This guide describes features, components, options, and general operations for the HP StorageWorks XP10000 Disk Array.
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About this guide

This guide is for use by system administrators who have expertise in:

- Disk arrays and RAID technology
- Operating system commands and utilities

Unless otherwise noted, the term disk array refers to the HP StorageWorks XP10000 Disk Array.

Related information

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

- HP StorageWorks XP10000 Disk Array Site Preparation Guide
- HP StorageWorks Remote Web Console XP User Guide
- HP StorageWorks Disk Array XP Operating System Configuration Guide (various operating systems)

To locate these documents, to learn more about HP software products, or to obtain software updates, visit the HP web site:

Document conventions and symbols

Table 1. Document conventions

<table>
<thead>
<tr>
<th>Convention</th>
<th>Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue text (Figure 1)</td>
<td>Cross-reference links</td>
</tr>
<tr>
<td>Bold</td>
<td>Menu items, button names, key names, tab names, and group box names</td>
</tr>
<tr>
<td>Italics</td>
<td>Text emphasis and document titles</td>
</tr>
<tr>
<td>Blue underlined sans serif</td>
<td>Web site addresses</td>
</tr>
<tr>
<td>font (<a href="http://www.hp.com">www.hp.com</a>)</td>
<td></td>
</tr>
</tbody>
</table>

Caution

Indicates that failure to follow directions could result in damage to equipment or data.

Warning

Indicates that failure to follow directions could result in bodily harm or death.

HP technical support

In North America, call technical support at 1-800-633-3600, available 24 hours a day, 7 days a week. Say “XP disk” for automatic voice recognition and routing of your call. Respond to questions with “yes” and “no.”

Outside North America, call technical support at the location nearest you. The HP web site lists telephone numbers for worldwide technical support at: http://www.hp.com/support. From this web site, select your country.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
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.

**HP storage web site**

For the most current information about HP StorageWorks XP products, visit: http://h18006.www1.hp.com/storage/arraysystems.html.

For information about product availability, configuration, and connectivity, contact your HP support representative.

**HP sales and authorized resellers**

To reach HP sales or find a local authorized reseller of HP products, call 1-800-282-6672 or visit the HP How To Buy web site:


You can also find HP sales and resellers at http://www.hp.com. Click Contact HP.

**Helpful web sites**

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

http://www.hp.com/go/storage
http://www.hp.com/support
Revision history

July 2005    First edition
The XP10000 disk array is part of the HP StorageWorks XP Disk Array family of products. These disk arrays provide reliable and secure data storage and protection, featuring redundant circuitry and RAID storage options for data security. These disk arrays also support multiple operating systems, platforms, and RAID groups. Advantages include:

- Continuous data availability, page 12
- Nondisruptive service and upgrades, page 13
- Connectivity, page 14
- Scalability, page 15
- Data integrity and high availability, page 17
Continuous data availability

The HP StorageWorks Disk Array XP family is among the first RAID disk arrays to provide truly continuous data availability. XP disk arrays are designed for nonstop operation and continuous access to all user data.

The following XP10000 features ensure continuous data availability:

- No single point of component failure, which enables uninterrupted access to data
- Component and function redundancy, providing fault tolerance for disk array microprocessors, control storage, cache, control and data buses, power supplies, and cooling fans

*Note:* Although access to data is not compromised, the failure of a key component can cause a temporary reduction in disk array performance.
Nondisruptive service and upgrades

Without disrupting normal disk array operations (if alternate pathing is used), an HP support representative can:

- Remove, service, repair, or replace hardware subassemblies
- Use the built-in service processor (SVP) to upgrade microcode

Alternate paths can be established using host failover software, alternate Fibre Channel paths, nonstop SCSI, or combination solutions.

Caution

The disk array has no user-serviceable components. The SVP does not include a keyboard or monitor and is not a customer-accessible component. Only an HP support representative should open the cabinets.

HP StorageWorks Continuous Track XP monitoring software detects internal hardware component problems and automatically reports them to the HP Storage Technology Center (STC) before they are noticed by operators and users. An HP support representative can then verify the problem and perform the appropriate maintenance activity, with no interruption to applications or hosts. For more information on Continuous Track XP, see “HP StorageWorks Continuous Track XP” (page 31).
Connectivity

The disk array supports a standard set of channel adapters (and disk adapters) on the Mix board, and one pair of optional channel adapters. The adapters provide or are planned to provide the following types of connections to host systems:

- **Fibre Channel**: Open System, FC-AL or Fabric, 1 or 2 Gb/s, single or multimode, LC-Duplex
- **ESCON**: mainframe, serial
- **FICON**: mainframe, LC-Duplex, 1 or 2 Gb/s, single or multimode
- **NAS**: Open System, Gigabit Ethernet

*Note:* Some connection types may not be available with the initial XP10000 product release but are expected to become available soon afterwards.
Scalability

The disk array is scalable to accommodate your current and future storage capacity needs.

Figure 1 shows the disk array equipment racks.

In the basic configuration, the disk array consists of one primary 19-inch rack containing the following:

- One disk controller with control panel and SVP blade PC
- One 60-disk chassis, consisting of two 30-drive HDU boxes
- Mix board with disk adapters and host ports
- Power supplies, power distribution units (PDUs), backup batteries, power cords, and cabling

You can expand the primary rack as follows:

- Add one 60-disk chassis containing two 30-drive HDU boxes to the top space of the primary rack. This provides a total of up to 120 drives

After expanding the primary rack, you can add a second 19-inch rack with additional disk units as follows:

- Add one 60-disk chassis to the second rack for a total of up to 180 drives
- Add a second 60-disk chassis to the second rack for a total of up to 240 drives

Disk array basic storage includes disk chassis R0 in the primary rack. Add more disk chassis in the order shown in Figure 1: R1, R2, R3.

Your HP support representative can add disk chassis and disk drives online with no interruptions to applications or hosts.

Note: The initial release of the XP10000 disk array may not include a second rack. This option is expected to become available soon after release.
Figure 1. Disk array rack configurations
Data integrity and high availability

To provide the highest levels of data integrity and availability, the HP StorageWorks XP Disk Array family uses RAID technologies and redundant hardware throughout the disk arrays, including:

- RAID1, RAID5, RAID6
- Mirrored write cache
- Dual channel adapters (CHAs)
- Dual and concurrently active data and control paths through the array
- Split power domains on internal data paths
- Hot-pluggable boards
- Hot-pluggable fans, power supplies, and controllers
- Online upgradable firmware

The following software features and products help to ensure that the disk array meets your requirements for high availability:

- XP10000 support
  - Capability to “phone home” to the multidisciplinary HP Storage Technology Center (STC). See “HP StorageWorks Continuous Track XP” (page 31) for details
  - Advanced remote diagnostics
  - Full solution (host-SAN-storage) support
- Full software and solution integration enabled by HP software products. See Chapter 4 beginning on page 47 for details
Summary of features

This section summarizes the main features and specifications of the disk array.

For the most current product information, visit the HP web site: http://h18006.www1.hp.com/storage/enterprisestorage.html.

Web-based array management

HP StorageWorks Remote Web Console allows you to manage the disk array using a web browser. Command View XP Advanced Edition allows you to manage multiple arrays in multiple locations from a single Windows-based Device Manager server. For details, see “Array management” (page 35).

Operating systems

The disk array supports these operating systems:

• HP-UX
• Linux
• Windows
• HP OpenVMS
• HP Tru64
• Sun Solaris
• IBM AIX
• Novell NetWare
• SGI IRIX64

The disk array is also scheduled to support mainframe operating systems in the near future. For the latest information on supported operating systems and versions, contact your HP support representative or visit the HP web site: www.hp.com.
External storage

The disk array connects to external storage systems and can provide access to and management of external volumes. The XP10000 supports the following types of external storage:

- Other HP StorageWorks XP disk array models
- HP StorageWorks Modular Smart Array 1000
- Specific disk array models of other manufacturers. Consult your HP representative for detailed information.

