or **Cancel** the operation. This feature is available to all users; however, read-only users will not be able to make any modifications. **NOTE:** You cannot switch to Modify mode while another user is operating in Modify mode. Check the status of the Lock icon before switching to Modify mode. You can switch to Modify mode if the unlocked icon with the blue background is displayed.
Basic Information icon	The **Basic Information** icon (XP10000/XP12000 only) provides port, LUN, and LDEV information. See Basic information, page 76, for additional information on this feature.

Table 9   Identity pane buttons and icons (continued)

Button or Icon	Description
	The **Refresh** icon displays the latest information in the main window.
	NOTE: The information might not be displayed correctly when the array is locked, array maintenance is in progress, or SNMP operations in Modify mode are being performed.
	The **Exit** icon closes the main window.

- **Serial Number:** Disk array's serial number

- **IP Address**: Disk array's IP address

- **Device Name:** User-defined nickname that identifies a disk array. The characters ":" and "~" are not allowed in the Device Name box.

- **Contact**: Person to contact regarding issues with the disk array. The characters ":" and "~" are not allowed in the Contact box.

- **Device Location**: Physical location of the disk array. The characters ":" and "~" are not allowed in the Device Location box.

NOTE: You can add or modify the Device Name, Contact, and Device Location by updating the information in the Device Administration pane (page 22).

- **Firmware Version**: The version of the firmware currently loaded on the disk array

- **Device Type**: The type of the device you want to gather LDEV information on. One of three devices will be shown in the list:

  - Total Device

  - Internal Device Only

  - External Device Only (XP10000/XP12000 only)

- **Capacity**:

  - **OPEN Volume**: Volumes that can be accessed by the hosts having non-mainframe operating systems. Supported open volume emulation types are OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L, and OPEN-V.

  - **Mainframe Volume**: Volumes that can be accessed by mainframe hosts. Supported mainframe volume emulation types are 3380-E,-F,-J,-KA/KB/KC; 3390-1,-2,-3,-3R,-3A/3B/3C,-9.

  - **Allocated LDEV Capacity:** Sum of the capacities of all allocated LDEVs. An LDEV is considered allocated when at least one LUN path is associated with it. If two LUN paths point to the same LDEV, the space on that LDEV is counted once.

  - **Unallocated LDEV Capacity**: Sum of the capacities of all of unallocated LDEVs

  - **Reserved Capacity:** Sum of the capacities of all of reserved LDEVs

  - **Total Volume Capacity**: Sum of the storage capacity of all LDEVs on the system

- **Number of LDEVs:**

  - **Allocated OPEN LDEVs:** Number of LDEVs that are associated with LUNs

  - **Unallocated OPEN LDEVs**: Number of LDEVs that do not have assigned LUN paths

  - **Reserved OPEN LDEVs:** Number of LDEVs reserved as Auto LUN reserved volumes for use in LUN migration. This item is displayed only if HP Auto LUN XP is installed.

  - **Allocated Mainframe LDEVs**: Number of mainframe LDEVs having a path defined for one or more ports

  - **Reserved Mainframe LDEVs**: Mainframe LDEVs that are reserved for Auto LUN, BC, or CA operations

  - **Total LDEVs**: Total number of LDEVs on the disk array

Using the Identity pane (XP128/XP1024/XP10000 /XP12000)

To view additional features or make modifications in the Identity pane:

1. Verify that the **lock** icon is unlocked with a blue background and no other user is holding a lock on the array. If necessary, click to change to the unlocked lock. If the lock remains locked, another user is in Modify mode. Only one user can be in Modify mode at a given time.

2. Check the **Mode-Switching** icon. If the icon is red, you are in Modify mode. If the icon is blue, click the icon to switch to Modify mode.

NOTE: Not all information can be viewed without obtaining a lock on the array (for example, you cannot change to Modify mode without obtaining a lock on the array). All users can obtain a lock on an array and access Modify mode. For users with read-only privileges, this will only provide a view to additional features. Only users in the Administrators and StorageAdmins groups can modify the array.

Audit Log file (XP10000/XP12000 only)

When you click **Audit:Normal** or **Audit:Warning** (the button is located above the Identity pane), the pane used to specify the destination for saving the audit log file appears.

The audit log file is used for security measures for XP10000/XP12000. In the audit log file, the history information of the operation performed from Command View to the array is saved. The audit log file records who performed what operation as well as when the operation was performed; therefore, it can be used to investigate problems that occur with XP10000/XP12000.

Audit log file conventions are as follows:

- **File type**: The audit log file is a generic term for the login information file (login.log) and the setting information file (audit.log). These files are compressed to the tgz file when they are downloaded. The default file name is "Audityyyymmdd.tgz" where "yyyymmdd" indicates the date of the day the file is downloaded. You can specify the destination to save the file and the file name when you download it.

- **Maximum number of data that can be saved**: 10,000 data can be saved in each login information file and setting information file.

- **Maximum number of characters in a line**: 150 bytes of characters can be saved in a line.

- **File size**: 1.5 MB for each login information file and setting information file.

- **Threshold and the operation when the threshold is exceeded**: When the number of the saved data in the audit log file reaches the maximum number, the file starts to be overwritten from the starting line with the new data, and the old data is deleted (wrap around). To prevent the old data from being overwritten before the data is downloaded, the threshold is set. The preset threshold is 70% of the whole file. When the amount of the saved data reaches the threshold, a warning message urges you to download the audit log file. At this point, the **Audit:Warning** button appears. Once you have downloaded the audit log file, the counter of the saved data is reset, and monitoring of the amount of the saved data for the threshold is restarted from 0%.

- **Control information**: The first line of the audit log file is the control information (for example, file name and the last time the file is written.

Figure 6 shows an example of the audit log file.


```
Example of Login Information File
user-00,,04/08/20,16:59:00:000,00:00,[Base],Login,126.255.255.0,Normal end
    1   2   3       4          5      6       7        8         9
user-00,,04/08/20,17:00:00:000,00:00,[Base],Logout,,Normal end


Example of Setting Information File
user-00,,04/08/20,16:59:00:000,00:00,[Base],ChangeMode,,Normal end

user-00,,04/08/20,17:00:00:000,00:00,[TC],paircreate,,Normal end
```

Figure 6 Example of audit log file

The output items in the audit log file are described below according to the numbers shown in Figure 6.

1. Login user ID

2. This area is not used for XP10000/XP12000

3. Date (YY/MM/DD): The day the file was downloaded

4. Time (HH:MM:SS:xxx): The time the file was downloaded

5. Time zone: The time difference between GMT (Greenwich Mean Time) and the local time is displayed in the form of "hh:mm" (for example, "01:00", "02:00", "00:00").

6. The abbreviation indicating the function: the abbreviation indicating the function or program product option which has been used to perform the setting operation is output. The abbreviation and the function names are listed in Table 10.

7. Name of the operation: "Login" or "Logout" is output in the login information file. In the setting information file, the specific operation name to each function or program product option is output. For details on each output operation name and operation, see Table 11.

8. Parameters: the IP address of the Storage Navigator (web client) computer used for login is output in the Login information file (login.log). No information is output for logout or other setting information.

9. Result of the operation: The following terms are output as a result of the operation:

    - **Normal end**: indicates that the operation has ended normally.

    - **Error (xxxx-yyyyy)**: indicates that the operation has ended abnormally. Where "xxxx-yyyyy" displays the error code.

    - **Warning (xxxx-yyyyy)**: Indicates that the operation has partly ended abnormally. Where "xxxx-yyyyy" displays the error code.

