hp StorageWorks performance advisor xp 2.1

Command-Line User Interface

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1. Command Line User Interface Introduction

This document describes the Command Line User Interface (CLUI) for the Performance Advisor XP 2.1 product (PA XP) from Hewlett-Packard. Use the CLUI to gain access to performance data, set alarms, modify data collection intervals, and configure host information. Shell scripts are available for most of the commands in the CLUI, and these scripts are the recommended method for gaining access to the CLUI commands. The actual CLUI is divided into two parts: A report CLUI and a configuration CLUI. The usage for each part is found in the following sections.

2. CLUI Installation and Uninstallation

2.1 Before Installation

Complete the following steps *before* installing the Performance Advisor XP 2.1 CLUI.

Make sure that you have completed these steps before installing the Performance Advisor XP CLUI.

1. Installation requirements for the CLUI are the same as the installation requirements for the PA XP Host Agent. Refer to the *HP StorageWorks Performance Advisor XP Installation Guide* for detailed information. This includes JRE version 1.4.2. The JRE is automatically installed when you install the PA XP Host Agent on a host.
2. You need to know where your Java runtime environment (JRE) is installed.
    - In a UNIX environment, if the PA XP host agent is installed, use /opt/sanmgr/jre as the path. If the PA XP host agent is not installed, use the find /usr /sbin /home /bin /opt -name java or find / usr /sbin /home /bin /opt -name jre command to determine the location of the java environment. **The exact location will differ between systems, depending on the administrator's preference. We will be using everything from this path prior to the bin directory.**
    - In a Windows environment, use the Find utility to determine the location of java.exe or jre.exe. Put this location, minus the bin directory, in an environment variable called JAVA_HOME. In most instances of the JRE, the jre.exe or java.exe commands are in a path that looks similar to the following:
      c:\Program Files\JavaSoft\JRE\1.3.1_01\bin\java.exe.
      When entering this path in the JAVA_HOME variable, type everything but the \bin\java.exe portion. If the command is found in a path that does not have a bin directory, enter everything but the \java.exe. You can create or update this environment variable in the system control panel.

3. Choose the location where you want to install the software. The following are the default locations:
   Windows: C:\Program Files\Hewlett-Packard\Performance Advisor\
   AIX, HP-UX, Linux, and Sun: /opt/xppa
   At the top of the install script is a variable that holds this location. Edit this variable if you want to install the software to a different directory.
4. You need to know the Administrative username and password of the Performance Advisor XP management station. See the Performance Advisor XP documentation for the default values.
5. You need to know if the management station that you will be connecting to has a web server with SSL installed and configured.
6. If you are installing the CLUI on a UNIX-type system *and* you plan to use telnet to access this system, note that only xterm, hpterm, and ansi terminals are supported.

2.2 During Installation

The CLUI is packaged as a UNIX .tar file, which can also be manipulated by using WinZip. Follow the instructions below to extract this file and install the CLUI:

1. Navigate to <cd_drive>\Tools\CmdLineUserInterface\.
2. Unpack the appropriate .tar file for your platform to a temporary directory. For Windows, use the WinZip program to open this file and extract the files from it. Extract *all* of the files from this archive.
3. Open a command prompt (DOS prompt in Windows), and run the appropriate install script (install.bat for Windows, install.sh for UNIX variants). The Windows installation process is slightly different from the UNIX installation process.

For UNIX variants, run the install.sh file. You might need to set the install.sh file to be executable. To do this, type chmod 755 install.sh. In UNIX, it is necessary to be the root user to run this file.

1. The script tells you what is about to be done, and asks if you want to continue. Press **Y** for yes, or **N** for no.
2. You are then prompted for the location of the Java environment. Enter this information, minus the bin directory and everything after it.
3. If the Java or JRE commands are not found, the script exits. Otherwise, you are prompted to enter the management station name.
4. The install script then asks if SSL is installed and configured on the management station's web server. Enter **Y** for yes to use SSL (HTTPS). Enter **N** for no to use HTTP. **N** is the default. Entering anything other than a **y** or **Y** here will result in the default value being used.
5. The script then prompts for the Administrative username and password of the Performance Advisor XP management station. This is entered by using the form **username:password**.
6. The CLUI is now installed. Proceed to the *After Installation* section.

For Windows, run install.bat. You must have the JAVA_HOME variable set.

1. The script tells you what is about to be done, and asks if you want to continue. Press **Ctrl** and **C** if you want to quit.

2. The script then checks the location indicated by the JAVA_HOME environment variable to see if the java.exe or jre.exe program exists.
3. If the Java or JRE commands are not found, the script exits. Otherwise, you are prompted to enter the management station name.
4. The install script then asks if SSL is installed and configured on the management station's web server. Enter **Y** for yes to use SSL (HTTPS). Enter **N** for no to use HTTP. **N** is the default. Entering anything other than a **y** or **Y** here will result in the default value being used.
5. The script then prompts for the Administrative username and password pair of the Performance Advisor XP management station. This is entered by using the form **username:password**.
6. The CLUI is now installed. Proceed to the *After Installation* section.

2.3 After Installation

To use the shell scripts, either change the directory to the location of the shell scripts (usually in a CLUI directory in the install directory), or add that location to your path and type the name of the script. Calling the script with a -? prints a usage statement. See Section 3 for shell script usage.

Note: For UNIX system users, it might be necessary to put quotation marks ("") around the question mark (?), because in some shells, the question mark (?) is used as a wild card. Also in UNIX, when specifying Windows device files, it is necessary to put quotation marks around the # to avoid commenting out the rest of the line.

To uninstall the CLUI, change to the installation directory and invoke the uninstall script there (uninstallclui.sh for UNIX platforms; uninstall.bat for Windows).

3. Report and Configuration CLUI Shell Scripts

The CLUI provides a group of shell scripts that make it easier to use. There is a script for running each of the CLUI commands, except for the version and encrypt commands.

3.1 External Storage Script (E-Lun)

3.1.1 E-Lun Usage

The report CLUI application provides a command that displays E-Lun data. The –dkc switch is a required element. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>.You can use –pf <password file> in place of –auth. E-Lun can also be used to create a custom group. The command's general format is as follows:

elun [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] –dkc <serial #> [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter character.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
<serial #>	The array serial number.
-?	Prints the usage statement.

3.1.2 E-Lun Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**. If the external array is a non-xp array, the **E-Seq** will be the <Vendor ID>:<Produce ID> and the **E-LDEV** will be '-1'.

```
elun –dkc 10033

0:01, CL1C, 20074, 1:01
0:02, CL1C, 20074, 1:02
0:03, CL1C, 20074, 1:03
0:04, CL2C, 20074, 1:04
0:05, CL1C, 20074, 1:05
0:05, CL2C, 20074, 1:05

elun –dkc 10033 –hr

LDEV     E-Port   E-Seq    E-LDEV
0:01     CL1C     20074    1:01
0:02     CL1C     20074    1:02
0:03     CL1C     20074    1:03
0:04     CL2C     20074    1:04
0:05     CL1C     20074    1:05
0:05     CL2C     20074    1:05
```

3.2 CLPR (cachegrp)

CLPR is not supported in this release.

3.3 Disk Controller Snapshot Script (DKCS)

3.3.1 DKCS Usage

The report CLUI application provides a command that displays Disk Controller Snapshot data. The –dkc switch is a required element. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

dkcs [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>]
–dkc <serial #> [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter character.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
<serial #>	The array serial number.
-?	Prints the usage statement.