Included components

The XP10000 base product includes the following hardware, software, services, and support:

- One primary rack containing a controller, a disk chassis for holding up to 60 drives, basic redundant power supplies, batteries, and cables
- Blade PC Service Processor (SVP)
- Modem
- HP microcode
- Remote Web Console web-based array management software
- Continuous Track XP software
- RAID Manager Library software
- Site preparation services
- Installation and configuration services
- Proactive monitoring and support
- Reactive hardware support
- Software support
- Owner’s guide and XP operating system configuration guides CD
Additional required components

- Cache memory
- Shared memory
- MIX pair (combined channel and disk adapters)
- Hard disk drives

Optional components

HP offers an extensive list of optional hardware, software, and services tailored for XP disk arrays, including the following:

- Additional CHIP pair (channel interface processor)
- Additional disk chassis
- Additional cache memory
- Additional shared memory
- HP StorageWorks Command View XP Advanced Edition (page 48)

For more information about software options, see Chapter 4 beginning on page 47 and contact your HP support representative.
Hardware specifications

Table 2. Hardware specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>Single-phase, 200VAC, 50 or 60 Hz</td>
</tr>
<tr>
<td>Equipment racks</td>
<td>One standard primary rack</td>
</tr>
<tr>
<td></td>
<td>One optional second rack</td>
</tr>
<tr>
<td>Disk chassis (60 drives each)</td>
<td>One standard primary rack disk chassis</td>
</tr>
<tr>
<td></td>
<td>One optional primary rack disk chassis</td>
</tr>
<tr>
<td></td>
<td>Two optional second rack disk chassis</td>
</tr>
<tr>
<td>Maximum hard disk drives</td>
<td>120 in one rack, 240 in two racks</td>
</tr>
<tr>
<td>Maximum spare disk drives</td>
<td>16</td>
</tr>
<tr>
<td>Maximum parity groups/array</td>
<td>59</td>
</tr>
<tr>
<td>Maximum disk drive capacity</td>
<td>69.2 TB</td>
</tr>
<tr>
<td>Maximum cache</td>
<td>16 GB initially, 64 GB planned</td>
</tr>
<tr>
<td>Available hard disk drives</td>
<td>73 GB 15,000 RPM Fibre Channel</td>
</tr>
<tr>
<td></td>
<td>146 GB 10,000 RPM Fibre Channel</td>
</tr>
<tr>
<td></td>
<td>300 GB 10,000 RPM Fibre Channel</td>
</tr>
<tr>
<td>Maximum shared memory</td>
<td>6 GB</td>
</tr>
<tr>
<td>MIX pairs</td>
<td>1 pair</td>
</tr>
<tr>
<td>CHIP pairs</td>
<td>1 pair</td>
</tr>
<tr>
<td>Maximum host ports</td>
<td>48 FC</td>
</tr>
<tr>
<td>RAID level</td>
<td>RAID 1 (2D+2D)</td>
</tr>
<tr>
<td></td>
<td>RAID 5 (3D+1P)</td>
</tr>
<tr>
<td></td>
<td>RAID 6 (6D+2P)</td>
</tr>
<tr>
<td>Maximum LDEVs</td>
<td>16,384&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maximum LUNs</td>
<td>49,152</td>
</tr>
<tr>
<td>Maximum LUNs per port</td>
<td>1024</td>
</tr>
</tbody>
</table>

1 Contact HP for the firmware version required to achieve this maximum.

Specifications are subject to change without notice.
The XP10000 is a high-performance RAID-capable disk array system used to store large quantities of data in an efficient and secure manner.

There is no single point of failure in the disk array. It includes redundant logic assemblies, controllers, disk drives, and power supplies, all of which can be removed or replaced without interrupting access to data.

Caution

Only your HP support representative can remove or replace hardware.
Physical components

The disk array includes the following major hardware components:

• One primary rack containing a disk controller with Service Processor (SVP) and one disk chassis. A second disk chassis is optional.

• One optional second rack containing up to two expansion disk chassis

Figure 2 shows the disk array in single and twin rack configurations.
Figure 3 shows the major components within each XP10000 rack.
Disk controller

The disk controller is part of the basic disk array configuration housed in the primary rack and controls disk array operation. It contains the control panel, connection hardware, power supplies, SVP, and control boards for the disk array.

Control panel

Once the disk array is powered on and running normally, no user operations are required at the control panel, except when instructed by your HP support representative.

Figure 4 and Table 3 (page 27) describe the control panel.
<table>
<thead>
<tr>
<th>Item</th>
<th>Label</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1    | READY   | LED (Green) | During normal operation, this LED should be on.  
**On:** Input/output on the channel interface is enabled.  
**Off:** The system is not accepting data. |
| 2    | ALARM   | LED (Red) | During normal operation, this LED should be off.  
**On:** One or more of the following:  
• The DC is under voltage.  
• The DC is over current.  
• The temperature is abnormally high.  
• An unrecoverable failure has occurred.  
If the disk array is set up to “phone home” to STC; your HP support representative is notified automatically. If the disk array is not set up to “phone home,” place a service call to HP to have the message evaluated to determine if any action is required.  
**Blinking:** The DC is under voltage. |
Table 3. Control panel functions (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Label</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>MESSAGE</td>
<td>LED (Amber)</td>
<td>During normal operation, this LED should be off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>On:</strong> A service information message (SIM) has been issued from either storage cluster. If the disk array is set up to “phone home” to STC, your HP support representative is notified automatically. If the disk array is not set up to phone home, place a service call to HP to have the message evaluated to determine if any action is required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Blinking:</strong> An SVP failure has occurred. The disk array will continue to operate normally. Place a service call to HP to ensure notification. SVP failures might not be reported automatically to STC.</td>
</tr>
<tr>
<td>4</td>
<td>RESTART</td>
<td>Switch</td>
<td>If a blocked path occurs between a host and a disk drive, this switch is used to unfence the fenced drive path and to release Write Inhibit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>During normal operation, this switch should be in the upper position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Restarting the array performs a soft reset to try to recover. If the system restart does not unblock the path, an HP support representative will be notified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Caution:</strong> Do not change the switch position unless directed to do so by HP service personnel.</td>
</tr>
</tbody>
</table>
During normal operation, this LED may be on if remote maintenance is occurring. Remote maintenance can occur and this LED can light only when the REMOTE MAINTENANCE ENABLE/DISABLE switch is in the ENABLE position.

**On:** Remote maintenance is in progress. An HP support representative is probably working on the system. The system remains online and accepting data.

<table>
<thead>
<tr>
<th>Item</th>
<th>Label</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5    | REMOTE MAINTENANCE PROCESSING | LED (Amber) | During normal operation, this LED may be on if remote maintenance is occurring. Remote maintenance can occur and this LED can light only when the REMOTE MAINTENANCE ENABLE/DISABLE switch is in the ENABLE position.  
**On:** Remote maintenance is in progress. An HP support representative is probably working on the system. The system remains online and accepting data. |
| 6    | REMOTE MAINTENANCE ENABLE/DISABLE | Switch | Used to permit remote service maintenance. During normal operation, this switch should be in the ENABLE position.  
**Disable:** No one can provide remote maintenance.  
**Enable:** An HP support representative can provide remote maintenance.  
**Caution:** Do not change the switch position unless directed to do so by HP service personnel. |
| 7    | BS-ON | LED (Amber) | During normal operation, this LED should be on.  
**On:** The disk array is plugged in and receiving power from the primary AC outlet. The SVP is receiving power from the outlet.  
**Off:** The disk array is not receiving power from the primary AC outlet. Check the electrical outlets in your building. |
During normal operation, this LED should be on.

**On:** The PS ON/OFF switch is on. If the READY light is also on, the disk array is ready to receive data.

**Off:** The PS ON/OFF switch is off and the disk array is not ready to receive data.

Used to enable the PS ON/OFF switch. During normal operation, this switch should be in the “Disable” position (opposite the ENABLE position).

**Enable:** The PS ON/OFF switch can be used.

**Disable:** The PS ON/OFF switch cannot be used.

---

**Caution:** Do not change the switch position unless directed to do so by HP service personnel.

Used to power on/off the disk array. During normal operation, this switch should be in the ON position.

The switch functions only if the PS ENABLE switch is in the ENABLE position.

---

**Caution:** Do not change the switch position unless directed to do so by HP service personnel.

<table>
<thead>
<tr>
<th>Item</th>
<th>Label</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>PS-ON</td>
<td>LED (Green)</td>
<td>During normal operation, this LED should be on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>On:</strong> The PS ON/OFF switch is on. If the READY light is also on, the disk array is ready to receive data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Off:</strong> The PS ON/OFF switch is off and the disk array is not ready to receive data.</td>
</tr>
<tr>
<td>9</td>
<td>PS ENABLE</td>
<td>Switch</td>
<td>Used to enable the PS ON/OFF switch. During normal operation, this switch should be in the “Disable” position (opposite the ENABLE position).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Enable:</strong> The PS ON/OFF switch can be used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Disable:</strong> The PS ON/OFF switch cannot be used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Caution:</strong> Do not change the switch position unless directed to do so by HP service personnel.</td>
</tr>
<tr>
<td>10</td>
<td>PS ON/OFF</td>
<td>Switch</td>
<td>Used to power on/off the disk array. During normal operation, this switch should be in the ON position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The switch functions only if the PS ENABLE switch is in the ENABLE position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Caution:</strong> Do not change the switch position unless directed to do so by HP service personnel.</td>
</tr>
</tbody>
</table>
Service Processor (SVP)

The SVP is a blade PC inside the primary rack that does the following:

- Collects performance data on the disk array for diagnostic testing and analysis; see “Service information messages” (page 58)
- Provides your HP support representative with access to the disk array
- Allows you to manage the disk array using built-in Remote Web Console software accessed from a web browser on a remote host

Your HP support representative uses the SVP to configure, maintain, and upgrade the disk array software and hardware.

Note: For extreme availability requirements, an optional second SVP is available.

To manage multiple XP disk arrays, you can install an optional Device Manager server running optional Command View Advanced Edition software (page 35).