To download the audit log file:

1. Log on to an XP10000/XP12000 to open the Identity pane.

2. Click **Audit:Normal** or **Audit:Warning** above the Identity pane. A new window will appear.

3. Specify the destination to save the audit log file and the file name, and click **Save.**

Table 10   Abbreviation displayed in audit log file and corresponding program product or operation

Output Abbreviation in Audit Log File	Program Product or Operation
Base	Login, Logout Changing between View Mode and Modify Mode Changing information on the Information panel
LUNM	LUN Manager
ENAS	PCR of FlashAccess
LUSE	Volume Management (LUSE)
VLL	Volume Management (VLL)
SHRED	Data Shredder
Cache	FlashAccess, FlashAccess - S/390®
PFM	Performance Monitor
CC	Auto LUN XP
PPC	Priority Access
TC	Continuous Access XP
TC s/390	Hitachi TrueCopy - S/390®
SI	Business Copy XP
SI s/390	ShadowImage - S/390®
HPAV	Parallel Access Volume
SANtinel	Hitachi SANtinel - S/390®
LDG	LDEV Guard
OLG	LUN Security XP Extension
HC	Flex Copy XP
CFL	Configuration File Loader
PP KEY	License Key
SNMP	SNMP Information, SNMP
PORT	Changing port attribute operation from Continuous Access, Hitachi TrueCopy - S/390®, Extended Copy Manager, or Flex Copy XP

Table 10 Abbreviation displayed in audit log file and corresponding program product or operation (continued)

Output Abbreviation in Audit Log File	Program Product or Operation
RCU	RCU operation from Continuous Access XP or Hitachi TrueCopy - S/390®
LDEV	LDEV operation such as blocking, restoring, and formatting

Table 11 Operation and Terms Displayed in Audit Log File

Panel	Tab	Operation	Output of Audit Log File	
			Function	Operation
LUNM	LUNM (*Note 3*)	Command Device: OFF ON	LUNM	Set CommandDev
LUN Sec		Command Device: ON OFF		Set CommandDev (*Note 1*)
		Cmd Dev.Security: OFF ON		Set CommandDevSec (*Note 1*)
		Cmd Dev.Security: ON OFF		Set CommandDevSec (*Note 1*)
		Add LU Path		Add LU Path (*Note 1*)
		Release LU Path		Delete LU Path (*Note 1*)
		Set Host Mode		Set Host Mode (*Note 1*)
		LUN Security: OFF ON		Set Security Switch
		LUN Security: ON OFF		Set Security Switch
		Add New WWN		Add WWN (*Note 1*)
		Delete WWN		Delete WWN (*Note 1*)
		Change WWN & Name		Change WWN (*Note 1*)
		Add New Host Group		Add Host Group (*Note 1*)
				Set Host Mode (*Note 1*)
		Delete Host Group		Delete Host Group (*Note 1*)
		Change Host Group		Change Host Group (*Note 1*)
		Clear Host Group		Delete Host Group (*Note 1*)
		Paste		Add Host Group (*Note 1*)
				Set Host Mode (*Note 1*)
				Add WWN (*Note 1*)
				Add iSCSI Name (*Note 1*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
				Add LU Path (*Note 1*)
		Erase WWN		Delete DKC WWN (*Note 1*)
		"Drag & Drop" WWN node		Add WWN (*Note 1*)
				Delete WWN (*Note 1*)
		"Drag & Drop" iSCSI name node		Add iSCSI Name (*Note 1*)
				Del iSCSI Name (*Note 1*)
		Paste Path		Add LU Path (*Note 1*)
		Add new iSCSI name		Add iSCSI Name (*Note 1*)
		Delete iSCSI name		Del iSCSI Name (*Note 1*)
		Change iSCSI name & Name		Change iSCSI Name (*Note 1*)
		Erase iSCSI name		Del DKC iSCSI Name (*Note 1*)
	Port (*Note 4*)	Standard Mode		Set Speed Mode (*Note 1*)
		High Speed Mode		Set Speed Mode (*Note 1*)
		High Speed (2Port) Mode		Set Speed Mode (*Note 1*)
		Fibre Addr.		Set Fibre Address (*Note 1*)
		Fabric		Set Fibre Topology (*Note 1*)
		Connection		Set Fibre Topology (*Note 1*)
		Host Speed		Set Channel Speed (*Note 1*)
		IP Address		Set IP address
		Subnet Mask		Set IP address
		Gateway		Set IP address
		iSCSI Name		Set iSCSI name
		iSCSI Alias		Set iSCSI name
		Port Number		Set TCP/IP port
		Keep Alive Timer		Set KAT
		iSNS Server		Set iSNS

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
		iSNS IP Address		Set iSNS
		iSNS Port No.		Set iSNS
	UserAuth	Set AuthSwitch		Set AuthSwitch (*Note 1*) (*Note 2*)
		Set AuthInfo		Set AuthInfo (*Note 1*) (*Note 2*)
		Set AuthTargetInfo		Set AuthTargetInfo (*Note 1*) (*Note 2*)
LUSE	LUSE (*Note 5*)	Make LUSE	LUSE	Make LUSE (*Note 1*)
VLL		Release LUSE		Release LUSE (*Note 1*)
	VLL	Set Shredding	SHRED	Set Shredding (*Note 1*)
		Suspend Shredding		Suspend Shredding (*Note 1*)
		Install CV	VLL	Install CV (*Note 1*)
		Volume to Space		Volume to Space (*Note 1*)
		Volume Initialize		Volume Initialize (*Note 1*)
		Make Volume		Make Volume (*Note 1*)
		Blockade	LDEV	Volume-Blockade (*Note 1*)
		Restore		Volume-Restore(N) (*Note 1*)
FlashAccess / PCR	FlashAccess	Set FlashAccess (Open Volume)	Cache	Set Open DCR (*Note 1*) (*Note 2*)
		Set FlashAccess (M/F Volume)		Set M/F DCR (*Note 1*) (*Note 2*)
		Release FlashAccess (Open Volume)		Delete Open DCR (*Note 1*) (*Note 2*)
		Release FlashAccess (M/F Volume)		Delete M/F DCR (*Note 1*) (*Note 2*)
		Prestaging ON		DCR Prestaging (*Note 1*) (*Note 6*)
	PCR	PCR Set / Clear	ENAS	Set Cache Color (*Note 1*)
Performance Monitor	Performance Monitor [Physical]	Get Latest Data	PFM	Get Latest Data
	Monitoring	LongRange Monitoring S/W On		S/W LongRange (*Note 1*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
LUN Configuration Manager XP	Options	LongRange Monitoring S/W Off		S/W LongRange (*Note 1*)
		ShortRange Monitoring S/W On		S/W ShortRange (*Note 1*)
Prioritized Port Control		ShortRange Monitoring S/W Off		S/W ShortRange (*Note 1*)
	Manual Plan	Set	CC	Set Migration Vol (*Note 1*) (*Note 2*)
		Delete		Set Migration Vol (*Note 1*) (*Note 2*)
	Auto Plan	Auto Migration Function		Set Auto Plan Param (*Note 1*)
		Make New Plan		Create Auto Plan (*Note 1*)
		Delete		Create Auto Plan (*Note 1*)
	Attribute	Change Class Threshold		Set Class Threshold (*Note 1*)
		Fixed PG		Set Fixed PG (*Note 1*) (*Note 2*)
		Normal PG		Set Fixed PG (*Note 1*) (*Note 2*)
		Reserved LDEV		Set Reserved Vol (*Note 1*) (*Note 2*)
		Normal LDEV		Set Reserved Vol (*Note 1*) (*Note 2*)
	History	Erase Auto Migration History		Del Auto Plan Log
		Erase Migration History		Del Migration Log
	Port	All Thresholds	PPC	Set All Prio Port (*Note 1*) (*Note 2*) Set Ctrl Kind
		Set Prio Port		Set Prio Port (*Note 1*) (*Note 2*) Set All Prio Port
		Initialize		Default Set (*Note 1*) (*Note 2*)
		Delete ports if CHA is removed		Clear PPC Info
		Set Ctrl Kind (Port Control)		Set Ctrl Kind