3.3.2 DKCS Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**.

```
dkcs –hr –dkc 30143
```

Array Type: XP512

Serial #: 30143
Record Time: 13:55:00
Record Date: 07/18/2001
Micro Code: 01.12.16
Raid Manager Lib: 01.03.02

Chip Data:				**ACP Data:**			
P = 100%	97%	94%	91%	L = 0%	3%	6%	9%
Q = 88%	85%	82%	79%	K = 12%	15%	18%	21
R = 76%	73%	70%	67%	J = 24%	27%	30%	33%
S = 64%	61%	58%	55%	H = 36%	39%	42%	45%
V = 52%	49%	46%	43%	E = 48%	51%	54%	57%
W = 40%	37%	34%	31%	D = 60%	63%	66%	69%
X = 28%	25%	22%	19%	C = 72%	75%	78%	81%
Y = 16%	13%	10%	7%	B = 84%	87%	90%	93%

Data Bus = 27%
Control Bus = 37%

Cache Usage = 300MB
Cache Size = 4096MB
Cache Pending = 50MB
Cache Side File = 200MB

dkcs –L –dkc 30143

Array Type, Serial No., Record Time, Record Date, Micro Code, RMLib Version,Chip P MP 0,Chip P MP 1,Chip P MP 2,Chip P MP 3,Chip Q MP 0,Chip Q MP 1,Chip Q MP 2,Chip Q MP 3,Chip R MP 0,Chip R MP 1,Chip R MP 2,Chip R MP 3,Chip S MP 0,Chip S MP 1,Chip S MP 2,Chip S MP 3,Chip V MP 0,Chip V MP 1,Chip V MP 2,Chip V MP 3,Chip W MP 0,Chip W MP 1,Chip W MP 2,Chip W MP 3,Chip X MP 0,Chip X MP 1,Chip X MP 2,Chip MP 3,Chip Y MP 0,Chip Y MP 1,Chip Y MP 2,Chip Y MP 3,Acp B MP 0,Acp B MP 1,Acp B MP 2,Acp B MP 3,Acp C MP 0,Acp C MP 1,Acp C MP 2,Acp C MP 3,Acp D MP 0,Acp D MP 1,Acp D MP 2,Acp D MP 3,Acp E MP 0,Acp E MP 1,Acp E MP 2,Acp E MP 3,Acp H MP 0,Acp H MP 1,Acp H MP 2,Acp H MP 3,Acp J MP 0,Acp J MP 1,Acp J MP 2,Acp J MP 3,Acp K MP 0,Acp K MP 1,Acp K MP 2,Acp K MP 3,Acp L MP 0,Acp L MP 1,Acp L MP 2,AcpL MP 3,SM Bus,CM Bus, Cache Usage (MB),Cache Size (MB),Cache Pending (MB),Cache Side File (MB)

XP512,30143:00,01/31/2002,01-13-18/00,01.04.01,100,97,94,91,88,85,82,79,76,73,70,67,64,61,58,55,52,49,46,43,40,37,34,31,28,25,22,19,16,13,10,7,0,3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,57,60,63,66,69,72,75,78,81,84,87,90,93,27,37,300,4096,50,200

```
dkcs –dkc 30143

XP512,30143,14:18:00,01/31/2002,01-13-
18/00,01.04.01,100,97,94,91,88,85,82,79,76,73,70,67,64,61,58,55,
52,49,46,43,40,37,34,31,28,25,22,19,16,13,10,7,0,3,6,9,12,15,18,21,2
4,27,30,33,36,39,42,45,48,51,54,
57,60,63,66,69,72,75,78,81,84,87,90,93,27,37,300,4096,50,200
```

3.4 Disk Controller History Script (DKCH)

3.4.1 DKCH Usage

The report CLUI application provides a command that displays Disk Controller History data. The –dkc switch is a required element. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

dkch [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>]
–dkc <serial #> [-st <start time> -et <end time>] [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter character.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
<serial #>	The array serial number.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
<start time>	The start time in the form mm.dd.yyyy hh:mm:ss.
<end time>	The end time in the form mm.dd.yyyy hh:mm:ss.
-?	Prints the usage statement.

If no start and end time are specified, only the latest 10 records will be retrieved from the management station.

3.4.2 DKCH Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**.

```
dkch –hr –dkc 30143

Array Type: XP512
Serial #: 30143
Record Time: 14:04:00
Record Date: 11/28/2001
Micro Code: 01-13-18/00
Raid Manager Lib: 01.04.01

Chip Data:                      ACP Data:
P = 100.0%97.0% 94.0% 91.0%  B = 84.0% 87.0% 90.0% 93.0%
Q = 88.0% 85.0% 82.0% 79.0%  C = 72.0% 75.0% 78.0% 81.0%
R = 76.0% 73.0% 70.0% 67.0%  D = 60.0% 63.0% 66.0% 69.0%
S = 64.0% 61.0% 58.0% 55.0%  E = 48.0% 51.0% 54.0% 57.0%
V = 52.0% 49.0% 46.0% 43.0%  H = 36.0% 39.0% 42.0% 45.0%
W = 40.0% 37.0% 34.0% 31.0%  J = 24.0% 27.0% 30.0% 33.0%
X = 28.0% 25.0% 22.0% 19.0%  K = 12.0% 15.0% 18.0% 21.0%
Y = 16.0% 13.0% 10.0% 7.0%   L = 0.0%  3.0%  6.0%  9.0%

Control Bus:                    Data Bus:
High: 40.0  Low: 35.0           High: 30.0  Low: 25.0
Cache Usage: 300.0 MB           Cache Size:  4096.0 MB
Cache Pending: 50.0 MB          Cache Side File: 200.0 MB
ACP Pair BH: 64.5%              ACP Pair CJ: 52.5%
ACP Pair DK: 40.5%              ACP Pair EL: 28.5%

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Array Type: XP512
Serial #: 30143
Record Time: 14:04:10
Record Date: 11/28/2001
Micro Code: 01-13-18/00
Raid Manager Lib: 01.04.01

Chip Data:                    ACP Data:
P = 100.0%97.0% 94.0% 91.0% B = 84.0% 87.0% 90.0% 93.0%
Q = 88.0% 85.0% 82.0% 79.0% C = 72.0% 75.0% 78.0% 81.0%
R = 76.0% 73.0% 70.0% 67.0% D = 60.0% 63.0% 66.0% 69.0%
```

S = 64.0% 61.0% 58.0% 55.0% **E =** 48.0% 51.0% 54.0% 57.0%
V = 52.0% 49.0% 46.0% 43.0% **H =** 36.0% 39.0% 42.0% 45.0%
W = 40.0% 37.0% 34.0% 31.0% **J =** 24.0% 27.0% 30.0% 33.0%
X = 28.0% 25.0% 22.0% 19.0% **K =** 12.0% 15.0% 18.0% 21.0%
Y = 16.0% 13.0% 10.0% 7.0% **L =** 0.0% 3.0% 6.0% 9.0%

Control Bus:		**Data Bus:**	
High 40.0 **Low:** 35.0		**High:** 30.0 **Low:** 25.0	
Cache Usage:	300.0 MB	**Cache Size:**	4096.0 MB
Cache Pending:	50.0 MB	**Cache Side File:**	200.0 MB
ACP Pair BH:	64.5%	**ACP Pair CJ:**	52.5%
ACP Pair DK:	40.5%	**ACP Pair EL:**	28.5%