Disk drives

The primary rack must contain at least four hard disk drives and can contain up to 60 drives in the R0 basic disk chassis. For more information, see “Disk drives” (page 33) and Table 2 (page 21).

HP StorageWorks Continuous Track XP

Continuous Track XP is a program in the disk array that detects and reports problems even before they are noticed by operators and users.

Continuous Track XP “phones home” to the HP Storage Technology Center (STC), providing:

- Periodic “well” checkups

This checkup records the health of the disk array on a day-to-day basis. Every 24 hours, Continuous Track XP calls STC (your HP support representative sets the time of the call). When a successful connection is made, status and configuration change information is transferred from the disk array to STC.
• Incidental “sick” calls

When an error occurs, a service information message (SIM) is generated, stored in the disk array for use by your HP support representative, and reported to STC. For details, see Chapter 5 beginning on page 57.

**Note:** The “phone home” capability can be turned off, if desired. Continuous Track XP still monitors the disk array, but does not automatically notify HP if a problem occurs.
Disk array chassis

Disk array chassis are optional units that allow you to expand the disk array’s storage capacity. Disk array chassis contain physical disk drives. The disk array can include up to four disk chassis, one of which (R0) is supplied with the basic disk array. Four disk chassis fully populated with disk drives provide up to 69.2 TB of storage capacity.

Disk drives

Each disk chassis can contain up to 60 hard disk drives. A variety of disk capacities are available; see Table 2 (page 21). Ask your HP support representative about currently available disk drives. The disk array automatically detects and corrects disk errors, and an HP support representative can replace any of the disk drives without disrupting user activity.

The disk array must contain at least one spare disk drive and can contain up to 16. Any of the spare disk drives can back up any other disk drive of equal rotational speed and equal or lesser capacity, in any disk chassis, even if the failed disk and the spare disk are in different array domains.

RAID options

The disk array supports RAID1, RAID5, or RAID6 array groups.
Backup batteries

Internal batteries provide backup power for the cache memory, shared memory, MIXs, CHIPS, and disk drives. The backup batteries enable the disk array to continue normal operations for up to 20 milliseconds after the loss of AC power.

When AC power is off longer than 20 milliseconds, the disk array executes its backup process. This process copies the contents of cache and shared memory to disk and then supports cache and shared memory for up to 36 hours. When AC power is restored after battery backup is exhausted, time is required for staging data from disk back to shared and cache memory.

Figure 5. Battery operation modes

When power is restored, if the Auto-Power-On jumper is in the ENABLE position, the disk array powers on automatically. If the jumper is in the DISABLE position, you must turn the power switch on to power up the disk array. HP representatives will assist you in determining which Auto-Power-On mode is best for your disk array configuration and will configure the selected mode during disk array installation.
Array management

HP Remote Web Console allows browser-based management of a single disk array. The optional Command View XP Advanced Edition software may be installed on an optional Device Manager server to enable additional management capabilities, including the ability to manage multiple arrays. Other HP StorageWorks XP Disk Array software may also be installed on this host; see Chapter 4 beginning on page 47 for information on optional HP software products.

To protect your security, Remote Web Console and HP Command View XP Advanced Edition do not have access to user data stored on the disk array.

You may use an existing host (such as your storage administrator’s PC) as the Device Manager server provided that it meets system requirements for the required and optional software you plan to deploy.

The CV XP AE Device Manager server connects to the disk array(s) using a private Ethernet LAN connection, as shown in Figure 6.

Figure 6. Management connection to the disk array
Specifications

This section provides some general specifications for the XP10000. For complete specifications, see the HP StorageWorks XP10000 Disk Array Site Preparation Guide, available on the HP XP Disk Array web site: http://h18006.www1.hp.com/storage/xparrays.html.

Temperature

Table 4. Temperature specifications

<table>
<thead>
<tr>
<th>Temperature range type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended operating temperature range</td>
<td>21° to 24° C 70° to 75° F</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>16° to 32° C 61° to 89° F</td>
</tr>
<tr>
<td>Nonoperating temperature range</td>
<td>–10° to +43° C 14° to 109° F</td>
</tr>
<tr>
<td>Shipping and storage temperature (product packed in factory packing)</td>
<td>–25° to +60° C –13° to +140° F</td>
</tr>
<tr>
<td>Temperature shock immunity (maximum rate of temperature change)</td>
<td>10° C per hour 18° F per hour</td>
</tr>
</tbody>
</table>
Humidity

Protect the disk array from excessive humidity. You should not observe condensation in or around the product under any conditions. There is no procedure for recovery from moisture condensation.

Table 5. Humidity specifications

<table>
<thead>
<tr>
<th>Humidity range type</th>
<th>Noncondensing relative humidity (RH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating humidity range at 22° C (71° F)</td>
<td>20% to 80%</td>
</tr>
<tr>
<td>Nonoperating humidity range</td>
<td>8% to 90%</td>
</tr>
<tr>
<td>Shipping and storage humidity range (product packed in factory packing)</td>
<td>5% to 95%</td>
</tr>
<tr>
<td>Operating maximum wet bulb temperature</td>
<td>26° C (79° F)</td>
</tr>
<tr>
<td>Nonoperating maximum wet bulb temperature</td>
<td>27° C (81° F)</td>
</tr>
<tr>
<td>Shipping and storage maximum wet bulb temperature</td>
<td>29° C (84° F)</td>
</tr>
</tbody>
</table>

Mechanical vibration

Continuous vibration can cause a slow degradation of mechanical parts and, when severe, can cause data errors in disk drives. Mechanical connections such as printed circuit assembly (PCA) conductors, cable connectors, and processor backplane wiring can also be affected by vibrations. Vibration specifications apply to all three axes.

Table 6. Mechanical vibration specifications

<table>
<thead>
<tr>
<th>Condition</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>0.25 mm, 5–10 Hz 0.05 G, 10–300 Hz</td>
</tr>
<tr>
<td>Nonoperating</td>
<td>2.5 mm, 5–10 Hz 0.5 G, 10–70 Hz 0.05 mm, 70–99 Hz 1.0 G, 99–300 Hz</td>
</tr>
</tbody>
</table>
AC line voltage requirements

This section lists the AC power recommendations. Each rack has four power cords. In case of a failure of the power source for one cord, the power requirements, and therefore the current requirement for the remaining power cord, will double.

For details about electrical specifications, cabling, and connectors, see the *HP StorageWorks XP10000 Disk Array Site Preparation Guide*.

Table 7. AC line voltage requirements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>200</th>
<th>208(^1)</th>
<th>220</th>
<th>230</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated line current per power cord</td>
<td>16A</td>
<td>16A</td>
<td>16A</td>
<td>16A</td>
<td>16A</td>
</tr>
<tr>
<td>Number of power cords per rack</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Recommended circuit breakers</td>
<td>20A</td>
<td>20A</td>
<td>20A</td>
<td>20A</td>
<td>20A</td>
</tr>
</tbody>
</table>

\(^1\) 60 Hz only.

HP requires a separate branch circuit for each power cord connection. The circuit breaker for each branch circuit must have a minimum rating of 20 amps. Breakers must be easily visible and accessible so power can be quickly removed in an emergency. Local building electrical codes may dictate specific additional circuit breaker requirements. Consult your electrician or local code for the requirements in your location.

If you have multiple power sources, such as a UPS, connect two of the power cords for each cabinet to each power source for maximum protection from power outages. Consult your local HP service representative about which power cords are to be attached to the two power sources.
During normal operations, the disk array does not require your intervention and you should not attempt to open the disk array cabinets.

The disk array reports any service information messages (SIMs) to the SVP and the Device Manager server. If the array is set up to “phone home,” the SVP automatically reports SIMs to the HP Storage Technology Center (STC). For more information on automatic reporting, see “HP StorageWorks Continuous Track XP” (page 31). For more information on SIMs, see Chapter 5.
General safety guidelines

Carefully read these safety guidelines and follow them when working with the disk array.

- Fully understand and follow all hazard warnings in this guide and on warning labels on the disk array. These hazard warnings help you to prevent or reduce the risk of death, personal injury, or product damage. Hazard warnings include alert headings consisting of an alert symbol and the word Caution or Warning:

<table>
<thead>
<tr>
<th>Caution</th>
<th>This indicates a hazardous situation which, if not avoided, will or can result in serious product damage or loss of data.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Warning</th>
<th>This indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Replace any warning label that becomes dirty or starts peeling off.</td>
</tr>
<tr>
<td></td>
<td>Keep in mind that the hazard warnings in this guide and on the disk array cannot cover every possible hazard because it is impossible to predict and evaluate all potentially hazardous circumstances. Be alert and use common sense. If you have any questions, contact your HP support representative.</td>
</tr>
<tr>
<td></td>
<td>Follow the safety guidelines and procedures in all documentation for this and related products.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caution</th>
<th>Disk array maintenance must be done only by trained and qualified HP support representatives. Only an HP support representative can power off the disk array, except in an emergency.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Caution</th>
<th>Do not perform any procedures not described in this guide. If you have any questions or concerns, contact your HP support representative.</th>
</tr>
</thead>
</table>
Warning
Do not touch areas marked HAZARDOUS, even with the power off. These areas contain high-voltage power.