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
	WWN	All Thresholds		Set All Prio WWN (*Note 1*) (*Note 2*)
		Set Prio WWN		Set Prio WWN (*Note 1*) (*Note 2*) Set All Prio WWN
		Update WWN		Update WWN (*Note 1*) (*Note 2*) Set All Prio WWN
		Add WWN (WWN is added to a PPC Group.)		Update PPCGrp (*Note 1*) (*Note 2*)
		Delete WWN (WWN is deleted to a PPC Group.)		Update PPCGrp (*Note 1*) (*Note 2*)
		PPC Group Add & WWN Add		Update PPCGrp (*Note 1*) (*Note 2*) Set All Prio WWN
		PPCGroup Delete		Update PPCGrp (*Note 1*) (*Note 2*) PPCGrp Del/Chg Set All Prio WWN
		Change PPCGroup (Attribute/Upper)		Change PPCGrp (*Note 1*) (*Note 2*) Set All Prio WWN
		PPCGroup Change (ReName)		PPCGrp Del/Chg (*Note 1*) (*Note 2*) Set All Prio WWN
		Set Ctrl Kind (WWN Control)		Set Ctrl Kind (*Note 1*) (*Note 2*)
		Port-WWN Add		Update Port WWN (*Note 1*) (*Note 2*)
		Port-WWN Delete		Update Port WWN (*Note 1*) (*Note 2*)
		Initialize		Default Set (*Note 2*)
		Delete ports if CHA is removed		Clear PPC Info (*Note 2*)
TrueCopy	Pair Operations	Paircreate	TC	Paircreate (*Note 1*) (*Note 2*)
		Pairsplit-S		Pairsplit-S (*Note 1*) (*Note 2*)
		Pairsplit-r		Pairsplit-r (*Note 1*) (*Note 2*)
		Pairresync		Pairresync (*Note 1*) (*Note 2*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
		Change Pair Option		Change Pair Option (*Note 1*) (*Note 2*)
	RCU Operations	Add RCU	RCU	Add RCU
		Change RCU Option		Change RCU Option
		Delete RCU		Delete RCU
		Add Path		Add Path (*Note 1*) (*Note 2*)
		Delete Path		Delete Path (*Note 1*) (*Note 2*)
		Add SSID		Add RCU
		Delete SSID		Delete RCU
		PortChange	PORT	Check Port
				Change Port
				Restart Port
	Asynchronous	Add CT Group	TC	Add CTG
	Operations	CT Group Option		Change CTG Option
		Delete CT Group	TC S/390(R)	Delete CTG
		Async Option	TC	Change Async Option
Business Copy XP	Main	Paircreate	SI	Paircreate (*Note 1*)
		Pairsplit		Pairsplit (*Note 1*)
		Pairresync		Pairresync (*Note 1*)
		Pairsplit-E		Pairsplit-E (*Note 1*)
		Pairsplit-S		Pairsplit-S (*Note 1*)
		Change Reserve		ChangeReserve (*Note 1*)
	Option	Option		Option (*Note 1*)
TrueCopy -	Pair Operations	Add Pair	TC S/390(R)	Add Pair (*Note 1*) (*Note 2*)
S/390(R)		Delete Pair		Delete Pair (*Note 1*) (*Note 2*)
		Suspend Pair		Suspend Pair (*Note 1*) (*Note 2*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
		Resume Pair		Resume Pair (*Note 1*) (*Note 2*)
		Change Pair Option		Change Pair Option (*Note 1*) (*Note 2*)
	RCU Operations	Add RCU	RCU	Add RCU
		Change RCU Option		Change RCU Option
		Delete RCU		Delete RCU
		Add Path		Add Path (*Note 1*) (*Note 2*)
		Delete Path		Delete Path (*Note 1*) (*Note 2*)
		Add SSID		Add RCU
		Delete SSID		Delete RCU
		PortChange	PORT	Check Port
				Change Port
				Restart Port
	Asynchronous	Add CT Group	TC S/390(R)	Add CTG
	Operations	CT Group Option		Change CTG Option
		Delete CT Group		Delete CTG
		Async Option		Change Async Option
	Script Operations	Run		Script Operation
		Stop		
	Other Operations	Clear SIM		Complete SIM
Business Copy XP	Main	Add Pair	SI S/390(R)	AddPair (*Note 1*)
- S/390(R)		Split Pair		SplitPair (*Note 1*)
		Resync Pair		ResyncPair (*Note 1*)
		Suspend Pair		SuspendPair (*Note 1*)
		Delete Pair		DeletePair (*Note 1*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
		Change Reserve		ChangeReserve (*Note 1*)
	Option	Option		Option (*Note 1*)
	CTG	Add CTG		CTG (*Note 1*)
		Delete CTG		CTG (*Note 1*)
Mainframe	HPAV	Add	HPAV	Add Alias (*Note 1*)
		Delete		Delete Alias (*Note 1*)
	SANtinel	Set Group	SANtinel	Set Group (*Note 1*)
	LDEV Guard	Attribute	LDG	Attribute (*Note 1*)
		VTOC		VTOC (*Note 1*)
OpenLdev	OpenLdev	Attribute / S-VOL / Reserved	OLG	Attribute (*Note 1*)
Guard	Guard	Retention-Term		Retention-Term (*Note 1*)
		Expiration Lock		Audit Lock (*Note 1*)
Flex Copy XP	LU Operation	Add LU	HC	Add-Wwn / Add Lu (*Note 1*) **NOTE:** Add Wwn is output only when the WWN has not been registered.
		Delete LU		Delete-Lu (*Note 1*)
		Alternate Path (ADD / Delete / Priority UP / Priority Down)		Alternate Path (*Note 1*)
		Restore	LDEV	Volume-Restore(F) (*Note 1*)
	Port Operation	Change to Target/ Change to	PORT	Check Port
		External		Change Port
	Hi-Copy	Create Pair	HC	Paircreate (*Note 1*)
		Delete Pair		Pairsplit-S (*Note 1*)

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
CFL	Configuration File Loader	Upload	CFL	LUNM Operation **NOTE:** The log information is not output for the format violation and inconsistency of configuration.
LicenseKey	LicenseKey	Install	PPKey	PP Install (*Note 1*) (*Note 2*)
SNMP		Uninstall		PP Uninstall (*Note 1*) (*Note 2*)
Just in Time		File		PP Install from File
	SNMP	Set SNMP Agent	SNMP	Set SNMP Agent
	Just in Time	On-Demand: ON -> OFF	JIT	Release LUN (*Note 1*)
		Extend		Release Cache (*Note 1*)
Information / Status	Information	Set System Info	BASE	Set System Info
All	Common to all tabs	Login	BASE	LOGIN (*Note 7*) **NOTE:** The IP address of the web client is output as the parameter. **NOTE:** When "*" is output at the end of the IP address, the IP address may be that of the proxy server.
		Logout		LOGOUT (*Note 7*)
				UNLOCK_LOGOUT **NOTE:** This log information indicates the processing of the release of the Modify authority by the system during logout.
		Modify		LOCK

Table 11 Operation and Terms Displayed in Audit Log File (continued)

Panel	Tab	Operation	Output of Audit Log File	
			Function	**Operation**
		View		UNLOCK **NOTE:** This information is output regardless of the status of the Modify mode.
		Closing with the × button of the web browser without any processing.		UNLOCK_LOGOUT **NOTE:** If the session is cut off while the processing is in progress, this information is output as the processing has finished.
		Timeout of Modify		UNLOCK_TIMEOUT
		Network failure, termination of the web browser processing from the task manager, and so on.		UNLOCK_TIMEOUT **NOTE:** As the connection from the client is disconnected and the processing is ended without the demand of logout, the timeout occurs in the server side and the log information is output.