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2 records displayed

dkch –L –dkc 30143

Start Time,End Time
0,0,
Time,Date,Serial No.,Type, Chip P MP1,Chip P MP 2,Chip P MP 3,Chip P MP 4,Chip Q MP 1,Chip Q MP 2,Chip Q MP 3,Chip Q MP 4,Chip R MP 1,Chip R MP 2,Chip R MP 3,Chip R MP 4,Chip S MP 1,Chip S MP 2,Chip S MP 3,Chip S MP 4, Chip V MP 1,Chip V MP 2,Chip V MP 3,Chip V MP 4,Chip W MP 1,Chip W MP 2,Chip W MP 3,Chip W MP 4,Chip X MP 1,Chip X MP 2,Chip X MP 3,Chip X MP 4,Chip Y MP 1,Chip Y MP 2,Chip Y MP 3,Chip Y MP 4,ACP L MP 1,ACP L MP 2,ACP L MP 3,ACP L MP 4,ACP K MP 1,ACP K MP 2,ACP K MP 3,ACP K MP 4, ACP J MP 1,ACP J MP 2,ACP J MP 3,ACP J MP 4,ACP H MP 1,ACP H MP 2,ACP H MP 3,ACP H MP 4,ACP E MP 1,ACP E MP 2,ACP E MP 3,ACP E MP 4,ACP D MP 1,ACP D MP 2,ACP D MP 3,ACP D MP 4,ACP C MP 1,ACP C MP 2,ACP C MP 3,ACP C MP 4,ACP B MP 1,ACP B MP 2,ACP B MP 3,ACP B MP 4,Control Bus Lo,Control Bus Hi,Data Bus Lo,Data Bus Hi,CacheUsage, CacheSize,
WritePending,FileUsage,AcpPair BH,AcpPair CJ,AcpPair DK,AcpPair EL
160500,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,73.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,12.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.0,4096,50.0,200.0,3.0,27.0,51.0,75.0
161000,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,73.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,1

```
2.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,
63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.
0,4096,50.0,200.0,99.0,123.0,147.0,171.0
161500,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,7
3.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,
31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,1
2.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,
63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.
0,4096,50.0,200.0,3.0,27.0,51.0,75.0

dkch –dkc 30143

0,0,
160500,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,7
3.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,
31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,1
2.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,
63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.
0,4096,50.0,200.0,3.0,27.0,51.0,75.0
161000,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,7
3.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,
31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,1
2.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,
63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.
0,4096,50.0,200.0,99.0,123.0,147.0,171.0
161500,07172001,30143,1,100.0,97.0,94.0,91.0,88.0,85.0,82.0,79.0,76.0,7
3.0,70.0,67.0,64.0,61.0,58.0,55.0,52.0,49.0,46.0,43.0,40.0,37.0,34.0,
31.0,28.0,25.0,22.0,19.0,16.0,13.0,10.0,7.0,0.0,3.0,0.0,3.0,12.0,15.0,1
2.0,15.0,24.0,27.0,24.0,27.0,36.0,39.0,36.0,39.0,48.0,51.0,48.0,51.0,60.0,
63.0,60.0,63.0,72.0,75.0,72.0,75.0,84.0,87.0,84.0,87.0,40,35,30,25,300.
0,4096,50.0,200.0,3.0,27.0,51.0,75.0
```

3.5 Logical Unit Host Snapshot Script (LUNH)

3.5.1 LUNH Usage

The report CLUI application provides a command that displays Logical Unit Host Snapshot data. The output for this command is ordered by DKC ID. The required element for this command is –ha. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

lunh [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] –ha <host ID>
[-mr <maxRecords>] [-rg <raidGroup>] [-chp <chpPort>] [-acp <acpPair>]
[-dkc <serial #>] [-dver <xxxxxx>] [-?] [-luse] [-ugrp]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human readable format.
<host ID>	The host ID for which LUN information is reported. The word "all" may be used here to indicate all hosts.
<serial #>	The array serial number. The word "all" may be used here to indicate all DKCs.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
-dver <xxxxxx>	Indicates how the data should be displayed. XXXXXX is a version number. Currently supported values are 010500, 010600, and 015100. The default value is 010500.
<maxRecords>	The maximum number of records to return. You cannot specify a number of records larger than 16000.
<raidGroup>	Constrains the output to a specific RAID group. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.
<chpPort>	Constrains the output to a specific CHP Port. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.
<acpPair>	Constrains the output to a specific ACP Pair. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.
-?	Prints the usage statement.
-luse <ldev ID>	Constrains the output by LUSE master ID.
-ugrp <user group>	Constrains the output by User Group ID. Can be used interchangeably with –dkc or –ha.

3.5.2 LUNH Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**.

```
lunh –ha xpslk.user.server.com -hr

Retrieving records 0 - 1999
Array ID: 30143  Lun ID: 5    Volume-Grp.:--
Dev. File: /dev/rdsk/c5t3d5   LDEV ID: 0:0   LDEV IO/Sec: 0
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1B        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Array ID: 30143  Lun ID: 6    Volume-Grp.:--
Dev. File: /dev/rdsk/c5t3d6   LDEV ID: 0:2   LDEV IO/Sec: 0
Emulation: OPEN-3     SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1B        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Array ID: 30143  Lun ID: 7    Volume-Grp.:
Dev. File: /dev/rdsk/c5t3d7   LDEV ID: 0:3   LDEV IO/Sec: 0
Emulation: OPEN-3     SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1B        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Array ID: 30143  Lun ID: 0    Volume-Grp.:--
Dev. File: /dev/rdsk/c5t4d0   LDEV ID: 0:4   LDEV IO/Sec: 0
Emulation: OPEN-3     SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1B        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

lunh -ha xpslk.user.server.com –L

Array ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS
ID,Raid Grp.,CHP Port ID,CHP Port Util,ACP Pair ID,ACP Pair Util
30143,5, ,/dev/rdsk/c5t3d5,0:0,0,OPEN-3-CM,0004,'1-1,CL1B,0,1,1
30143,6, ,/dev/rdsk/c5t3d6,0:2,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,7, ,/dev/rdsk/c5t3d7,0:3,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,0, ,/dev/rdsk/c5t4d0,0:4,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,1, ,/dev/rdsk/c5t4d1,0:5,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,2, ,/dev/rdsk/c5t4d2,0:6,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,3, ,/dev/rdsk/c5t4d3,0:7,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,4, ,/dev/rdsk/c5t4d4,0:8,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,5, ,/dev/rdsk/c5t4d5,0:9,0,OPEN-3,0004,'1-1,CL1B,0,1,1
30143,6, ,/dev/rdsk/c5t4d6,0:A,0,OPEN-3,0004,'1-1,CL1B,0,1,1

lunh –ha xpslc360.user.server.com
```

30143,0, ,/dev/rdsk/c3t0d0,0:0,0,OPEN-3-CM,0004,1-1,CL1A,57,1,0
30143,0, ,/dev/rdsk/c5t0d0,1:EA,0,OPEN-3,0005,1-7,CL1A,57,1,0
30143,0, ,/dev/rdsk/c5t7d0,2:22,0,OPEN-3,0006,1-8,CL1A,57,1,0
30143,0, ,/dev/rdsk/c3t14d0,1:DA,0,OPEN-3,0005,1-7,CL1A,57,1,0
30143,0, ,/dev/rdsk/c5t15d0,2:62,0,OPEN-3,0006,1-9,CL1A,57,1,0
30143,0, ,/dev/rdsk/c3t11d0,1:C2,0,OPEN-3,0005,1-7,CL1A,57,1,0

lunh –ha hpbs1428.user.server.com –hr –dver 010600

Array ID: 30143 **Array Type:** XP512
Lun ID:1 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d1
LDEV ID: 0:01 **LDEV IO/Sec:** 1437   **LDEV MB/Sec:** 3
Emulation: OPEN-3   **SS ID:** 0004 **Raid Grp.:** 1-2
CHP Port ID: CL1A   **CHP Port Util:** 100
ACP Pair ID: BH   **ACP Pair Util:** 29
Cont. Access Volume: SMPL   **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0   **DASD Fast Writes:** 0
Load Inhibit Count: 0   **Bypass Count:** 0
Backend Transfer Count: 75

++++++++++++++++++++++++++++++++++++++

Array ID: 30143 **Array Type:** XP512
Lun ID:2 **Volume-Grp.:**-/dev/vg00   **Dev. File:** /dev/rdsk/c0t0d2
LDEV ID: 0:02 **LDEV IO/Sec:** 1437   **LDEV MB/Sec:** 3
Emulation: OPEN-3   **SS ID:** 0004 **Raid Grp.:** 1-3
CHP Port ID: CL1A   **CHP Port Util:** 100
ACP Pair ID: BH   **ACP Pair Util:** 29
Cont. Access Volume: SMPL   **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0   **DASD Fast Writes:** 0
Load Inhibit Count: 0   **Bypass Count:** 0
Backend Transfer Count: 75

++++++++++++++++++++++++++++++++++++++

2 records displayed.

lunh –ha hpbs1428.user.server.com –L –dver 010600

Array ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS ID,Raid Grp.,CHP Port ID,CHPPort Util,ACP Pair ID,ACP Pair Util,Ldev MB/s,Continuous Access,Business Copy Vol 0,Business Copy Vol 1,Business