Caution
If you detect any abnormal noise, smell, or smoke coming from the disk array, immediately power off the disk array by following the emergency power-off procedure (page 42). For routine power off in non-emergency situations, contact your HP support representative.

Caution
Keep the front and rear doors closed at all times.

Caution
Keep the tops and sides of the cabinets clear to allow air to flow properly.

Caution
Use the supplied power cord. The power cord may not be used with other products.
Powering down the disk array

Two situations may arise when you need to power down the disk array:

• Emergency power-off
• Planned power-off

For instructions in each of these situations, see the following procedures.

Emergency power-off

The XP10000 disk array does not have an emergency power off switch. In an emergency when it is crucial to power off the disk array immediately for safety reasons, remove power at the AC branch circuit breakers in your facility that supply power to the disk array. Take care when placing these breakers that they are clearly marked and easily accessible.

Caution

Performing an emergency power-off immediately shuts down the disk array, neglecting the array’s normal power-off sequence. Jobs in process are aborted and their integrity after recovery is not guaranteed.

Use this power-off method only in an emergency. Afterwards, only a qualified HP support representative is allowed to restore power to the disk array. Call your HP support representative immediately.

Emergency situations in which you should consider performing the emergency power-off procedure are:

• A physical location catastrophe such as a flood, hurricane, tornado, or earthquake
• Any circumstance that presents the threat of injury or death to a person
• You detect any smoke, abnormal loud noise, or smell coming from the disk array.
Planned power-off

Occasionally, you may need to plan a site power outage, such as during alterations to the data center, inspections, or work by the electric company. If a scheduled power outage will affect the disk array, contact your HP support representative to schedule a planned power-off.

Caution

Only a trained HP support representative can shut down and power off the disk array. Do not attempt to power down the disk array other than during an emergency.
Recovering from an unplanned power outage

Unplanned power outages occur when the primary building power is lost due to electrical blackouts, thunderstorm activity, or similar occurrences, and input AC power is not received by the disk array. The disk array will maintain its state and recover when power is restored.

The disk array cache is powered by backup batteries that will maintain the array state for up to 36 hours, depending on the selected battery operation mode. For more information, see “Backup batteries” (page 34).

For restart procedures after power is restored to the disk array, see “Manual restart of the disk array after power is restored” on page 45 and “Automatic restart when power is restored” on page 46.
Manual restart of the disk array after power is restored

**Caution**  
*After power is restored to your site and before restoring power to the disk array, HP recommends that you have an electrician verify the power to ensure that all phases are restored and input power to the disk is stable.*

For assistance recovering from a power outage, contact your HP support representative.

**To restart the disk array manually:**

1. On the disk array control panel in the primary rack, shown in Figure 4 (page 26), move the PS ENABLE switch to the ENABLE position.

2. Move the PS ON/OFF switch to the ON position.

   The following LED power sequence occurs:
   a. BS-ON turns amber.
   b. PS-ON turns green.
   c. MESSAGE LED may turn amber if the disk array is not configured to “phone home,” signifying a SIM was generated because the disk array lost power unexpectedly.
   d. READY LED turns green, signifying the system is ready.

**Caution**  
*Powering on the disk array can take several minutes, depending on the number of disks installed in the disk array. Power-on is complete only when the READY LED turns green.*

3. Move the PS ENABLE switch to the “Disable” position (opposite the ENABLE position).
Automatic restart when power is restored

**Caution**  
HP recommends the use of automatic power on restart only if the power to the disk array is subject to power conditioning equipment, such as a UPS, to ensure that the power restored to the disk array is stable. If your site does not have a UPS, HP recommends configuring the disk array for manual restart, meaning the Auto-Power-On jumper, which is set during installation by an HP support representative, is in the DISABLE position. After a power outage, follow the manual restart procedure ([page 45](#)) only after power has been restored and verified to be stable.

Automatic restart is enabled by your HP representative during installation. With automatic restart enabled, the disk array automatically restarts and returns to service when power is restored after a power outage.

During the automatic restart, the following LED power sequence occurs:

a. BS-ON turns amber.

b. PS-ON turns green.

c. MESSAGE LED may turn amber if the disk array is not configured to “phone home,” signifying a SIM was generated because the disk array lost power unexpectedly.

d. READY LED turns green, signifying the system is ready.

**Caution**  
Powering on the disk array can take several minutes, depending on the number of disks installed in the disk array. Power-on is complete only when the READY LED turns green.
This chapter describes HP’s suite of software products designed to help you get the most from your disk array. HP StorageWorks XP Disk Array software:

- Augments critical array capabilities
- Helps optimize your IT resources
- Improves overall storage availability
- Simplifies disaster recovery
- Improves data security

Before installing a software package, refer to the software product documentation to verify equipment requirements.

To learn more about HP software products, or to obtain software updates, visit the HP web site: http://h18006.www1.hp.com/storage/xarrays.html.
**Device and configuration management software**

**HP StorageWorks XP Web Console and Command View Advanced Edition**

Remote Web Console (RWC), which comes installed on the SVP, is the standard software package for managing the XP disk array. RWC allows you to install and manage the disk array but does not allow you to manage multiple arrays. To manage multiple XP disk arrays, you will need the optional Command View XP Advanced Edition software.

Command View XP Advanced Edition (CVXP AE) provides a browser-based common management platform from which you can manage the XP family of disk arrays. CVXP AE installs on an optional Device Manager server that you provide and can manage multiple XP arrays—even globally distributed arrays.

Remote Web Console and/or Command View AE provide:

- Web-browser-based GUI interface
- Visual representation and management of host and storage resources
- Common user interface for launching XP management applications
- Security provided by user and host authentication and authorization and an encrypted connection
- Event level integration into other network and system management solutions
HP StorageWorks LUN Configuration and Security Manager XP

LUN Configuration and Security Manager XP provides additional LUN configuration and security options. You can add and delete paths, create custom-sized volumes, and configure foolproof LUN security that provides controlled, secure access to data stored on the XP disk array—preventing unauthorized servers from accessing your data. It also configures the array to meet changing storage requirements and enables users to share a single Fibre Channel array among multiple servers.

LUN Configuration and Security Manager XP allows you to:

• Create, define, and configure LUNs on the disk array
• Consolidate LUNs (combine up to 36 LUNs)
• Create small size LUNs to accommodate data locked into cache
• Establish security at the LUN level so that you can enable multiple server connectivity to the disk array
• Hide LUNs assigned to one server from other servers during IOSCAN operations
• Configure LUSE and create custom volume sizes

HP StorageWorks LUN Security XP Extension

LUN Security XP Extension helps you manage business-critical or sensitive data by providing a highly secure method of LDEV access control, allowing you to protect critical data from being changed.

Key features and benefits include:

• Creation of read-only volumes
• Protection of datasets from write and read access
• Protection from local and remote replication activities
• Data read only by authorized applications
• Access attributes assigned to each logical volume
• Global masking for protection from all host servers
• Rejection of file system device inquiry requests
• Reporting of access failures to host server
• Allows XP disk array deployment in data retention\(^1\) solutions that assist in meeting SEC-related data integrity requirements\(^2\)
• Firmware-based solution accessible from Remote Web Console

**HP StorageWorks External Storage XP**

HP StorageWorks External Storage XP enables you to connect low-cost and/or legacy external storage utilizing the superior functionality of XP disk arrays.

Key features and benefits include:

• Accessed as a full privilege internal XP disk array LUN
• Use without restrictions:
  – As a regular XP disk array LUN
  – As part of a Flex Copy XP or Business Copy
  – With full solutions support
• Facilitates data migration
• Reduces costs by allowing less expensive secondary storage

---

1. Once the retention period is set, it cannot be changed.
2. Purchase and deployment of this product does not by itself ensure that regulatory/legal requirements for data retention will be met, and compliance is not implicitly or explicitly guaranteed.
Performance management software

HP StorageWorks Cache LUN XP

Cache LUN XP lets you reserve areas of memory cache on the XP disk arrays to store frequently accessed information. It improves file access times and enables faster data transfers. Assigning information to on-board cache speeds up access to your data because cache-resident data is available at host data transfer speeds for both read and write operations.

Cache LUN XP redirects I/O requests from the XP disk drives to data locked in the array’s cache. It’s transparent, simple to implement, and it delivers immediate performance gains. Cache memory for Cache LUN XP can be set as low as one logical block or 512 MB. As your needs grow, you can increase cache volumes in increments of one logical block to a maximum of 1,024 cached volumes. The software integrates with Remote Web Console for web-based anytime, anywhere access.