NOTE: This information is output regardless of the status of the Modify mode.

Note 1: When two or more settings of the same kind are applied to the disk array at one time, the log information is output as one entry.

Note 2: When one or more settings that are applied at one time end abnormally, the output log information will be "Error", not "Warning."

Note 3: The notes on the log information that is output, when two or more LUNM settings are set, is as follows:

- When two or more operations are performed for one target, the log information is output as one entry. For example, if you have performed the changing operation twice for one LU consecutively, and then clicked **Apply**, the log information is output just as "change."

- When two or more settings are applied at one time, the log information is output according to the priority shown in Table 12. If the priority is the same, the log information is output in the order of the operations performed.

Table 12 LUNM Operation and Priority of Log Information Output

Operation	Target of Operation		Priority
Delete	LU		2
	Host Group		1
	WWN (iSCSI name)		
	DKC connection WWN (iSCSI name)		2
Add	LU		4
	Host Group		3
	WWN (iSCSI name)		
Change	Host Group		3
	WWN (iSCSI name)		
	Changing Host Mode		
	Command Device		4
	Command Dev. Security		
	LUN Security	OFF	3
		ON	1

- The examples of the combination of multiple operations that are performed for one target at one time and the output log information are as follows:

  - **Add → Delete**: The operations cancel each other; therefore, the log information is not output.

  - **Change → Delete**: Only the log information on the Delete operation is output.

  - **Change 1 → Change 2**: Only the log information on the Change 2 operation is output.

  - **Add → Change**: The log information is output as the Add operation; however, the contents of the setting are output according to the setting of the Change operation.

- When deletion of a Host Group is set, the following operations that have been performed for that Host Group are not output as the log information:

  - Changing host mode

  - Changing Host Group

  - Adding or deleting paths

  - Adding, changing, or deleting WWN

Note 4: The notes on the log information that is output, when two or more Port settings are set, are as follows:

- When two or more operations are performed for one target, the log information is output as one entry.

- The log information is output in the order of the operations performed.

- An example of the combination of multiple operations that are performed for one target at one time and the output log information is as follows:

  Change 1 → Change 2: The log information only on the Change 2 operation is output.

Note 5: The notes on the log information that are output when two or more LUSE settings are set are as follows:

- When two or more operations are performed for one target, the log information is output as one entry. For example, if you have created one LUSE volume and then created another LUSE volume using the previously-created LUSE volume, the log information is output just as "create."

- The log information is output in the order of the operations performed.

- The examples of the combination of multiple operations that are performed for one target at one time and the output log information are as follows:

  Create LUSE volume → Delete LUSE volume: The operations cancel each other, therefore the log information is not output.

  Create LUSE volume 1 → Create LUSE volume 2 → Create LUSE volume 3 using LUSE volume 1 and LUSE volume 2 → Delete LUSE volume 3: Only the log information for the Create LUSE volume 1 operation and Create LUSE volume 2 operation is output.

Note 6: The log information is output at the end, no matter when the Cache LUN operation is performed.

Note 7: The log information is output in the Login information file (login.log).

Basic information

When you click the **Basic Information** icon in the Command View main window, the Basic Information Display pane appears. The Basic Information Display pane displays the basic configuration information of XP10000/XP12000 and consists of the Port pane, LUN pane, and LDEV pane. When you log on as a storage partition administrator, the information on the allocated SLPR is displayed. The Basic Information Display pane is another pane that is displayed apart from the Command View main window; therefore, it can be displayed regardless of the operation of the Command View options. For example, when you perform the setting operation of one of the Command View options, you may need to check the existing setting information on the ports or LUNs. In such a situation, you can display the Basic Information Display pane and look at the basic configuration information, at the same time you can perform the operation.

Following is the description on the Basic Information Display pane:

- The information displayed on the Basic Information Display pane is updated:

  - When the tab is selected on the Basic Information Display pane and the displayed pane is changed.

  - When the **Refresh** icon in the Command View main window is selected.

  - When the tab is selected in the Command View window during the operation of the product option and the displayed pane is changed.

  - When the **Apply** button is clicked in the Command View main window.

  - When the operation mode is changed from View mode to Modify mode in the Command View main window.

- If the volume is a LUSE volume, you can display the detailed information of the LUSE volume. If you select an LUSE volume in the list of the LUN pane or the LDEV pane and right-click, the Detail Information command is displayed. As you select the Detail Information command, the detailed information of the LUSE volume is displayed.

- You can export the information displayed on the Basic Information Display panel as the comma-separated format (CSV) file by clicking the **Export** button at the lower left of the Basic Information Display pane. To export the information displayed on the Basic Information Display pane as a CSV file, follow these instructions:

1. Click **Export** at the lower left of the Basic Information Display pane. The pane for selecting the file is displayed.

2. Specify the file name and location to save the file on the displayed pane.

3. Click **Save.**

When the saving processing finishes, the procedure is complete. Click **Close** to close the Basic Information Display pane. The **Close** button is located on the lower right of the Basic Information Display pane.

Port pane

This pane displays the following items:

- **SLPR drop-down list**:

  You can display the information on a particular SLPR as you select the SLPR in the SLPR list. If you have logged on as a storage partition administrator, the information only on the allocated SLPR is displayed, and you cannot select other SLPRs in this drop-down list.

- **Port list:** The following items are displayed in the Port list:

  - **SLPR:** SLPR number and SLPR name

  - **Port Name**: Port name

  - **Type:** Type of port. Fibre, NAS, or Serial is displayed.

  - **Host Speed**: Data transfer speed for Fibre Channel ports. The unit is Gbps (Gigabits per second).

  - **Addr. (Loop ID)**: Address and Loop ID of port

  - **Fabric**: Indicates whether a Fabric switch is used. **Enable** or **Disable** is displayed

  - **Connection**: Topology. FC-AL or P-to-P is displayed

  - **Attribute**: Port attribute. Initiator, Target, RCU Target, External, LCP, or RCP is displayed

  - **WWN**: WWN of host bus adapter

LUN pane

This pane displays the following items:

- **SLPR** drop-down list:

  You can display the information on a particular SLPR as you select the SLPR in the SLPR list. If you have logged on as a storage partition administrator, the information only on the allocated SLPR is displayed, and you cannot select other SLPRs in this drop-down list.

- **Port** list**:** Select from the list the port for which information is to be shown

- **LUN** list: Following items are displayed in the LUN list:

  - **SLPR**: SLPR number and SLPR name

- **Port Name**: Port name

- **Group ID**: Host group ID

- **LUN**: LUNs (logical unit numbers) assigned to logical volumes

  The ( ) icon indicates a logical volume to which an LU path is defined.

  The ( ) icon indicates an expanded LU.

  The ( ) icon indicates a command device

  The ( ) icon indicates command device security

- **CU:LDEV**: The CU image number appears to the left of the colon. To the right of the colon displays the LDEV number.

- **Emulation**: Emulation type

- **Capacity**: Volume capacity

- **RAID:** RAID level

- **Paths**: Number of paths

LDEV pane

This pane displays the following items:

- **SLPR** drop-down list:

  You can display the information on a particular SLPR as you select the SLPR in the SLPR list. If you have logged on as a storage partition administrator, the information only on the allocated SLPR is displayed, and you cannot select other SLPRs in this drop-down list.