Copy Vol 2,Cache Fast Writes,DASD Fast Writes,Load Inhibit Count,Bypass Count,Backend Transfer,Array Type
30143,0,/dev/vg00,/dev/rdsk/c0t0d0 ,0:00,1437,OPEN-3-CM,0004,1-1,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,0004,1-2,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,0004,1-3,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512

lunh –ha hpbs1428.user.server.com –dver 010600

30143,0,/dev/vg00, /dev/rdsk/c0t0d0,0:00,1437,OPEN-3-CM,0004,1-1,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,0004,1-2,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512
30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,0004,1-3,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,0,75,XP512

lunh –ha hpbs1428.user.server.com –hr –dver 015100

Array ID: 30143 **Array Type:** XP512
Lun ID:0 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d0
LDEV ID: 0:00 **LDEV IO/Sec:** 1401 **LDEV MB/Sec:** 3
Emulation:OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-1
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util:** 97
ACP Pair ID: BL **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 74

++++++++++++++++++++++++++++++++++++++

Array ID: 30143 **Array Type**: XP512
Lun ID:1 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d1
LDEV ID: 0:01 **LDEV IO/Sec:** 1340 **LDEV MB/Sec:** 3

Emulation: OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-2
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util:** 97
ACP Pair ID: BL **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 71

++++++++++++++++++++++++++++++++++++

Total IO: 2741.0 **Total MB:** 5.57 **Total Tracks:** 145.0

2 records displayed

lunh –ha hpbs1428.user.server.com –L –dver 015100

Array ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS ID,Raid Grp.,CHP Port ID,CHP Port Util,ACP Pair ID,ACP Pair Util,Ldev MB/s,Continuous Access,Business Copy Vol 0,Business Copy Vol 1,Business Copy Vol 2,Cache Fast Writes,DASD Fast Writes,Load Inhibit Count,Bypass Count,Backend Transfer,Array Type,Host Group
30143,0,/dev/vg00,/dev/rdsk/c0t0d0,0:00,1401,OPEN-3,0004,1-
1,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,74,XP512,UNKNOWN
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1340,OPEN-3,0004,1-
2,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,71,XP512,UNKNOWN
30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1338,OPEN-3,0004,1-
3,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,71,XP512,UNKNOWN

lunh –ha hpbs1428.user.server.com –dver 015100

30143,0,/dev/vg00,/dev/rdsk/c0t0d0,0:00,1401,OPEN-3,0004,1-
1,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,74,XP512,UNKNOWN
30143,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1340,OPEN-3,0004,1-
2,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,71,XP512,UNKNOWN
=30143,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1338,OPEN-3,0004,1-
3,CL1A,97,BL,29,3,SMPL,SMPL,SMPL,SMPL,0,0,0,
0,71,XP512,UNKNOWN

3.6 Logical Unit Disk Controller Snapshot Script (LUND)

3.6.1 LUND Usage

The report CLUI application provides a command that displays Logical Unit Disk Controller Snapshot data. Output for this command is ordered by Host ID. The required element for this command is –dkc. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

lund [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] -dkc <serial #>
[-mr <maxRecords>] [-rg <raidGroup>] [-chp <chpPort>] [-acp <acpPair>]
[–ha <host ID>] [-dver<xxxxxx>] [-?] –ugrp <user group>

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
<host ID>	The host ID for which LUN information is reported. The word "all" may be used here to indicate all hosts.
<serial #>	The array serial number. The word "all" may be used here to indicate all DKCs.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
-dver <xxxxxx>	Indicates how the data should be displayed. XXXXXX is a version number. Currently supported values are 010500, 010600, and 015100. The default value is 010500.
<maxRecords>	The maximum number of records to return. You cannot specify a number of records larger than 16000.
<raidGroup>	Constrains the output to a specific RAID group. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.
<chpPort>	Constrains the output to a specific CHP Port. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.
<acpPair>	Constrains the output to a specific ACP Pair. The word "all" may be used here to indicate all hosts. Not adding this switch has the same effect.

-?	Prints the usage statement.
-ugrp <user group>	Constrains the output by User Group ID. Can be used interchangeably with –dkc or –ha.

3.6.2 LUND Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**. Also, the amount of data has been reduced for this guide.

```
lund -hr –dkc 30143

Retrieving records 0 - 1999
Host ID: hpbs2167.user.server.com Lun ID: 0   Volume-Grp.:--
Dev. File: /dev/rdsk/c17t0d0  LDEV ID: 0:0  LDEV IO/Sec: 0
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL2D        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Host ID: hpbs2196.user.server.com Lun ID: 0   Volume-Grp.:--
Dev. File: /dev/rdsk/c17t0d0  LDEV ID: 0:0  LDEV IO/Sec: 0
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL2D        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Host ID: xpslc360.user.server.com Lun ID: 0   Volume-Grp.:--
Dev. File: /dev/rdsk/c3t0d0   LDEV ID: 0:0  LDEV IO/Sec: 0
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1A        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Host ID: xpslk.user.server.com Lun ID: 5    Volume-Grp.:--
Dev. File: /dev/rdsk/c5t3d5   LDEV ID: 0:0   LDEV IO/Sec: 0
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL1B        CHP Port Util: 0
ACP Pair ID: 1           ACP Pair Util: 1

Host ID: hpbs2167.user.server.com Lun ID: 1    Volume-Grp.:--
Dev. File: /dev/rdsk/c13t0d1  LDEV ID: 0:1   LDEV IO/Sec: 1
Emulation: OPEN-3-CM  SS ID: 0004  Raid Grp.: 1-1
CHP Port ID: CL2B        CHP Port Util: 0
```

ACP Pair ID: 1 ACP Pair Util: 1

Host ID: hpbs2196.user.server.com Lun ID: 1 Volume-Grp.:--
Dev. File: /dev/rdsk/c13t0d1 LDEV ID: 0:1 LDEV IO/Sec: 1
Emulation: OPEN-3-CM SS ID: 0004 Raid Grp.: 1-1
CHP Port ID: CL2B CHP Port Util: 0
ACP Pair ID: 1 ACP Pair Util: 1

lund -dkc 30143 -L

Host ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS ID,Raid Grp.,CHP Port ID,CHP Port Util,ACP Pair ID,ACP Pair Util
hpbs2167.user.server.com,0, ,/dev/rdsk/c17t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL2D,0,1,1
hpbs2196.user.server.com,0, ,/dev/rdsk/c17t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL2D,0,1,1
xpslc360.user.server.com,0, ,/dev/rdsk/c3t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL1A,0,1,1
xpslk.user.server.com,5, ,/dev/rdsk/c5t3d5,0:0,0,OPEN-3-CM,0004,'1-1,
CL1B,0,1,1
hpbs2167.user.server.com,1, ,/dev/rdsk/c13t0d1,0:1,1,OPEN-3-CM,0004,'1-1,
CL2B,0,1,1
hpbs2196.user.server.com,1, ,/dev/rdsk/c13t0d1,0:1,1,OPEN-3-CM,0004,'1-1,
CL2B,0,1,1
hpbs2167.user.server.com,2, ,/dev/rdsk/c17t0d2,0:2,0,OPEN-3,0004,'1-1,
CL2D,0,1,1
hpbs2196.user.server.com,2, ,/dev/rdsk/c17t0d2,0:2,0,OPEN-3,0004,'1-1,
CL2D,0,1,1
xpslc360.user.server.com,2, ,/dev/rdsk/c3t0d2,0:2,0,OPEN-3,0004,'1-1,
CL1A,0,1,1
xpslk.user.server.com,6, ,/dev/rdsk/c5t3d6,0:2,0,OPEN-3,0004,'1-1,
CL1B,0,1,1

lund –dkc 30143

hpbs2167.user.server.com,0, ,/dev/rdsk/c17t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL2D,0,1,1
hpbs2196.user.server.com,0, ,/dev/rdsk/c17t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL2D,0,1,1
xpslc360.user.server.com,0, ,/dev/rdsk/c3t0d0,0:0,0,OPEN-3-CM,0004,'1-1,
CL1A,0,1,1
xpslk.user.server.com,5, ,/dev/rdsk/c5t3d5,0:0,0,OPEN-3-CM,0004,'1-1,
CL1B,0,1,1
hpbs2167.user.server.com,1, ,/dev/rdsk/c13t0d1,0:1,1,OPEN-3-CM,0004,'1-1,