HP StorageWorks Auto LUN XP

Auto LUN XP provides monitoring and disk usage analysis for your disk array based on user thresholds. Auto LUN develops a plan to migrate impacted data volumes to lower usage LUNs, using the data acquired during monitoring. You can perform the migration manually or automatically.
**HP StorageWorks XP Performance Advisor**

Performance Advisor is an Internet application used to monitor real-time performance of the HP StorageWorks XP family of disk array products. Using a simple, browser-based interface, you can quickly customize performance data collection and set performance alarms. Performance Advisor provides real-time and historical data on:

- LDEV I/Os
- Front-end and back-end port utilization
- Internal bus utilization
- Cache usage

You can easily integrate with other well-known performance management software to view your performance metrics.

**HP StorageWorks Performance Control XP**

Performance Control XP is a performance allocation and management tool for XP disk arrays. It lets you allocate storage performance resources to hosts by means of policies you define.

It ensures that critical business processes have all the XP disk array performance they need to meet business objectives. You can ensure that processes such as backups and data warehouse loads get the array bandwidth necessary to meet deadlines. Performance Control XP enables sophisticated service provider solutions based on distinct levels of service.

Performance Control XP has a rich feature set for flexible policy definition, scheduling, monitoring, and analysis.
Replication software

**HP StorageWorks Business Copy XP**

Business Copy allows you to make up to nine ongoing copies of data. These copies are maintained on the local disk array. Use Business Copy for nonproduction activities such as backup, batching, and system testing.

**HP StorageWorks Continuous Access XP**

Continuous Access allows you to make ongoing synchronous copies of disk array data to a remote data site up to 27 miles (43 kilometers) away.

**HP StorageWorks Continuous Access Extension XP**

Continuous Access Extension is similar to Continuous Access, but operates in asynchronous mode. Transactions to be written to the secondary array are kept in cache memory on the local array in a “side-file.” This potentially increases performance in remote copying. Copy operations are sequence-stamped to ensure they are executed and sorted correctly at the remote disk array. Continuous Access Extension is offered as an upgrade to Continuous Access.

**HP StorageWorks Flex Copy XP**

Flex Copy XP enables bidirectional, server-independent data transfer between HP Disk Array XP12000/10000/1024/128 and MSA 1000 storage systems. Data can be transferred locally within a single data center or over metropolitan distances in a distributed storage network, without consuming server or LAN performance resources. This capability allows for more efficient, cost-effective leverage of business-critical data in a wide range of storage solutions, resulting in enhanced IT effectiveness and better return-on-investment in storage infrastructures. These storage solutions include nearline/array-based storage backup, data distribution/concentration, and hierarchical storage management.
Business continuity solutions

HP StorageWorks Cluster Extension XP

Cluster Extension XP offers protection against system downtime from a variety of faults, failures, and disasters. It enables flawless integration of an XP disk array’s remote mirroring capabilities with high-availability server clustering solutions, including clusters covering metropolitan distances and based on SUN, AIX, Linux, and Microsoft systems (similar functionality exists for HP-UX servers with HP cluster software).

This extended-distance solution allows for more robust disaster recovery topologies as well as automatic failover, failback, and redirection of mirrored pairs for fast recovery. A host-based utility, Cluster Extension XP requires Continuous Access and Continuous Access Extension.

Key features and benefits include:

• Automatic failover/failback disaster recovery solutions for Serviceguard for Linux, Windows with Microsoft Cluster Server (MSCS), Solaris with Veritas Cluster Server (VCS), and AIX with IBM’s HACMP cluster software
• Seamless integration of remote mirroring with server clusters
• A fully scripted turnkey solution for disaster recovery
• Allows consolidated disaster recovery across heterogeneous clusters
• Speeds recovery implementation
• Simplifies automatic failover and failback; no user intervention is required
HP StorageWorks Direct Backup Engine XP

Direct Backup Engine XP provides a backup solution for XP disk array customers wanting to use an array-based data mover to back up data directly from the disk array to the tape library within a SAN.

Key features and benefits include:

- Data mover maximizes system performance, providing efficient backup and restore of mission-critical data within a SAN
- Leverages existing LAN and SAN to provide lower cost of ownership
- Supports multiple platforms and applications
Other business solutions

HP StorageWorks Data Integrity Check for XP

Data Integrity Check for XP corrects extraneous data problems in the I/O path from server to array. It provides XP disk arrays with an added level of protection when deployed in Oracle database environments, eliminating data corruption-related downtime and ensuring business continuity. It comprises flexible tools for solution configuration and management and supports raw disk, LVM, and VxVM environments.

The software is compatible with HP-UX, Sun Solaris, and MC/Service Guard for HP-UX.

HP StorageWorks Data Shredder

HP StorageWorks XP Data Shredder is a valuable software application for critical data stored in enterprise environments where secure erasure is an absolute requirement. Data Shredder erases selected data volumes with up to eight overwrite passes to minimize the possibility of recreating the data. It can reduce costs, help achieve compliance with corporate policies, and help to ensure data privacy and security.

XP Data Shredder is an easy-to-use application that provides a variety of overwrite patterns, either user selectable or random. It shows progress bars and displays a confirmation panel for each of the overwrites at completion of the operation.
**Service information messages**

The disk array generates service information messages (SIMs) to identify normal operations, service requirements, and failures. SIMs are generated by the SVP and the disk array microprocessors. Your HP support representative uses the SIMs to monitor and troubleshoot the disk array. You can view SIMs using the disk array’s management software (page 35).
Failure detection and reporting process

If a failure occurs in the disk array, the failure is detected and reported to the system log, the SIM log, and the HP STC, as shown in Figure 7 and explained in Table 8 (page 59).

**Figure 7. Failure detection and reporting process**

**Table 8. Failure detection and reporting process**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A failure is detected in the disk array.</td>
</tr>
<tr>
<td>2</td>
<td>The failure is reported to the system.</td>
</tr>
<tr>
<td>3</td>
<td>The system stores the failure information in the system log.</td>
</tr>
</tbody>
</table>
| 4    | The generated SIMs are stored on the disk array for use by HP support representatives, and logged on the management server as remote SIMs (R-SIMs).  
  If the disk array is not set up to “phone home,” when a SIM is generated, the amber message LED on the disk array control panel turns on. Call HP to determine the reason for the message. |
For more information on Continuous Track XP, see “HP StorageWorks Continuous Track XP” (page 31).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5    | If the disk array is set up to “phone home,” Continuous Track XP reports the SIMs to STC through a dedicated dialup connection. SIMs are classified according to severity: service, moderate, serious, or acute.  
  • **Service and moderate levels**—Do not require immediate attention and are addressed during routine maintenance. These failures are often corrected before the failure becomes apparent.  
  • **Serious and acute levels**—Reported immediately to STC to ensure that the problem is addressed as soon as possible. |
6

Regulatory statements
FCC EMC statement (USA)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense. The end user of this product should be aware that any changes or modifications made to this equipment without the approval of Hewlett-Packard could result in the product not meeting the Class A limits, in which case the FCC could void the user’s authority to operate the equipment.

Hewlett-Packard’s device certification tests were conducted with HP computer systems and HP shielded cables, such as those you received with your product. Changes or modifications not expressly approved by Hewlett-Packard could void the user’s authority to operate the equipment. Cables used with this device must be properly shielded to comply with the requirements of the FCC.
IEC statement (worldwide)

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.
EMC statement (Canada)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
Spécification ATI Classe A (France)

DECLARATION D’INSTALLATION ET DE MISE EN EXPLOITATION
d’un matériel de traitement de l’information (ATI), classé A en fonction des
niveaux de perturbations radioélectriques émis, définis dans la norme
européenne EN 55022 concernant la Compatibilité Electromagnétique.
VCCI EMC statement (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることができます。
BSMI EMC statement (Taiwan)

警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策的對策
RRL EMC statement (Korea)

사용자 안내문 : A급 기기

이 기기는 업무용으로 전자파적합등록을 받은 기기이오니, 판매자 또는 사용자는 이 점을 주의 하시기 바라며, 만약 잘못 구입 하셨을 때에는 구입한 곳에서 비업무용으로 교환 하시기 바랍니다.
Harmonics conformance (Japan)

高調波ガイドライン適合品
German noise declaration

XP10000: Schalldruckpegel Lp = 70 dB(A)

Am Arbeitsplatz (operator position)

Normaler Betrieb (normal operation)

Laser safety

When equipped with native Fibre Channel adapters, this product contains a laser internal to the Optical Link Module (OLM) contained on the 8-port Fibre Channel Adapter board and 8-port FICON board, and on the 16-port Fibre Channel Adapter board and 16-port FICON board for connection to a fibre communications network.

In the USA, the OLM is certified as a Class 1 laser product conforming to the PRT requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR, Subchapter J. The certification is indicated by a label on the plastic OLM housing. Outside the USA, the OLM is certified as a Class 1 laser product conforming to the requirements contained in IEC 825-1:1993 and EN 60825-1:1994, including Amendment 11:1996.

The following figure shows the Class 1 information label that appears on the plastic housing of the OLM.

![Class 1 Laser Product Label]

Each communications port consists of a transmitter and receiver optical subassembly. The transmitter subassembly contains an internal semiconductor laser diode in the wavelength range of 770 to 850 nanometers. In the event of a break anywhere in the fibre path, the OLM control system prevents laser emissions from exceeding Class 1 levels. Class 1 laser products are not considered hazardous.