- The buttons for selecting drop-down list:

  - If you click **CU**, the **PG** list becomes unavailable and **ALL** is automatically selected. You can select a CU from the **CU** list.

  - If you click **PG**, you can select a parity group from the **PG** list. The **CU** list becomes unavailable and **ALL** is automatically selected.

- **PG** list: You can select the parity group for which the information to be listed from the list.

- **CU** list: You can select the CU for which the information to be listed from the list.

- **LDEV** list: The following items are displayed in the LDEV list:

  - **SLPR**: SLPR number and SLPR name.

  - **CLPR**: CLPR number and CLPR name

  - **CU:LDEV**: The CU image number displays to the left of the colon. The LDEV number is shown on the right of the colon.

    The ( ) icon indicates a normal LDEV

    The ( ) icon indicates an expanded (LUSE) volume

    The ( ) icon indicates a reserved volume

    The ( ) icon indicates a variable sized volume (CV)

    The ( ) icon indicates that the security is set for the volume

The () icon indicates a command device

The () icon indicates command device security

- **Emulation**: Emulation type

- **Capacity**: Volume capacity

- **RAID**: RAID level

- **Parity Group**: Parity Group

- **Paths**: Number of paths

- **External Device Information**: Information on the external volume is displayed in the format of vendor/product name/serial number.

- **External Paths:** Number of paths that are set for the external volume

- **IO Suppression Mode:** IO Suppression mode set for the external volume when it was mapped

- **Cache Mode**: Cache Mode set for the external volume when it was mapped

Displaying the detailed information on the LUSE volume

If you select an LUSE volume in the list of the LUN pane or the LDEV pane and right-click, the Detail Information command is displayed. When you select the Detail Information command, the detailed information of the LUSE volume is displayed in the Detail Information pane.

Control Panel (XP128/XP1024/XP10000/XP12000)

Use the Control Panel to view user accounts and set environment parameters. To access the Control Panel, click **Option** ( ) in the Command View window.

User Entry tab

User Entry is the default tab for the Control Panel. This tab is read-only and includes the following items:

- **No.**: Displays the order of user entries. The default user (administrator) is displayed at the top of the list. The administrator can register up to 500 users including the root.

- **User ID**: ID of the listed Command View user account

- **SLPR**: (XP10000/XP12000 only) SLPR number and its nickname assigned to the Command View user account. (See note below.)

NOTE: For users having full array access, the SLPR column will have the value "SA". For users having partition level access, the SLPR column will have the SLPR number and its nickname separated by ":".

- **Write Permission**: Displays icons that show the options each user is permitted to use with Modify mode.

- **Detail**: Click to access details about Write Permissions.

- **Exit** button: Click ( ) to close the Control Panel.

Set Env tab

The Set Environment tab lets Administrators view and set the Command View environment parameters.

The following parameters are view-only in the Set Environment tab:

- **Maximum number of connections**: Sets the maximum number of Command View users that can concurrently connect to the same subsystem.

- **Maximum number of user entries**: Sets the maximum number of user entries that can be registered in the user account list of a subsystem.

NOTE: You cannot change these values from the Command View user interface. Contact your HP Account Support Representative if you want to change the default values.

- **Number of current user entries**: The number of user entries currently registered in the user account list.

- **Automatic distribution of Java plug-in**: The Java Runtime Environment (JRE) is required to use Command View; however, if the Command View web client does not have the JRE, the SVP can automatically distribute and install the appropriate JRE into the Command View computer when the user logs on to the array.

  The default is JRE1.4.2. You can select JRE1.4.1 or JRE1.4.2 from the list for the Automatic distribution of the Java plug-in parameter. See the minimum requirements for Command View in the *HP StorageWorks Command View Installation Guide*.

- **RMI™ time-out period**: If the user cannot access the array for a certain period of time because of a network error, the RMI™ time-out logs the user off of the array. This feature has the following parameters:

  - The default is 1 minute. You can specify 1 minute, 5 - 60 minutes in 5-minute increments, 70 to 120 minutes in 10-minute increments, or one day (24 hours).

  - The value of the RMI™ time-out period must be greater than the value set for the smallest polling period, either for checking exclusive lock or for checking obstacles (see below for those parameters).

    For example, specify a value of the RMI™ time-out period parameter to satisfy the following condition: RMI™ time-out period min [A, B], where A = Polling period for checking exclusive lock, B = Polling period for checking obstacles, and min [A, B] indicates the minimum value selected from A and B.

NOTE: This parameter cannot be disabled.

- **RMI™ time-out for Modify**: If a user is in Modify mode but does not make any changes that access the RMI™ server for a specified period of time, Modify mode is released and View mode is displayed.

  - The default time period is 60 minutes. You can specify between 10 and 60 minutes in 10-minute increments or between 120 and 360 minutes in 60-minute increments.

  - Select **No** to disable this parameter.

- **Polling period for checking exclusive lock**: If multiple users are accessing the array in View mode while one user is changing the array in Modify mode, the array can monitor the user who is changing the array. The Locked and Unlocked icons are updated when the array is polled or when the user who is in Modify mode logs out of Command View.

NOTE: The shorter the time period you specify, the more frequently the Lock/Unlock status is updated, but this increases network traffic.

  - The default time period is 35 seconds. You can specify 5 to 60 seconds in 5-second increments or 70 to 120 seconds in 10-second increments.

  - Select **No** to disable this parameter.

- **Polling period for checking obstacles**: Specify a time interval to monitor the Disk Controller and Disk Array Unit status, which is displayed by the status lamp icon in the Status panel of the main window.

  - The default is 110 seconds. You can specify 5 to 60 seconds in 5-second increments, 110, or 120 for this parameter.

  - Select **No** to disable this parameter.

- **Status Panel hidden Option**: Check the **Hide Status Panel** box to display the Status pane. If the **Hide Status Panel** box is selected, the Status tab and Status pane disappear from the Command View main window. By default, the box is cleared.

- **Submit**: Applies the Command View settings.

- **Reset**: Resets the Command View settings to the defaults.

Setting the Command View environment parameters

1. Click **Option** ( ) in the main window to open the Control Panel.

2. Click the **Set Env.** tab.

3. Specify the Command View parameters as required.

4. Click **Submit**.

5. When a confirmation message is displayed, click **OK**.

6. Click **Exit** ( ) to close the Control Panel.

Log tab (XP128/XP1024 only)

Use the Log tab to view Command View log information, such as access log, error log, and operation log.

Figure 7

The Log Information pane has the following features:

- **Logon Access Log**: The access log of the users who logged on to the array. The logon access log includes the user ID, logon and logoff date and time, and flag.

- **Error Log**: The error information of the RMI objects. The error log includes the date and time of error, error code, error type, and description.

- **Operation Log**: Information regarding Command View user operations. The operation log includes the user ID, date and time of operation, and operation type.

To view Log Information:

1. Click **Option** ( ) in the Command View window to open the Control Panel.

2. Click the **Log** tab.

3. Click **Exit** ( ) to close the Control Panel.

Download Tab (XP128/XP1024 only)

Use the Download pane to download files containing Command View log information (such as error, access, and operation logs).

Figure 8

The Log File box displays the following check boxes:

- **Error Log**

- **Operation Log**

- **Logon Access Log**

To download Log Information:

1. Click **Option** ( ) in the Command View window to open the Control Panel.

2. Click the **Download** tab to open the Download File pane.

3. Check the check boxes of the desired files.

4. Click **Submit**. The Download pane opens.

5. Confirm that the selected files are marked with a colored icon, and then click **Download**. The File Download pane opens.

6. Select **Save this file to disk**.

7. Click **OK**. The Save As pane opens.

NOTE: The compressed file to be downloaded is automatically named; however, you can change the name.