CL2B,0,1,1
hpbs2196.user.server.com,1, ,/dev/rdsk/c13t0d1,0:1,1,OPEN-3-CM,0004,'1-1,
CL2B,0,1,1
hpbs2167.user.server.com,2, ,/dev/rdsk/c17t0d2,0:2,0,OPEN-3,0004,'1-1,
CL2D,0,1,1
hpbs2196.user.server.com,2, ,/dev/rdsk/c17t0d2,0:2,0,OPEN-3,0004,'1-1,
CL2D,0,1,1
xpslc360.user.server.com,2, ,/dev/rdsk/c3t0d2,0:2,0,OPEN-3,0004,'1-1,
CL1A,0,1,1
xpslk.user.server.com,6, ,/dev/rdsk/c5t3d6,0:2,0,OPEN-3,0004,'1-1,
CL1B,0,1,1

lund -hr –dkc 30143 –dver 010600

Host ID: hpbs1428.user.server.com
Lun ID:1 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d1
LDEV ID: 0:01 **LDEV IO/Sec:** 1437 **LDEV MB/Sec:** 3
Emulation: OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-2
CHP Port ID: CL1A **CHP Port Util**: 100
ACP Pair ID: BH **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 75

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Host ID: hpbs1428.user.server.com
Lun ID: 2 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d2
LDEV ID: 0:02 **LDEV IO/Sec:** 1437 **LDEV MB/Sec:** 3
Emulation: OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-3
CHP Port ID: CL1A **CHP Port Util:** 100
ACP Pair ID: BH **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 75

++++++++++++++++++++++++++++++++++++++

2 records displayed

lund –dkc 30143–L –dver 010600

Host ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/Sec,Emulation,SS ID,Raid Grp.,CHP Port ID,CHPPort Util,ACP Pair ID,ACP Pair Util,Ldev MB/s, Continuous Access,Business Copy Vol 0,Business Copy Vol 1,Business Copy Vol 2,Cache Fast Writes,DASD Fast Writes,Load Inhibit Count,Bypass Count, Backend Transfer,Array Type
hpbs1428.user.server.com,0,/dev/vg00,emulated 0 cero,0:00,1437,OPEN-3-CM,0004,1-1,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,
0,0,0,75,XP512
hpbs1428.user.server.com,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,0004,1-
2,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,
0,0,75,XP512
hpbs1428.user.server.com,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,0004,1-
3,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,
0,0,75,XP512

lund –dkc 30143 –L –dver 010600

hpbs1428.user.server.com,0,/dev/vg00,emulated 0 cero,0:00,1437,OPEN-3-CM,0004,1-1,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,
0,0,0,75,XP512
hpbs1428.user.server.com,1,/dev/vg00,/dev/rdsk/c0t0d1,0:01,1437,OPEN-3,0004,1-
2,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,
0,0,75,XP512
hpbs1428.user.server.com,2,/dev/vg00,/dev/rdsk/c0t0d2,0:02,1437,OPEN-3,0004,1-
3,CL1A,100,BH,29,3,SMPL,SMPL,SMPL,SMPL,0,0,
0,0,75,XP512

lund –dkc 30143 –hr –dver 015100

Host ID: hpbs1428.user.server.com
Lun ID: 0 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d1
LDEV ID: 0:00 **LDEV IO/Sec:** 1440 **LDEV MB/Sec:** 3
Emulation: OPEN-3-CM **SS ID:** 0004 **Raid Grp.:** 1-1
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util:** 96
ACP Pair ID: BH **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL

Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 75

++++++++++++++++++++++++++++++++++++

Host ID: hpbs1428.user.server.com
Lun ID: 1 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c0t0d2
LDEV ID: 0:01 **LDEV IO/Sec:** 1440 **LDEV MB/Sec:** 3
Emulation: OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-2
Host Group: UNKNOWN
CHP Port ID: CL1A **CHP Port Util:** 96
ACP Pair ID: BH **ACP Pair Util:** 29
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Cache Fast Writes: 0 **DASD Fast Writes:** 0
Load Inhibit Count: 0 **Bypass Count:** 0
Backend Transfer Count: 75

++++++++++++++++++++++++++++++++++++

Total IO: 2880.0 **Total MB:** 5.85 **Total Tracks:** 150.0

2 records displayed

lund –dkc 30143 –L –dver 015100

Host ID,Lun ID,Volume Grp.,Dev. File,LDEV ID,LDEV IO/S,Emulation,SS ID,Raid Grp.,CHP Port ID,CHP Port Util,ACP Pair ID,ACP Pair Util,Ldev MB/s,Continuous Access,Business Copy Vol 0,Business Copy Vol 1,Business Copy Vol 2,Cache Fast Writes,DASD Fast Writes,Load Inhibit Count,Bypass Count,Backend Transfer,Array Type,Host Group
hpbs1428.user.server.com,0,/dev/vg00,/dev/rdsk/c0t0d1,0:00,1440,OPEN-3-CM,0004,1-
1,CL1A,96,BH,29,3,SMLP,SM
PL,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN
hpbs1428.user.server.com,1,/dev/vg00,/dev/rdsk/c0t0d2,0:01,1440,OPEN-3,0004,1-
2,CL1A,96,BH,29,3,SMLP,SMPL
,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN
hpbs1428.user.server.com,2,/dev/vg00,/dev/rdsk/c0t0d3,0:02,1440,OPEN-3,0004,1-
3,CL1A,96,BH,29,3,SMLP,SMPL
,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN

```
lund –dkc 30143 –dver 015100

hpbs1428.user.server.com,0,/dev/vg00,/dev/rdsk/c0t0d1,0:00,1440,OPEN-3-
CM,0004,1-
1,CL1A,96,BH,29,3,SMLP,SM
PL,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN
hpbs1428.user.server.com,1,/dev/vg00,/dev/rdsk/c0t0d2,0:01,1440,OPEN-
3,0004,1-
2,CL1A,96,BH,29,3,SMLP,SMPL
,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN
hpbs1428.user.server.com,2,/dev/vg00,/dev/rdsk/c0t0d3,0:02,1440,OPEN-
3,0004,1-
3,CL1A,96,BH,29,3,SMLP,SMPL
,SMPL,SMPL,0,0,0,0,75,XP512,UNKNOWN
```

3.7 Logical Device History Script (LDEV)

3.7.1 LDEV Usage

The report CLUI application provides a command that displays Logical Device History data. The required elements for this command are –dkc, and –ldev. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

ldev [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] –dkc <serial #>
 -ldev <logical device #> [-st <start time> -et <end time>] [-dver <xxxxxx>] [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
<serial #>	The array serial number.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.

-dver <xxxxxx>	Indicates how the data should be displayed. XXXXXX is a version number. Currently supported values are 010500 and 010600. The default value is 010500.
<logical device #>	The logical device number in the form <cu>:<ldev>, where: <cu> – The control unit number (0...f). <ldev> – The logical device number (0...ff).
<start time>	The start time in the form mm.dd.yyyy hh:mm:ss.
<end time>	The end time in the form mm.dd.yyyy hh:mm:ss.
-?	Prints the usage statement.

If no start time and end time are specified, this command returns the latest 10 records from the management station.

3.7.2 LDEV Sample Output

The following are examples of output data for the CLUI shell script described in the previous section.