**Warning**

There are no user maintenance operations, service operations, or adjustments to be performed on the Optical Link Module.
Japan DENAN law cordset caution

Please use the supplied power cord. The power cord may not be used with other products.

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。
European WEEE statements

Czech

Likvidace zařízení soukromými domácími uživateli v Evropské unii

Tento symbol na produktu nebo balení označuje výrobek, který ne smí být vyhozen spolu s ostatním domácím odpadem. Povinností uživatele je předat takto označený odpad na předem určené sběrné místo pro recyklaci elektrických a elektronických zařízení. Okamžitě tridění a recyklace odpadu pomáže uchovat přírodní prostředí a zajistit takový způsob recyklace, který ochráni zdraví a životní prostředí člověka.

Další informace o možnostech odevzdání odpadu k recyklaci získáte na příslušném obecním nebo městském úřadě, od firmy zabývající se sběrem a svozem odpadu nebo v obchode, kde jste produkt zakoupili.

Danish

Bortskaffelse af affald fra husstande i den Europæiske Union

I trædt er det dit ansvar at bortskaffe kasseret udstyr ved at aflevere det på den kommunale genbrugsstation, der børstår genvinding af kasseret elektrisk og elektronisk udstyr. Den centrale modtagelse og genvinding af kasseret udstyr indebærer at bortskaffe udstyr i forbindelse med bortskaffelsen bidrager til bevareelse af naturlige ressourcer og sikrer, at udstyret genvides på en måde, der beskytter både mennesker og miljø.

Yderligere oplysninger om, hvor du kan aflevere kasseret udstyr til genvinding, kan du få hos kommunen, den lokale genbrugsstation eller i den butik, hvor du købte produktet.
Dutch

Verwijdering van afgedankte apparatuur door privé-gebruikers in de Europese Unie

Dit symbool op het product of de verpakking geeft aan dat dit product niet mag worden gedeponeerd bij het normale huishoudelijke afval. U bent zelf verantwoordelijk voor het inleveren van uw afgedankte apparatuur bij een inzamelingspunt voor het recyclen van oude elektrische en elektronische apparatuur. Door uw oude apparatuur apart aan te bieden en te recycelen, kunnen natuurlijke bronnen worden behouden en kan het materiaal worden hergebruikt op een manier waarmee de volksgezondheid en het milieu worden beschermd. Neem contact op met uw gemeente, het afvalinzamelingbedrijf of de winkel waar u het product hebt gekocht voor meer informatie over inzamelingspunten waar u oude apparatuur kunt afbrengen voor recycling.

English

Disposal of Waste Equipment by Users in Private Household in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Estonian

Seadmete jäätmee kõrvaldamine eramajapidamistes Euroopa Liidus

See tootel või selle pakendil olev sümbol näitab, et kõnealust toodet ei tohi koos teiste majapidamisjäätmetega kõrvaldada. Teie kohus on oma seadmete jäätmee kõrvaldamine, viies need elektri- ja elektroonikaseadmete jäätmee ringlussevõtmiseks selleks eeterähud kogunispunkti. Seadmete jäätmee aradi kogumine ja ringlussevõtmine kõrvaldamise ajal aitab kaitsta loodusvaraseid ning tagada, et ringlussevõtmine toimub viisil, mis kaitseb inimeste terivist ning keskkonda. Lisateabe saamiseks selle kohta, kuhu oma seadmete jäätmee ringlussevõtmiseks viia, võtte palun ühendust oma koha haldusel, majapidamise kihelkonnas, majapidamisjäätmekeskuses ja kohaliku kaitse- ning kaitsekeskuses, kust Te toote otsite.
Finnish

Laitteiden hävittäminen kotitalouksissa Euroopan unionin alueella


French

Élimination des appareils mis au rebut par les ménages dans l'Union européenne

Le symbole apposé sur ce produit ou sur son emballage indique que ce produit ne doit pas être jeté avec les déchets ménagers ordinaires. Il est de votre responsabilité de mettre au rebut vos appareils en les déposant dans les centres de collecte publique désignés pour le recyclage des équipements électriques et électroniques. La collecte et le recyclage de vos appareils mis au rebut indépendamment du reste des déchets contribue à la préservation des ressources naturelles et garantit que ces appareils seront recyclés dans le respect de la santé humaine et de l'environnement. Pour obtenir plus d’informations sur les centres de collecte et de recyclage des appareils mis au rebut, veuillez contacter les autorités locales de votre région, les services de collecte des ordures ménagères ou le magasin dans lequel vous avez acheté ce produit.

German

Entsorgung von Altgeräten aus privaten Haushalten in der EU

Greek

Απόρριψη χρήστου εξοπλισμού από χρήστες σε ιδιωτικά νοικοκυριά στην Ευρωπαϊκή Ένωση

Το σύμβολο αυτό στο προϊόν ή τη συσκευασία του υποδεικνύει ότι το συγκεκριμένο προϊόν δεν πρέπει να διατίθεται μαζί με τα άλλα οικιακά σας απορριμματά. Αντίθετα, είναι δική σας ευθύνη να απορρίpite τον χρήστο εξοπλισμό σας παραδίδοντας τον σε καθορισμένο σημείο συλλογής για την ανακύκλωση χρήστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού.

Η έξοδος συλλογή και ανακύκλωση του χρήστου εξοπλισμού σας κατά την απόρριψη θα συμβάλει στη διατήρηση των φυσικών πόρων και θα διασφαλίσει ότι η ανακύκλωση γίνεται με τρόπο που προστατεύει την ανθρώπινη υγεία και το περιβάλλον. Για περαιτέρω πληροφορίες σχετικά με το πού μπορείτε να παραδώσετε τον χρήστο εξοπλισμό σας για ανακύκλωση, επικοινωνήστε με το αρμόδιο τοπικό γραφείο, την τοπική υπηρεσία διάθεσης οικιακών απορριμμάτων ή το κατάστημα όπου αγοράσατε το προϊόν.

Hungarian

Készülékek magánháztartásban történő selejtezése az Európai Unió területén

A készüléken, illetve a készülék csomagolásán látható azonos szimbólum annak jelzésére szolgál, hogy a készülék a selejtezés során az egyéb háztartási hulladékolt elérő módon kezelendő. A vásárló a hulladékot vált készüléket köteles a kijelölt gyűjtőhelyre szállítani az elektromos és elektronikai készülékek újrahasznosítása céljából. A hulladékkal vált készülékek selejtezésékor begyűjtése és újrahasznosítása hozzájárul a természeti erőforrások megőrzéséhez, valamint biztosítja a selejtezett termékek környezetre és emberi egészségre nézve biztonságos telepítését.

A begyűjtés pontos helyéről bővebb tájékoztatást a lakóhelye szerint illetékes önkormányzattól, az illetékes személytakarító vállalattól, illetve a terméket eladó híven kaphat.
Italian

Smaltimento delle apparecchiature da parte di privati nel territorio dell'Unione Europea

Questo simbolo presente sul prodotto o sulla sua confezione indica che il prodotto non può essere smaltito insieme ai rifiuti domestici. È responsabilità dell'utente smaltire le apparecchiature consegnandole presso un punto di raccolta designato al riciclo e allo smaltimento di apparecchiature elettriche ed elettroniche. La raccolta differenziata e il corretto riciclo delle apparecchiature da smaltire permette di proteggere la salute degli individui e l'ecosistema. Per ulteriori informazioni relative ai punti di raccolta delle apparecchiature, contattare l'ente locale per lo smaltimento dei rifiuti, oppure il negozio presso il quale è stato acquistato il prodotto.

Latvian

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienībās privačajās mājsaimniecībās

Šāds simbols uz izstrādājuma vai uz tā iesaīnu norāda, ka šo izstrādājumu nedrīkst izmest kopā ar citiem sadasējumiem. Jūs atbild par to, lai nolietotas iekārtas tiktu nodotas speciāli iekārtotos punktos, kas paredzēti izmantoto elektrisko un elektronisko iekārtu savākšanai otrreizējai pārstrādei. Atsevišķa nolietoto iekārtu savākšana un otrreizējā pārstrāde palīdzēs saglabāt dabas resursus un garantēs, ka šis iekārtas tiks otrreizēji pārstrādātas tādā veidā, lai pasargātu vīcu un ciešāku veselību. Lai uzzinātu, kur nolietotās iekārtas var izmest otrreizējai pārstrādei, jāvēršas savas dzīves vietas pašvaldībā, sadaļējas atkritumu savākšanas dienestā vai veikalu, kurā izstrādājums tika noņirta.