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8. Specify the name of a folder where you want to save the compressed file, and click **Save.** When download is complete, the Download Complete panel is displayed.

9. Click **Close** to close the Download Complete pane

10. Decompress the downloaded file (*.tgz) as required.

NOTE: To create the *.tgz file, the directory tree is archived using the tar command and then compressed using the gzip command. To decompress the *.tgz file, please use the tool that supports tar and gzip commands. For instructions on decompressing the file, refer to the manual or online help of the tool you use.

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11. Click **Exit** ( ) to close the Control Panel.

10 Status monitoring XP48/XP512

The Status panes display a comprehensive overview of a selected disk array's configuration and condition.

Accessing the Status pane

The Status panes summarize the hardware and storage configuration status for the selected disk array.

To access the **Status** panes, click **Modify** or **View** to an XP48/XP512 in the Device Launcher pane, and then click **Status**. The Status Overview pane appears.

To access this pane from another Status pane, click **Overview**.

Status Overview pane

The capacity pie chart shows the current storage allocation: the allocated, unallocated, free, and reserved capacities. This table also lists capacity in GB and percentage, the number of LDEVs and LUNs, and the amount of cache memory.

- **Allocated Capacity**: Sum of the capacities of all allocated LDEVs. An LDEV is considered allocated when at least one LUN path is associated with it. If two LUN paths point to the same LDEV, the space on that LDEV is only counted once.

- **Unallocated Capacity**: Sum of the capacities of all unallocated LDEVs

- **Free Capacity**: Sum of all free space in the disk array

- **Reserved Capacity**: Sum of the capacities of all reserved LDEVs

- **Total Capacity**: Sum of the storage capacity of all LDEVs on the system

LDevs column

- **Allocated LDEVs**: Number of LDEVs that are associated with LUNs

- **Unallocated LDEVs**: Number of LDEVs that do not have assigned LUN paths

- **Reserved LDEVs**: Number of LDEVs reserved as Auto LUN reserved volumes for use in LUN migration. This item is displayed only if HP StorageWorks Auto LUN XP is installed.

- **Total LDEVs**: Total number of LDEVs on the disk array

Luns column

- **Total LUNs**: Number of created LUN paths.

Tables

- **LDev/CU table**: Number of LDEVs associated with each CU

- **LDev/ACP table**: Number of LDEVs associated with each ACP pair

- **Hardware configuration table**: Quantity and names for the Channel Host Interface Processor (CHIP), Channel Processor (CHP), Array Control Processor (ACP), and Disaster Recovery and Regeneration Processor (DRR).

Port/LUN Map pane

The Port/LUN Map pane shows a map of LUNs configured on each physical disk array port. A LUN is a path to a logical device (LDEV).

To access this pane, click **Status**, and then click **Port/LUN Map**.

This pane lists the following items:

- **Port**: Physical disk array port associated with this LUN

- **Scsi ID**: The ID, defined using LUN Management, associated with a LUN and LDEV

- **LUN**: LUN ID for the LUN

- **CU:LDev**: Control unit (CU) and the first logical device associated with the LUN

- **Save** button: Downloads the information from this pane to a text file

Ldev/Port Map pane

The Ldev/Port Map pane shows a map of the LDEVs configured on each physical array port. LDEV configuration details are displayed.

It is possible to configure multiple physical disk array ports to access a single LDEV (by means of a LUN). Depending on your disk array configuration, the Ldev/Port Map pane may reference redundant physical ports associated with a single LDEV and LUN.

To access this pane, click **Status**, and then click **Ldev/Port Map**.

This pane lists the following items:

- **CU:Ldev**: Control Unit (CU) and name of the logical device (LDEV).

- **ACP Pair**: The ACP pair associated with this LDEV. If the parity group spans across two ACP pairs, the table lists both pairs. For example: 1,2.

- **Parity Group**: Parity group associated with this LDEV

- **Port**: Physical disk array port associated with this LDEV

- **Attribute**: Indicates whether the LDEV is part of an expanded (LUSE) volume. LUSE functionality is available when the optional Volume Management software is installed.

Table 13 Attribute values

Attribute	The LDEV is…
Not Expanded	Not part of an expanded volume
Expanded - first	The top element in an expanded volume
Expanded - not first	Part of an expanded volume and is not the first element of the expansion

- **Status**: Free indicates that the LDEV is not allocated. **Allocated** indicates that a LUN has been assigned to the LDEV. **Reserved** indicates that a LUN has not been assigned. The LDEV is reserved for use by the Auto LUN migration function. Reserved status occurs only when HP StorageWorks Auto LUN XP is installed.

- **Emulation**: The open system emulation mode. This determines the size of the logical device.

- **Size (MB)**: Size of the LDEV in megabytes

- **Save** button: Downloads the information from this pane to a text file

ACP/Ldev Map pane

The ACP/Ldev Map pane displays a list of ACP pairs and their associated LDEVs.

To access this pane, click **Status**, and then click **ACP/Ldev Map**.

This pane lists the following items:

- **ACP Pair**: Displays ACP pair number. If the parity group spans across two ACP pairs, the table displays both pairs. For example: 1,2.

- **CU:Ldev**: Control unit (CU) and name of the logical device (LDEV)

- **Parity Group**: Parity group to which the LDEV belongs

- **Disk Group**: Physical locations within the disk array that the RAID group occupies

- **Disk Type**: Physical disk type

- **Port**: Port associated with the LDEV

- **Save** button: Downloads the information from this pane to a text file

Ports pane

The Ports pane shows port configuration details. The number of configured ports depends on the number of installed I/O boards. The first table lists all the CL1 ports and the second table lists all the CL2 ports. Ports that are not configured are listed with empty data fields and port speeds are not listed in this pane.

To access this pane, click **Status**, and then click **Ports**.

This pane lists the following items:

- **Port**: Port name

- **Type**: The port type is determined by the I/O card associated with the port. Possible values are:

  - **Fibre**: Fibre Channel port

  - **SCSI**: Direct connected or bridge-connected SCSI port

- Host Mode: List of host groups set up for a port, with the corresponding host mode

- **Topology (Fibre Channel ports only)**: For HP-UX systems only, the *FCAL with Fabric Off* configuration is supported. Possible values are:

  - **FCAL with Fabric ON**: Fibre Channel Arbitrated Loop with Fabric on

  - **FCAL with Fabric OFF**: Fibre Channel Arbitrated Loop with Fabric off

  - **Point-to-Point with Fabric ON**: Fibre Channel Point-to-Point with Fabric on

  - **Point-to-Point with Fabric OFF**: Fibre Channel Point-to-Point with Fabric off

- **Loop ID (AL-PA)**: For Fibre Channel ports only, the FC-AL loop number and the loop physical address. Loop ID is a value from 0-125 corresponding to the last 8 bits of the node ID for the port.

- **Save** button: Downloads the information from this pane to a text file

Device Health pane

The Device Health pane shows the state of major components in a selected disk array. There is a graphic representation of the disk array hardware and a list of health status conditions. You can quickly monitor the overall status of the disk array, with red or yellow indicating problems and green indicating normal operation.

Configuration and health information are dynamically updated as long as the Device Health pane remains active in the Command View session.

To access this pane, click **Status**, and then click **Device Health**.

Clicking a component in this pane displays detailed information in the **Detail Configuration** box.

Device status

Table 14 Status conditions

Color	Status
Gray	This component is not present or active on this disk array.
Green	Normal operation status.
Yellow	A warning or minor problem condition was detected.
Red	A serious problem was detected.

Status health is reported in the Device Status list for the components listed in Table 15.