Note: Labels in labeled outputs (specified by –hr or -L in the command line) are in **bold**.

```
ldev -hr –dkc 30143 –ldev 1:6C –st 01.03.2001 12:49:00 –et
01.03.2001 14:20:00

Start Time: 01/03/2001,12:49:00  End Time: 01/03/2001,14:20:00
Time     Date   Rand: Reads  RHits  Writes  WHits  Seq: Reads  RHits
Writes
WHits
160500   07172001     270   240   210    180          150   120   90      60
161000   07172001     270   240   210    180          150   120   90      60
161500   07172001     270   240   210    180          150   120   90      60
162000   07172001     270   240   210    180          150   120   90      60
162500   07172001     270   240   210    180          150   120   90      60
163000   07172001     270   240   210    180          150   120   90      60
163500   07172001     270   240   210    180          150   120   90      60
164000   07172001     270   240   210    180          150   120   90      60
164500   07172001     270   240   210    180          150   120   90      60
135500   07182001     270   240   210    180          150   120   90
60

ldev –dkc 30143 –ldev 1:6C –st 01.03.2001 12:49:00 –et 01.03.2001 14:20:00

01/03/2001,12:49:00,01/03/2001,14:20:00
```

124904,01032001,28,11,6,0,440,437,360,0
125904,01032001,26,10,6,0,434,430,356,0
130904,01032001,27,10,6,0,437,433,363,0
131904,01032001,27,10,6,0,437,434,364,0
132904,01032001,26,10,6,0,447,443,358,0
133903,01032001,27,10,6,0,437,433,375,0
134903,01032001,27,10,6,0,449,445,362,0
135904,01032001,28,10,6,0,450,446,378,0
140904,01032001,27,10,6,0,447,443,367,0
141904,01032001,26,10,6,0,433,429,365,0

ldev –dkc 30143 –ldev 1:74 -L

Start time,End Time
0,0
Time,Date,Random Reads,Random Read Hits,Random Writes,Random Write Hits, Sequential Reads,Sequential Read Hits,Sequential Writes,Sequential Write Hits
114455,05012001,10,10,48,0,0,0,0,0
115455,05012001,10,10,48,0,0,0,0,0
120455,05012001,10,10,48,0,0,0,0,0
121455,05012001,10,10,48,0,0,0,0,0
122455,05012001,10,10,48,0,0,0,0,0
123455,05012001,10,10,48,0,0,0,0,0
124455,05012001,10,10,48,0,0,0,0,0
125455,05012001,10,10,48,0,0,0,0,0
130544,05012001,10,10,48,0,0,0,0,0
131544,05012001,10,10,48,0,0,0,0,0

ldev -dkc 30143 -ldev 0:00 -hr -dver 010600 –st
11.08.2001 16:29:00 –et 11.08.2001 16:33:00

Start Time: 11082001 162900 **End Time:** 11082001 163300

++++++++++++++++++++++++++++++++++++++

Ldev ID: 0:00 **Date:** 11082001 **Time:** 163000 **Array ID:** 30143
Rand: Reads: 270 **Read Cache Hits:** 240 **Read Cache Misses:** 30
Rand: Writes: 210 **Write Cache Hits:** 180 **Write Cache Misses:** 30
Rand: Reads MB/s: 0 **Writes MB/s:** 0
Seq: Reads: 150 **Read Cache Hits:** 120 **Read Cache Misses:** 30
Seq: Writes: 90 **Write Cache Hits:** 60 **Write Cache Misses:** 30
Seq: Reads MB/s: 0 **Writes MB/s:** 0
Total IO: 720

Backend Transfer Sequential Reads: 15
Backend Transfer Non-Sequential Reads: 25
Backend Transfer Writes: 35
CFW Reads: 0 **CFW Read Cache Hits:** 0
CFW Writes: 0 **CFW Write Cache Hits**: 0
DFW Count: 0 **DFW Normal Cache Mode Count:** 0
DFW Sequential Cache Mode Count: 0
Inhibit Cache Mode Count: 0 **Bypass Cache Mode Count:** 0

++++++++++++++++++++++++++++++++++++++

Ldev ID: 0:00 **Date:** 11082001 **Time:** 163200 **Array ID:** 30143
Rand: Reads: 270 **Read Cache Hits:** 240 **Read Cache Misses:** 30
Rand: Writes: 210 **Write Cache Hits:** 180 **Write Cache Misses:** 30
Rand: Reads MB/s: 0 **Writes MB/s:** 0
Seq: Reads: 150 **Read Cache Hits:** 120 **Read Cache Misses:** 30
Seq: Writes: 90 **Write Cache Hits:** 60 **Write Cache Misses:** 30
Seq: Reads MB/s: 0 **Writes MB/s:** 0
Total IO: 720
Backend Transfer Sequential Reads: 15
Backend Transfer Non-Sequential Reads: 25
Backend Transfer Writes: 35
CFW Reads: 0 **CFW Read Cache Hits:** 0
CFW Writes: 0 **CFW Write Cache Hits:** 0
DFW Count: 0 **DFW Normal Cache Mode Count:** 0
DFW Sequential Cache Mode Count: 0
Inhibit Cache Mode Count: 0 **Bypass Cache Mode Count:** 0

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```
ldev -dkc 30143 -ldev 0:00 -L -dver 010600 -st 11.08.2001 16:29:00 -et
11.08.2001 16:33:00
```

Note: For this command, the Start Time and End Time are reported in milliseconds since January 1, 1970 for programmatic reasons.

```
Start time,End Time
1005262140000,1005262380000

Time,Date,Random Reads,Random Read Hits,Random Writes,Random Write
Hits,Sequential Reads,Sequential Read Hits,Sequential Writes,Sequential
Write Hits,Ldev ID,Array ID,Rand. Read Cache Misses,Rand. Write Cache
Misses,Seq. Read Cache Misses,Seq. Write Cache Misses,Total IO,Random
MB/s Reads,Random MB/s Writes,Sequential MB/s Reads,Sequential MB/s
```

```
Writes,Backend Transfer Sequential Reads,Backend Transfer Non-Sequential
Reads,Backend Transfer Writes,CFW Reads,CFW Read Cache Hits,CFW
Writes,CFW Write Cache Hits,DFW Count,DFW Normal Mode,DFW
Sequential Mode,Inhibit Cache Mode,Bypass Cache Mode
043000,11082001,270,240,210,180,150,120,90,60,30143,0:00,30,30,30,30,72
0,0,0,0,0,15,25,35,0,0,0,0,0,0,
0,0,0
043200,11082001,270,240,210,180,150,120,90,60,30143,0:00,30,30,30,30,72
0,0,0,0,0,15,25,35,0,0,0,0,0,0,
0,0,0
ldev -dkc 30143 -ldev 0:00 -L -dver 010600 -st 11.08.2001 16:29:00 -et
11.08.2001 16:33:00
```

Note: For this command, the Start Time and End Time are reported in milliseconds since January 1, 1970 for programmatic reasons.