Lithuanian

Vartotojų iš privačių namų ūkių įrangos atliekų šalinimas Europos Sąjungoje

Šis simbolis ant gaminio arba jo pakuotės rodo, kad šio gaminio šalinė kartu su kitomis namų ūkio atliekomis negalima. Šalinimas įrangos atliekas privačiote pristatysi į specialią suimkimą vietą elektros ir elektroninės įrangos atliekoms perdirbti. Atskirai surenkamos ir perdirbamos šaltinis įrangos atliekas padės saugoti gamininius išteklius ir užtikrinti, kad jos bus perdirbtos tokiu būdu, kuris nekentka žmonių sveikatai ir aplinka. Jeigu norite sužinoti daugiau apie tai, kur galima pristatyti perdirbtinas įrangos atliekas, kreipkitės į savo seniūniją, namų ūkio atliekų šalinimo tarnybą arba pardavėjų, kurioje įsigijote gaminį.
Polish

Pozbywanie się zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w Unii Europejskiej

Ten symbol na produkcie lub jego opakowaniu oznacza, że produkt nie wolno wyrzucać do zwykłych pojemników na śmieci. Obowiązkiem użytkownika jest przekazanie zużytego sprzętu do wyznaczonego punktu zbiórki w celu recyklingu odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Osoba zbiórka oraz recykling zużytego sprzętu pomagają w ochronie zasobów naturalnych i zapewnią ponowne wprowadzenie go do obiegu w sposób chroniący zdrowie człowieka i środowisko. Aby uzyskać więcej informacji o tym, gdzie można przekazać zużyty sprzęt do recyklingu, należy się skontaktować z urzędem miasta, zakładem gospodarki odpadami lub sklepem, w którym zakupiło produkt.

Portuguese

Descarte de Lixo Elétrico na Comunidade Européia

Este símbolo encontrado no produto ou na embalagem indica que o produto não deve ser descartado no lixo doméstico comum. É responsabilidade do cliente descartar o material usado (lixo elétrico), encaminhando-o para um ponto de coleta para reciclagem. A coleta e a reciclagem seletivas desse tipo de lixo ajudarão a conservar as reservas naturais; sendo assim, a reciclagem será feita de uma forma segura, protegendo o ambiente e a saúde das pessoas. Para obter mais informações sobre locais que recebem esse tipo de material, entre em contato com o escritório da HP em sua cidade, com o serviço de coleta de lixo ou com a IEE em que o produto foi adquirido.

Slovak

Likvidácia vyradených zariadení v domácnostiach v Európskej únií

Symbol na výrobku alebo jeho balení označuje, že daný výrobok sa nesmie likvidovať s domovým odpadom. Povinnosťou spotrebiteľa je odovzdať vyradené zariadenie v zbernom mieste, ktoré je určené na recykláciu vyradených elektrických a elektronických zariadení. Separovaný zber a recyklácia vyradených zariadení prispieva k ochrane prírodných zdrojov a zabezpečuje, že recyklácia sa vykonáva spôsobom chrániacim ľudské zdravie a životné prostredie. Informácie o zberných miestach na recykláciu vyradených zariadení vám poskytne miestne zastupiteľstvo, spoločnosť zabezpečujúca odvoz domového odpadu alebo obchod, v ktorom ste si výrobok zakúpili.
Slovenian

Odstranjevanje odslužene opreme uporabnikov v zasebnih gospodinjstvih v Evropski uniji

Ta znak na izdelku ali njegovi embalaži pomeri, da izdelka ne smete odvreč med gospodinjske odpadke. Nasprotno, odsluženo opremo morate predati na zbiralniško postajo za recikliranje električne in elektronske opreme. Ločeno zbiranje in recikliranje odslužene opreme prispeva k ohranjanju naravnih virov in zagotavlja recikliranje te opreme na zdravju in okolju neškodljiv način. Za podrobnejše informacije o tem, kam lahko odpeljete odsluženo opremo na recikliranje, se obrnite na pristojni organ, komunalno službo ali trgovino, kjer ste izdelke kupili.

Spanish

Eliminación de residuos de equipos eléctricos y electrónicos por parte de usuarios particulares en la Unión Europea

Este símbolo en el producto o en su envase indica que no debe eliminarse junto con los desperdicios generales de la casa. Es responsabilidad del usuario eliminar los residuos de este tipo depositándolos en un “punto limpio” para el reciclado de residuos eléctricos y electrónicos. La recogida y el reciclado selectivos de los residuos de aparatos eléctricos en el momento de su eliminación contribuirá a conservar los recursos naturales y a garantizar el reciclado de estos residuos de forma que se proteja el medio ambiente y la salud. Para obtener más información sobre los puntos de recogida de residuos eléctricos y electrónicos para reciclado, póngase en contacto con su ayuntamiento, con el servicio de eliminación de residuos domésticos o con el establecimiento en el que adquirió el producto.

Swedish

Bortskaffande av avfallsprodukter från användare i privathushåll inom Europeiska Unionen

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ACP</td>
<td>Array control processor. On other XP models, the ACP handles the passing of data between the cache and the physical drives. On the XP10000, this function is handled by the disk adapter on the MIX board.</td>
</tr>
<tr>
<td>AL</td>
<td>Arbitrated loop.</td>
</tr>
<tr>
<td>AL-PA</td>
<td>Arbitrated loop physical address.</td>
</tr>
<tr>
<td>allocation</td>
<td>The ratio of allocated storage capacity versus total capacity as a percentage. “Allocated storage” refers to those LDEVs that have paths assigned to them. The allocated storage capacity is the sum of the storage of these LDEVs. Total capacity refers to the sum of the capacity of all LDEVs on the disk array.</td>
</tr>
<tr>
<td>array group</td>
<td>A group of 4 or 8 physical hard disk drives (HDDs) installed in an XP disk array and assigned a common RAID level. RAID1 2d+2d array groups are made up of 4 HDDs. A RAID1 4d+4d group is two 4 HDD array groups concatenated together. RAID5 array groups are made up of 4 or 8 HDDs, depending on whether they are RAID5 3d+1p or RAID5 7d+1p, respectively. All RAID6 array groups are made up of 8 HDDs (6d+2P).</td>
</tr>
<tr>
<td>ASE</td>
<td>Application System Engineer.</td>
</tr>
<tr>
<td>BC</td>
<td>The HP StorageWorks Business Copy XP software program, which enables you to maintain up to nine internal copies of logical volumes on the disk array.</td>
</tr>
<tr>
<td>C-Track</td>
<td>The HP StorageWorks Continuous Track XP software program, which detects internal hardware component problems on a disk array and automatically reports them to the HP STC.</td>
</tr>
<tr>
<td>CA</td>
<td>The HP StorageWorks Continuous Access XP program, which enables you to replicate data stored on a local disk array to a remote disk array.</td>
</tr>
<tr>
<td>cache</td>
<td>Very high speed memory that is used to speed I/O transaction time. All reads and writes to the XP array family are sent to the cache. The data is buffered there until the transfer to/from physical disks (with slower data throughput) is complete. The benefit of cache memory is that it speeds I/O throughput to the application. The larger the cache size, the greater the amount of data buffering that can occur and the greater throughput to the applications. XP arrays support a range of cache memory. In the event of power loss, battery power holds up the contents of cache for up to 36 hours.</td>
</tr>
<tr>
<td>CE</td>
<td>Customer engineer.</td>
</tr>
<tr>
<td>channel adapter (CHA)</td>
<td>The channel adapter (CHA) provides the interface between the disk array and the external host system. Occasionally this term is used synonymously with the term channel host interface processor (CHIP).</td>
</tr>
<tr>
<td>channel host interface processor (CHIP)</td>
<td>Synonymous with the term channel adapter (CHA).</td>
</tr>
<tr>
<td>channel processor (CHP)</td>
<td>The processors located on the channel adapter (CHA). Synonymous with CHIP.</td>
</tr>
<tr>
<td>command device</td>
<td>A volume on the disk array that accepts Continuous Access or Business Copy control operations which are then executed by the disk array.</td>
</tr>
<tr>
<td>control unit</td>
<td>To organize the storage space attached to the disk controller, you can group similarly configured logical devices (LDEVs) with unique control unit images (CUs). CUs are numbered sequentially. The disk array supports a certain number of CUs, depending on the disk array model. Each CU can manage multiple LDEVs. Therefore, to uniquely identify a particular LDEV requires both the CU number and the LDEV number.</td>
</tr>
<tr>
<td>CU</td>
<td>Control unit.</td>
</tr>
<tr>
<td>CVS</td>
<td>Custom volume size. CVS devices (OPEN-x CVS) are custom volumes configured using array management software to be smaller than normal</td>
</tr>
</tbody>
</table>
fixed-size OPEN system volumes. Synonymous with volume size customization (VSC).