Table 15 Device Status List

Component	Details
DKC Processor	The DKC processors include both the ACP Processor pairs and Channel Host Interface Processor (CHIP)
DKC Bus	The bus components are either the set of FBUS-Low, FBUS-High, MBUS-Low, and MBUS-High; or the set of C-HSN and S-HSN
DKC Cache	Cache memory
DKC Shared Memory	Shared memory
DKC Power	AC power
DKC Battery	DC backup battery power
DKC Fan	Fans in the controller cabinet
DKC Environmental	The Environmental Monitor in the controller cabinet
DKU Power	AC power in one or more disk cabinets
DKU Fan	Fans in one or more disk cabinets

Table 15 Device Status List (continued)

Component	Details
DKU Disk Drive	One or more disk drives in one or more hard disk unit (HDU) groups in one or more disk Unit cabinets
DKU Environmental	The Environmental Monitor in the R1 disk cabinet (to the right of the DKC)

LUN Security pane

The LUN Security pane displays the security status of the Fibre Channel ports, and shows associated host groups and host WWNs.

To access this pane, click **Status**, and then click **LUN Security**.

This pane lists the following items:

- **Port Name**: Port name

- **Security Status**: Port security status (enabled or disabled)

- **Host WWN**: Registered host worldwide names (WWNs) in the host group

- **Nickname**: Nickname assigned to the host WWN (empty if no nickname is assigned)

- **Accessible LUNs**: The LUN IDs for LUNs accessible to the host group

- **Save** button: Downloads the information from this pane to a text file

Cache LUN pane

The Cache LUN pane displays the LDEVs that have been set up in cache memory as cache LUNs.

To access this pane, click **Status**, and then click **Cache LUN**.

This pane lists the following items:

- **Total Cache**: Total amount of system cache allocated for use by Cache LUN, that may or may not be fully consumed by cache extents

- **Allocated Cache**: Amount of Cache LUN cache allocated to hold any cache extents

- **Unallocated Cache**: Amount of Cache LUN cache not currently allocated to any cache extents

- **CU:Ldev**: LDEV for which cache LUN extents have been set up

- **Mode**: Bind mode or Priority mode

- **Start LBA**: The start logical block address (LBA) for the cache extent

- **End LBA**: The end LBA for the cache extent

- **LBA Size**: Size in LBAs of the cache extent. An LBA is 48 KB

- **Save** button: Downloads the information from this pane to a text file

VSC pane

The VSC pane displays VSC information for each parity group.

To access this pane, click **Status**, and then click **VSC**.

This pane lists the following items:

- **Parity Group**: Parity group name

- **CU:Ldev**: Control unit (CU) and logical device (LDEV) associated with the parity group

- **Type**: If an attribute value shows a plus sign (+), the LDEV is part of a path or LU expansion. Other possible values are CV (custom volume), NV (normal volume) and free space.

- **Emulation**: Emulation type of the parity group

- **User Size**: Space on the LDEV available for storing user data

- **Total Size**: Total space on the LDEV

- **Save** button: Downloads the information from this pane to a text file

Parity Group pane

The Parity Group pane displays details about disk array parity groups.

To access this pane, click **Status**, and then click **Parity Group**.

This pane lists the following items:

- **Parity Group**: Parity group name

- **RAID Type**: Parity group's RAID configuration (2D+2D, 3D+1P, 4D+4D, 7D+1P)

- **Drive Type**: Type of physical drives making up the parity group

- **Cu:Ldev**: Control unit (CU) and logical devices (LDEVs) associated with the parity group

- **Disk Group**: Physical locations within the disk array that the parity group occupies

- **Save** button: Downloads the information from this pane to a text file

11 Status monitoring for the XP128/XP1024/XP10000/XP12000

The Status pane provides a comprehensive overview of the configuration and condition of a selected disk array.

Accessing the Status pane

The Status pane summarizes the hardware and storage configuration status for the selected disk array.

1. Click **Array Manager** in the main window.
2. In the Device Launcher pane, click an XP128/XP1024/XP10000/XP12000 link for the array you want to view.
3. Click the **Status** tab.

The Status pane provides information about the internal statuses of the connected subsystem. The XP128/XP1024/XP10000/XP12000 generates a service information message (SIM) whenever it detects an error or service requirement.

This pane lists the following items:

- **Ref. Code:** The Service Information Message (SIM) Reference Code for identifying an error
- **Error Level**: The error levels: Good, Service, Moderate, Serious, and Acute (see Table 16)
- **Status:** Complete (if the SIM has been deleted from the SVP) or Not Complete (if the error has not been deleted)
- **Date:** The date that the SIM occurred

Table 16 Error levels

Error Level	Description
Good	No error
Service, Moderate	Immediate attention is not required. These errors are addressed during routine maintenance.
Serious, Acute	Contact your HP account support representative

NOTE: If the status changes from Good to another status, all SIMs must be completed (resolved) from the SVP to restore the status to Good.

NOTE: The icon displayed in the upper left corner of the Status pane indicates the error level of the controller (DKC) status or the disk array unit (DKU) status.

Viewing status details

1. Select a row in the Status pane.

2. Right-click and select **Detail**.

Detailed information about the error appears in the **Detail** window.

Error Section refers to the name of the component which is in error condition, and **Error Detail** provides a detailed description of the error.

12 System for the XP10000/XP12000

The System pane is an array-dependent feature specific to XP10000/XP12000.

Viewing the equipment information of the system

The System pane provides information about the equipment and port status of the connected subsystem.

Base information

This **Base Information** section lists the following items:

- **Product name:** Name of the device of the connected subsystem

- **Serial Number:** Serial number of the connected subsystem

- **IP Address:** IP address of the connected subsystem (SVP)

- **Main FW Version:** Version of the microprogram installed on the connected subsystem

- **SVP Version:** Version of the Java applet program installed on the SVP of the connected subsystem

- **RMI Server Version:** Version of the RMI server installed on the SVP of the connected subsystem

Port status

The **Port Status** section shows the port information using the image of the ports mounted on the subsystem.

Cluster 1 and Cluster 2 indicate the clusters. Each cluster has eight Printed Circuit Boards (PCBs), and the name of each PCB is displayed on the header of the port list. The icons show the port name, port status, and equipment information for the port.

Table 17 Port icons

Icon	Status
1A	This port is equipped and the cable is set. This port is available for the operation.
1N	The port is equipped, but the cable is not set
1E	(Numbers are grey) This port is not equipped, or it is blocked

13 LUN Security for the XP48/XP512

Use LUN Security to restrict LUN availability to specified hosts, using the hosts' worldwide names (WWNs). Unauthorized hosts cannot access a secured LUN and its data.

You can secure some or all of the LUNs on a port. You can consolidate LUNs into LUN groups to help simplify this task. Use a LUN group to assign a group of LUNs to a host under a single LUN group name.

You can also combine host WWNs into WWN groups. For the XP48/XP512, you can assign up to 256 WWNs to a single group.

By giving a WWN group access to a specified LUN or group of LUNs, you give every host in the WWN group access to the LUN or LUN group.

You can assign more than one WWN to one port and one WWN to several ports.

Starting LUN Security

1. From the Device Launcher pane, click **Modify** or **View** for an XP48/XP512.
2. Click **LUN Security**. The LUN Security pane appears.

This pane includes the following items:

- **Use Security** check box: Check to enable LUN Security for the port selected in the Port list

- **Port**: A list containing the Fibre Channel ports

- **LUN/LUN Group**: Displays the LUNs and LUN groups defined for the selected port

- Buttons:

    - **Security**: Sets the security options for selected LUNs or LUN groups

    - The top section of the pane changes when you click **Security**. The top section is used to group LUNs, change LUN group nicknames, and set the security for LUNs and LUN groups defined for the selected port.