```
043000,11082001,270,240,210,180,150,120,90,60,30143,0:00,30,30,30,30,72
0,0,0,0,0,15,25,35,0,0,0,0,0,0,
0,0,0
043200,11082001,270,240,210,180,150,120,90,60,30143,0:00,30,30,30,30,72
0,0,0,0,0,15,25,35,0,0,0,0,0,0,
0,0,0
```

3.8 Alarm History Script (ALMH)

3.8.1 ALMH Usage

This command is now deprecated and does nothing if called. Please use the alarmhist command instead.

3.9 Alarm History Script (ALARMHIST)

3.9.1 ALARMHIST Usage

The CLUI provides a command that displays Alarm History data. Alarm History objects are created when array usage exceeds a certain user-defined threshold in one of a number of categories. There are no required arguments for this command. The command's general format is as follows:

alarmhist [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>] [–dkc <serial #>]
[-metric <Category>] [-mval <Item Value>] [-st <mm.dd.yyyy hh:mm:ss>]
[-et <mm.dd.yyyy hh:mm:ss>] [-tclass <Time Class>] [-pf <password file>]

Optional arguments:

-ms <management station> The URL of the management station.

-auth <user:passwd> The username and password.

-dkc <Serial Number> Constrains the output by the array serial number.

-metric <Category> Constrains the output by the metric category. Valid values are as follows:

IO_TOTAL - LDEV IO Total
IO_RAND_TOTAL – LDEV IO Random Total
IO_RAND_READ – LDEV IO Random Read
IO_RAND_READ_CACHE – LDEV IO Random Read Cache Hits
IO_RAND_WRITE – LDEV IO Random Write
IO_RAND_WRITE_CACHE – LDEV IO Random Write Cache Hits
IO_SEQ_TOTAL – LDEV IO Sequential Total
IO_SEQ_READ – LDEV IO Sequential Read
IO_SEQ_READ_CACHE – LDEV IO Sequential Read Cache Hits
IO_SEQ_WRITE – LDEV IO Sequential Write
IO_SEQ_WRITE_CACHE – LDEV IO Sequential Write Cache Hits
MB_TOTAL – LDEV MB Total
MB_RAND_TOTAL – LDEV MB Random Total
MB_RAND_READ – LDEV MB Random Read
MB_RAND_WRITE – LDEV MB Random Write
MB_SEQ_TOTAL – LDEV MB Sequential Total
MB_SEQ_READ – LDEV MB Sequential Read
MB_SEQ_WRITE – LDEV MB Sequential Write
CFW_TOTAL – LDEV IO type
CFW_READ – LDEV IO type
CFW_READ_CACHE – LDEV IO type
CFW_WRITE – LDEV IO type
CFW_WRITE_CACHE – LDEV IO type
DFW_COUNT – LDEV IO type
DFW_NRML_COUNT – LDEV IO type
DFW_SEQ_ACCESS – LDEV IO type
DFW_WRITE_HITS – LDEV IO type
DFW_SA_WRITE_HITS – LDEV IO type
CACHEMODE_INHIBIT – LDEV IO type
CACHEMODE_BYPASS – LDEV IO type
PORT_IO_MAX – Port Maximum IO/s
PORT_IO_MIN – Port Minimum IO/s
PORT_IO_AVE – Port Average IO/s
PORT_MB_MAX – Port Maximum MB/s
PORT_MB_MIN – Port Minimum MB/s
PORT_MB_AVE – Port Average MB/s
FBUS_HI – DKC Bus Utilization
FBUS_LO – DKC Bus Utilization

	MBUS_HI – DKC Bus Utilization MBUS_LO – DKC Bus Utilization BACKEND_SEQ_READ – LDEV Backend BACKEND_NONSEQ_READ – LDEV Backend BACKEND_WRITE – LDEV Backend
-mval <Item Value>	Constrains the output by the item value, for example an LDEV or Port ID.
-st <mm.dd.yyyy hh:mm:ss>	Constrains the output by a certain start time.
-et <mm.dd.yyyy hh:mm:ss>	Constrains the output by a certain end time.
-tclass <Time Class>	The class for the time constraints. Valid arguments are: posted – Time is constrained by the posted time. updated – Time is constrained by the updated time. dispatched – Time is constrained by the updated time.
-pf <password file>	May be used in place of -auth.
-d<delim>	The delimiter for delimited display. Used with -list and -details.
-hr	Displays human-readable output. Used with -list and -details.
-?	Prints the usage statement.

3.9.2 ALARMHIST Sample Output

```
alarmhist –hr

Alarm ID: 2         Array ID: 30143          Metric Value: 1:F4
Metric Category: Total IO
Alarm State: Level_1                    Threshold: 9
Time Posted: 2002-03-01 11:40:00.0      Time Updated: 2002-03-07
16:50:00.0
Time Dispatched: 1969-12-31 17:00:00.0

++++++++++++++++++++++++++++++++++++++++

Alarm ID: 1         Array ID: 30143          Metric Value: 1:F6
Metric Category: Total IO
Alarm State: Level_0                    Threshold: 999999
Time Posted: 2002-03-01 11:21:11.0      Time Updated: 2002-03-07
16:50:00.0
Time Dispatched: 1969-12-31 17:00:00.0

++++++++++++++++++++++++++++++++++++++++
```

```
alarmhist –L

Alarm ID,Array ID,Metric,Metric Value,Level,Value,Threshold,Time
Posted,Time Updated,Time Dispatched
2,30143,Total IO,1:F4,Level_1,9,2002-03-01 11:40:00.0,2002-03-08
10:08:00.0,1969-12-31 17:00:00.0
1, 30143,Total IO,1:F6,Level_0,999999,2002-03-01 11:21:11.0,2002-03-08
10:08:00.0,1969-12-31 17:00:00.0

alarmhist

2,30143,Total IO,1:F4,Level_1,9,2002-03-01 11:40:00.0,2002-03-08
10:08:00.0,1969-12-31 17:00:00.0
1, 30143,Total IO,1:F6,Level_0,999999,2002-03-01 11:21:11.0,2002-03-08
10:08:00.0,1969-12-31 17:00:00.0
```

3.10 Port Performance Data Script (PORT)

3.10.1 PORT Usage

The CLUI provides a command that displays Port Performance data. The required elements for this command are –dkc, and –port. Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. The command's general format is as follows:

ldev [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>]
–dkc <serial #> -port <port ID> [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
<serial #>	The array serial number.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.

<port ID>	The port number in the form CLxc, where *x* is the cluster number and *c* is the port letter within the cluster.
-?	Prints the usage statement.

3.10.2 PORT Sample Output

```
port -dkc 30143 -port cl1a –hr

Serial #: 30143
Port ID:  CL1A
Time   Date   Max IO/s Min IO/s AvgIO/s Max MB/s  Min MB/s Avg MB/s
023000 11022001 900      700      800      8          6        7
023200 11022001 900      700      800      8          6        7
023400 11022001 900      700      800      8          6        7
023600 11022001 900      700      800      8          6        7
023800 11022001 900      700      800      8          6        7
024000 11022001 900      700      800      8          6        7
024200 11022001 900      700      800      8          6        7
024400 11022001 900      700      800      8          6        7
024600 11022001 900      700      800      8          6        7
024800 11022001 900      700      800      8          6        7
025000 11022001 900      700      800      8          6        7
025200 11022001 900      700      800      8          6        7
025400 11022001 900      700      800      8          6        7
025600 11022001 900      700      800      8          6        7
025800 11022001 900      700      800      8          6        7

port -dkc 30143 -port cl1a –L

Serial #,Time,Date,Port,Max IO/s,Min IO/s,Avg IO/s,Max MB/s,Min MB/s,Avg
MB/s

30143,023000,11022001,CL1A,900,700,800,8,6,7
30143,023200,11022001,CL1A,900,700,800,8,6,7
30143,023400,11022001,CL1A,900,700,800,8,6,7
30143,023600,11022001,CL1A,900,700,800,8,6,7
30143,023800,11022001,CL1A,900,700,800,8,6,7
30143,024000,11022001,CL1A,900,700,800,8,6,7
30143,024200,11022001,CL1A,900,700,800,8,6,7
30143,024400,11022001,CL1A,900,700,800,8,6,7
30143,024600,11022001,CL1A,900,700,800,8,6,7
30143,024800,11022001,CL1A,900,700,800,8,6,7
30143,025000,11022001,CL1A,900,700,800,8,6,7
```

```
30143,025200,11022001,CL1A,900,700,800,8,6,7
30143,025400,11022001,CL1A,900,700,800,8,6,7
30143,025600,11022001,CL1A,900,700,800,8,6,7