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>disk adapter (DKA)</td>
<td>Synonymous with the term ACP.</td>
</tr>
<tr>
<td>disk cabinet unit (DKU)</td>
<td>The array cabinets that house the disk array physical disks. In the XP10000, the second rack is referred to as the DKU.</td>
</tr>
<tr>
<td>disk controller (DKC)</td>
<td>The array cabinet that houses the channel adapters and service processor (SVP).</td>
</tr>
<tr>
<td>disk chassis</td>
<td>The housing inside the primary or second rack that contains the physical disks. The XP10000 primary rack holds up to two disk chassis, and the second rack holds an additional two disk chassis.</td>
</tr>
<tr>
<td>disk recovery and restore unit (DRR)</td>
<td>The unit responsible for data recovery and restoration in the event of a cache failure.</td>
</tr>
<tr>
<td>disk group</td>
<td>The physical disk locations associated with a parity group.</td>
</tr>
<tr>
<td>disk type</td>
<td>The manufacturing label burned into the physical disk controller firmware. In most cases, the disk type is identical to the disk model number.</td>
</tr>
<tr>
<td>emulation modes</td>
<td>The logical devices (LDEVs) associated with each RAID group are assigned an emulation mode that makes them operate like OPEN system disk drives. The emulation mode determines the size of an LDEV.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emulation Mode</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN-3</td>
<td>2.46 GB</td>
</tr>
<tr>
<td>OPEN-8</td>
<td>7.38 GB</td>
</tr>
<tr>
<td>OPEN-9</td>
<td>7.42 GB</td>
</tr>
<tr>
<td>OPEN-E</td>
<td>13.56 GB</td>
</tr>
<tr>
<td>OPEN-K</td>
<td>Not available on XP10000 arrays</td>
</tr>
<tr>
<td>OPEN-L</td>
<td>36 GB</td>
</tr>
<tr>
<td>OPEN-M</td>
<td>Not available on XP10000 arrays</td>
</tr>
<tr>
<td>OPEN-V</td>
<td>User-defined custom size</td>
</tr>
</tbody>
</table>

**EPO**  
Emergency power-off.

**ESCON**  
Enterprise System Connection (the IBM trademark for optical channels).

**expanded LUN**  
A LUN is normally associated with only a single LDEV. The LUSE feature allows a LUN to be associated with 1 to 36 LDEVs. Essentially, LUSE
makes it possible for applications to access a single large pool of storage. The LUSE feature is available when the HP StorageWorks LUN Configuration Manager product is installed.

**ExSA**
Extended serial adapter.

**failover**
Disconnecting a failed unit or path and replacing it with an alternative unit or path in order to continue functioning.

**FC**
Fibre Channel.

**FC-AL**
Fibre Channel arbitrated loop.

**FCP**
Fibre Channel Protocol.

**fence level**
A level for selecting rejection of a write I/O request from the host according to the condition of mirroring consistency.

**FICON**
IBM mainframe Fiber Optic Connection.

**GB**
Gigabytes.

**GLM**
Gigabyte link module.

**HA**
High availability.

**HBA**
Host bus adapter. A built-in function or a card installed in a PC or other host computer to enable connection of the host to the SAN.

**host mode**
Each port can be configured for a particular host type. These modes are represented as two-digit hexadecimal numbers. For example, host mode 08 represents an HP-UX host.

**hot standby**
Using two or more servers as a standby in case of a primary server failure.

**HP**
Hewlett-Packard Company.

**I/O**
Input/output (applies to an operation or device).

**LAN**
Local area network.

**LD, LDEV**
Logical device. An LDEV is created when a RAID group is carved into pieces according to the selected host emulation mode (that is, OPEN-3, OPEN-8, OPEN-9). The number of resulting LDEVs depends on the
selected emulation mode. The term LDEV is often used synonymously with the term volume.

**LED**
Light emitting diode.

**local disk**
A disk in the host.

**LU**
Logical unit.

**LUN**
Logical unit number. A LUN results from mapping a SCSI logical unit number, port ID, and LDEV ID to a RAID group. The size of the LUN is determined by the emulation mode of the LDEV, and the number of LDEVs associated with the LUN. For example, a LUN associated with two OPEN-3 LDEVs has a size of 4,693 MB.

**LUSE**
Logical unit size expansion. See also *Expanded LUN*.

**m**
Meters.

**MB**
Megabytes.

**MCU**
Main control unit.

**MIX**
A circuit board in the disk control unit that includes disk adapters and channel adapters for interfacing disk drives and the host to cache memory.

**mirroring consistency**
The consistency (usability) of data in a volume (for example, S-VOL).

**mm**
Millimeters.

**MR**
Magnetoresistive.

**ms, msec**
Milliseconds.

**mutual hot standby system**
Two servers that are poised to cover for each other if necessary.

**NAS**
Network attached storage.

**node**
Logically speaking, an environment where instances can be executed. Physically, a processor, which is an element of a cluster system.

**NVS**
Nonvolatile storage.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFC</td>
<td>Open Fibre Control.</td>
</tr>
<tr>
<td>OLM</td>
<td>Optical link module.</td>
</tr>
<tr>
<td>OS</td>
<td>Operating system.</td>
</tr>
<tr>
<td>PA</td>
<td>Physical address.</td>
</tr>
<tr>
<td>parity group</td>
<td>A parity group is a mode of disk operation and configuration in which multiple disks work together to provide redundancy. Synonymous with “array group.”</td>
</tr>
<tr>
<td>partition</td>
<td>Dividing a specific physical disk into two or more areas as if there are two or more physical disks.</td>
</tr>
<tr>
<td>path</td>
<td>Paths are created by associating a port, a target, and a LUN ID with one or more LDEVs.</td>
</tr>
<tr>
<td>PCI</td>
<td>Power control interface or peripheral component interconnect.</td>
</tr>
<tr>
<td>port</td>
<td>A physical connection that allows data to pass between a host and the disk array. The number of ports on an XP disk array depends on the number of supported I/O slots and the number of ports available per I/O adapter. The XP family of disk arrays supports Fibre Channel (FC) ports as well as other port types. Ports are named by port group and port letter, such as CL1-A. CL1 is the group, and A is the port letter.</td>
</tr>
<tr>
<td>P-P</td>
<td>Point-to-point.</td>
</tr>
<tr>
<td>primary rack</td>
<td>The XP10000 rack that contains the basic disk array components, including the controller and one disk chassis. The primary rack can contain a second optional disk chassis.</td>
</tr>
<tr>
<td>PS</td>
<td>Power supply.</td>
</tr>
<tr>
<td>RS</td>
<td>Russellstoll®, a brand of electrical plugs and receptacles manufactured by Thomas &amp; Betts Corporation.</td>
</tr>
<tr>
<td>RAID</td>
<td>Redundant array of independent disks.</td>
</tr>
<tr>
<td>RAID group</td>
<td>See “array group.”</td>
</tr>
<tr>
<td>RAID level</td>
<td>A RAID Level is one of the ways that disk drives are grouped together to improve performance, data availability/reliability or both. RAID levels are...</td>
</tr>
</tbody>
</table>
defined from RAID0 to RAID6. HP StorageWorks Disk Arrays in the XP product family support RAID1, RAID5 and RAID6. Not all of these RAID levels are supported by all XP family members. Consult the owner's guide or your HP representative for the details of which RAID levels are supported by your specific XP disk array.

<table>
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<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
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<tr>
<td>RAM</td>
<td>Random access memory.</td>
</tr>
<tr>
<td>RM</td>
<td>HP StorageWorks RAID Manager XP, a command line interface for managing XP arrays.</td>
</tr>
<tr>
<td>R-SIM</td>
<td>Remote service information message.</td>
</tr>
<tr>
<td>R/W, r/w</td>
<td>Read/write.</td>
</tr>
<tr>
<td>script file</td>
<td>A file containing a shell script.</td>
</tr>
<tr>
<td>SCSI</td>
<td>Small computer system interface.</td>
</tr>
<tr>
<td>second rack</td>
<td>The optional second XP10000 disk array rack that contains up to two additional optional disk chassis (up to 120 drives).</td>
</tr>
<tr>
<td>shell script</td>
<td>A command sequence executed by a UNIX shell.</td>
</tr>
<tr>
<td>sidefile</td>
<td>An area of cache used to store the data sequence number, record location, record length, and queued control information before transmission over the ESCON link.</td>
</tr>
<tr>
<td>SIM</td>
<td>Service information message.</td>
</tr>
<tr>
<td>SMI-S</td>
<td>Storage Management Initiative Specification.</td>
</tr>
<tr>
<td>SMS</td>
<td>System managed storage.</td>
</tr>
<tr>
<td>SSID</td>
<td>Storage subsystem identification.</td>
</tr>
<tr>
<td>STC</td>
<td>HP Storage Technology Center.</td>
</tr>
<tr>
<td>SVP</td>
<td>Service processor, which is the PC built into the disk controller. The SVP provides a direct interface into the disk array. <em>SVP use is reserved for HP support representatives only.</em></td>
</tr>
<tr>
<td>TB</td>
<td>Terabyte.</td>
</tr>
<tr>
<td><strong>TCP/IP</strong></td>
<td>Transmission control protocol/Internet protocol</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>TID</strong></td>
<td>Target ID.</td>
</tr>
<tr>
<td><strong>VSC</strong></td>
<td>Volume size customization. Synonymous with CVS.</td>
</tr>
<tr>
<td><strong>VOLID</strong></td>
<td>Volume ID.</td>
</tr>
<tr>
<td><strong>volume</strong></td>
<td>Synonymous with LDEV.</td>
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