    - **Nickname**: Changes the nickname of the selected LUN group

    - **Group**: Creates, modifies, or deletes the selected LUN group

    - **WwnGrouping**: Used to define WWNs, create and modify WWN groups, delete WWNs and WWN groups, and change WWN, WWN nickname, and WWN group nicknames

    The WWN/WWNGroup section appears when you click **WwnGrouping**.

- **WWN/WWN Group**: Displays WWNs and WWN groups for the selected port

- Buttons:

    - **New Wwn**: Used to define WWNs and WWN nicknames

    - **Delete**: Deletes WWNs and WWN groups

    - **Update**: Changes the WWN, WWN nickname, and WWN group nickname

    - **Group**: Creates, modifies, and deletes WWN groups

Enabling and disabling LUN Security

If no paths are defined for a selected port, you cannot perform LUN Security operations for that port. Exit LUN Security, establish paths, and then return to LUN Security.

1. From the LUN Security main pane, select a port in the Port list.

2. To enable LUN security for the selected port, select the **Use Security** check box. If no WWN is defined for the selected port, the **New Wwn** button will be enabled in the bottom section of the pane. To add new WWNs, see "Adding a new WWN" on page 98.

   To disable LUN security for the selected port, clear the **Use Security** check box. All security permissions for the port will be disabled and any host can access the port. Disabling LUN Security for a port does not erase the LUN security setting for a LUN. The assigned setting for the LUN is held until that LUN or its port is uninstalled or until the settings are manually erased.

Defining LUN Security

You can allow access to a single LUN or a group of LUNs. To do this, you must create a LUN group.

You can make access to a LUN or a LUN group available to a single host WWN, or you can group WWNs in a WWN group as a simple way to allow multiple hosts to access a LUN or LUN group.

1. From the LUN Security main pane, select a port in the Port list. The LUN/LUN Group list displays the LUNs for the port.

   If no LUNs are displayed, a LUN must be defined. To define LUNs, see "LUN Management for the XP48/XP512" on page 164.

2. Select the **Use Security** check box.

3. Select a LUN or LUN Group.

4. Click **Security**. The LUN/LUN Group Security pane appears.

5. Select the WWN or WWN group that will be granted access to the selected LUN or LUN group.

6. Click **Select**. To select all of the WWNs in the list, click **Select All**. The selected WWNs appear in the Permitted Member list.

   If you do not want to grant access for a selected WWN, click the unwanted WWN in the Permitted Member list and click **Deselect**. To move all of the selected WWNs out of the Permitted Member list, click **Deselect All**.

7. Click **OK**. The LUN Security pane appears.

Repeat these steps for each port and LUN or port and LUN group combination you want secure.

Changing LUN Security parameters

Changing WWN access to a LUN

You can change WWNs or a WWN group permission to communicate with a selected LUN.

1. From the LUN Security main pane, select a port in the Port list.

2. In the LUN/LUN Group list, select a LUN or LUN group.

3. Click **Security**. The LUN/LUN Group Security pane appears.

4. To grant access to the LUN or LUN group, select a WWN or WWN group and click **Select**. To select all WWNs or WWN groups, click **Select All**. The selected WWNs or WWN groups are moved into the Permitted Member list.

   To remove access, select the WWNs or WWN groups in the Permitted Member list and click **Deselect**. To remove permissions for all of the WWNs or WWN groups, click **Deselect All**.

5. Click **OK**. You are returned to the LUN Security main pane.

Creating a LUN group

1. From the LUN Security main pane, select a port in the Port list.

2. Click **Group**. The LUN Group pane appears.

   The **LUN Group** list displays the available LUNs for the port.

3. In the **LUN Group** box, enter a name for the LUN Group.

4. Add LUNs to the group by selecting each LUN you want to assign and clicking **Select**. To select all the displayed LUNs, click **Select All**. The Group Member list displays the newly-assigned LUNs.

   To remove a LUN from the Group Member list, select the LUN you want to remove and click **Deselect**. To remove all the displayed LUNs, click **Deselect All**.

5. Click **OK**.

Changing LUN Group Information

1. From the LUN Security main pane, select a port in the **Port** list.

2. In the **LUN/LUN group** list on the LUN Security main pane, select a LUN group.

3. Click **Group**. The LUN Group pane appears.

4. Add LUNs to or remove LUNs from the group:

   a. To add a LUN to the LUN group, select it and click **Select**. To select all the displayed LUNs, click **Select All**. The Group Member list displays the newly-assigned LUNs.

   b. To remove a LUN from the group, select it in the Group Member list and click **Deselect**. To remove all the LUNs in the **Group Member** list, click **Deselect All**.

5. Click **OK**.

Creating or changing a LUN group nickname

You can assign a nickname to a LUN group.

NOTE: You cannot assign a nickname to an individual LUN.

---

1. From the LUN Security main pane, select a port in the **Port** list.

2. Select the LUN group for which the nickname is to be created or changed.

3. Click **Nickname**. The pane expands to display a Nickname box.

4. To add a nickname, enter the nickname for the LUN group. To change a nickname, enter a new nickname.

5. Click **OK**.

Adding a new WWN

1. From the LUN Security main pane, select a port in the Port list.

2. Click **WwnGrouping**. The pane expands to display WWN information.

3. Click **New Wwn**. The New WWN pane appears.

4. In the WWN box, enter the new WWN. The WWN is a hexadecimal string containing 16 characters.

5. In the Nickname box, enter the nickname. The nickname is mandatory for all WWNs. Maximum length is 8 characters.

6. Click **Add**. The WWN is added to the list.

7. Click **Set** or **OK** to register the WWN.

   If you click **Set**, the display remains in the same pane after registering the WWN for the selected port. If you click **OK**, the display returns the LUN Security main pane after adding the WWN.

Creating a WWN Group

WWNs can be combined into groups.

1. From the LUN Security main pane, select a port in the Port list.

2. Click **WwnGrouping**. The pane expands to display WWN information.

3. In the WWN/WWN Group area, click **Group**. The WwnGroup pane appears.

4. In the **WwnGroup** box, enter a name for the WWN Group.

   To add a WWN to the new WWN group, select the WWN in the WWN list and click **Select**. To select all the WWNs in the list, click **Select All**.

   The selected WWN appears in the **Group Member** list.

   To remove a WWN from the group, click **Deselect**. To remove all the WWNs, click **Deselect All**.

5. Click **OK**.

Deleting a WWN or WWN Group

1. From the LUN Security main pane, select a port in the Port list.

2. Click **WwnGrouping**. The pane expands to display WWN information.

3. Click the WWN or WWN group you want to delete.

4. Click **Delete**. A confirmation message appears.

5. Click **OK**.

Updating WWNs and Nicknames

1. From the LUN Security main pane, select a port in the Port list.

2. Click **WwnGrouping**. The pane expands to display WWN information.

3. Click **Update**. The pane displays the Update WWN/WWN Group boxes.

4. In the **WWN/WWN Group** list, select the WWN or WWN group you want to modify.

5. Enter a WWN name and WWN's nickname.

6. Click **Set** or **OK** to register the change.

   If you click **Set**, the display remains in the same pane after registering the change. If you click **OK**, the display returns to the LUN Security main pane after changing the WWN.

Changing WWN group members

1. From the LUN Security main pane, select a port in the **Port** list.

2. Click **WwnGrouping**. The pane expands to display WWN information.

3. Select the WWN group you want to modify and click **Group** in the WWN/WWN Group area. The WwnGroup pane appears.

4. To add a WWN to the new WWN group, select the WWN in the WWN list and click **Select**. To select all the WWNs in the list, click **Select All**. The Group Member list displays the selected WWN.

   To remove a WWN from the group, click **Deselect**. To remove all the WWNs, click **Deselect All**.

5. Click **OK**.

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