port -dkc 30143 -port cl1a

30143,023000,11022001,CL1A,900,700,800,8,6,7
30143,023200,11022001,CL1A,900,700,800,8,6,7
30143,023400,11022001,CL1A,900,700,800,8,6,7
30143,023600,11022001,CL1A,900,700,800,8,6,7
30143,023800,11022001,CL1A,900,700,800,8,6,7
30143,024000,11022001,CL1A,900,700,800,8,6,7
30143,024200,11022001,CL1A,900,700,800,8,6,7
30143,024400,11022001,CL1A,900,700,800,8,6,7
30143,024600,11022001,CL1A,900,700,800,8,6,7
30143,024800,11022001,CL1A,900,700,800,8,6,7
30143,025000,11022001,CL1A,900,700,800,8,6,7
30143,025200,11022001,CL1A,900,700,800,8,6,7
30143,025400,11022001,CL1A,900,700,800,8,6,7
30143,025600,11022001,CL1A,900,700,800,8,6,7
```

3.11 Alarm Configuration Script (ALRMCFG)

3.11.1 ALRMCFG Usage

This command is now deprecated and does nothing if called. Please use the configalarm command instead.

3.12 Alarm Configuration Script (CONFIGALARM)

3.12.1 CONFIGALARM Usage

The arguments for this command are as follows.

Required arguments:

-dkc <serial num>	The array serial number. Not required if -list is used.
-mval <Item List>	The items for which alarms are being created. This is a csv list. Not required if -list is used.

-metric <Metric Category> The alarm metric to watch. Not required if -list is used. Valid values are:

IO_TOTAL – LDEV IO Total
IO_RAND_TOTAL – LDEV IO Random Total
IO_RAND_READ – LDEV IO Random Read
IO_RAND_READ_CACHE – LDEV IO Random Read Cache Hits
IO_RAND_WRITE – LDEV IO Random Write
IO_RAND_WRITE_CACHE – LDEV IO Random Write Cache Hits
IO_SEQ_TOTAL – LDEV IO Sequential Total
IO_SEQ_READ – LDEV IO Sequential Read
IO_SEQ_READ_CACHE – LDEV IO Sequential Read Cache Hits
IO_SEQ_WRITE – LDEV IO Sequential Write
IO_SEQ_WRITE_CACHE – LDEV IO Sequential Write Cache Hits
MB_TOTAL – LDEV MB Total
MB_RAND_TOTAL – LDEV MB Random Total
MB_RAND_READ – LDEV MB Random Read
MB_RAND_WRITE – LDEV MB Random Write
MB_SEQ_TOTAL – LDEV MB Sequential Total
MB_SEQ_READ – LDEV MB Sequential Read
MB_SEQ_WRITE – LDEV MB Sequential Write
CFW_TOTAL – LDEV IO type
CFW_READ – LDEV IO type
CFW_READ_CACHE – LDEV IO type
CFW_WRITE – LDEV IO type
CFW_WRITE_CACHE – LDEV IO type
DFW_COUNT – LDEV IO type
DFW_NRML_COUNT – LDEV IO type
DFW_SEQ_ACCESS – LDEV IO type
DFW_WRITE_HITS – LDEV IO type
DFW_SA_WRITE_HITS – LDEV IO type
CACHEMODE_INHIBIT – LDEV IO type
CACHEMODE_BYPASS – LDEV IO type
PORT_IO_MAX – Port Maximum IO/s
PORT_IO_MIN – Port Minimum IO/s
PORT_IO_AVE – Port Average IO/s
PORT_MB_MAX – Port Maximum MB/s
PORT_MB_MIN – Port Minimum MB/s
PORT_MB_AVE – Port Average MB/s
FBUS_HI – DKC Bus Utilization
FBUS_LO – DKC Bus Utilization
MBUS_HI – DKC Bus Utilization
MBUS_LO – DKC Bus Utilization
BACKEND_SEQ_READ – LDEV Backend
BACKEND_NONSEQ_READ – LDEV Backend
BACKEND_WRITE – LDEV Backend

-list	Indicates that the command should list only configured alarms.

Optional arguments:

-ms <management station>	The URL of the management station.
-auth <user:passwd>	The username and password.
-pf <password file>	May be used in place of -auth.
-th1 <threshold>	The first threshold of these alarms.
-th2 <threshold>	The second threshold of these alarms.
-th3 <threshold>	The third threshold of these alarms.
-email <Email List>	A csv list of e-mail destinations.
-snmp <SNMP List>	A csv list of SNMP destinations.
-e	Indicates if the alarm is enabled.
-d<delim>	The delimiter for delimited display. Used with -list and -details.
-hr	Displays human-readable output. Used with -list and -details.
-?	Prints the usage statement.

3.12.2 CONFIGALARM Sample Output

```
configalarm -list –hr

Array ID: 30143     Item: 1:F6          Dispatch Level: 3
Threshold 1: 999999      Threshold 2: 999999      Threshold 3: 999999
Email Destinations:
SNMP Destinations:
Send to VPO: NO     Alarm Enabled: YES

++++++++++++++++++++++++++++++++++++++

Array ID: 30143     Item: 0:22          Dispatch Level: 2
Threshold 1: 99          Threshold 2: 999         Threshold 3: 9999
Email Destinations:>
SNMP Destinations:
Send to VPO: NO     Alarm Enabled: NO

++++++++++++++++++++++++++++++++++++++
```

```
configalarm -list -L

Active,Array,Item,Metric Category,Threshold 1,Threshold 2,Threshold 3,
Dispatch
Level,Email Destinations,SNMP Destinations,VPO Destination
Y,30143,1:F6,Total IO,999999,999999,999999,3,,,NO
N,30143,0:22,Total Random IO,99,999,9999,2,,,NO
N,30143,0:24,Total Random IO,99,999,9999,2,,,NO
Y,30143,1:F4,Total IO,9,99999,999999,1,,,NO
N,30143,0:00,Total IO,99999,99999,99999,1,,,NO
N,30143,1:FB,Total IO,999999,999999,999999,3,,,NO
N,30143,2:04,Total IO,999999,999999,999999,3,,,NO

configalarm -list

Y,30143,1:F6,Total IO,999999,999999,999999,3,,,NO
N,30143,0:22,Total Random IO,99,999,9999,2,,,NO
N,30143,0:24,Total Random IO,99,999,9999,2,,,NO
Y,30143,1:F4,Total IO,9,99999,999999,1,,,NO
N,30143,0:00,Total IO,99999,99999,99999,1,,,NO
N,30143,1:FB,Total IO,999999,999999,999999,3,,,NO
N,30143,2:04,Total IO,999999,999999,999999,3,,,NO
```

3.13 Host Configuration Script (HOSTCFG)

3.13.1 HOSTCFG Usage

This command requests array information from a Host Agent, removes an unwanted host, or unrequests array information. The command's general format is as follows:

hostcfg –op <op_string> -ha <HostAgent> [-auth <user:passwd>]
[-ms <URL>] [-os <operating system>] [-L] [–d<char>] [-hr] [-?]

Required arguments:

-op The operation to be performed. Not necessary if –list is used. Must be followed by one of the following:

xpinfo_req – Indicates that the Host Agent needs to send the Management Station its XPINFO data.

xpinfo_unreq – Indicates that the Management Station no longer needs XPINFO data.

ha_rem – Tells the management station to remove this Host Agent from its database.

-ha The location of the Host Agent. This can either be a host name or an IP address. Not necessary if –list is used.

Optional arguments:

-list Lists the host configuration data that is stored on the management station.

-L The output from the –list switch should be labeled, but delimited.

-d The character used to delimit output.

-hr Output from the –list switch should be in human-readable form.

-auth Authentication. Must be followed by a username and password pair in the form user:passwd.

-ms Management station. Must be followed by the URL of the management station.

-os The operating system of the Host Agent system (for example, HP-UX, WinNT, SUN, or AIX).

-? Prints the usage statement.

3.13.2 HOSTCFG Sample Output

```
hostcfg –list –hr

Host Name                                OS          Status
Last Update
hpbs1428.user.server.com            hp-ux      RECEIVED        14:04:41
01.31.2002

hostcfg –list –L

Host Name,OS,Status,Last Update
hpbs1428.user.server.com,hp-ux,RECIEVED,140441 01312002
```

```
hostcfg –list

hpbs1428.user.server.com,hp-ux,RECIEVED,140441 01312002
```

3.14 USERHOSTCFG Script (USERHOSTCONFIG)

Command options:

[-filein in_name | -streamin | -database colon:separated:no_spaces]
-fileout out_name -streamout -header -send -ms management_station_name
[-auth user:password | -pf password_file] -?

-filein <in_name>	When repeated, only uses the last in_name.
-streamin	The default input value.
-database <colon:separated:no_spaces>	A list of host names. * Using "all" by itself, without the quotation marks, is used to send each host's information.
-fileout <out_name>	When repeated, only uses the last out_name. * This parameter is effective only if all of the input records are parsed without error.
-streamout	Outputs to the console unless redirected elsewhere. * This parameter is effective only if all of the input records are parsed without error.
-header	Applies only when an output is selected. * The software ignores an incoming header line in an input file or stream-in.
-send	Sends the configuration records to the management station. * This parameter is effective only if all of the input records are parsed without error.
-ms <management_station_name>	In the form of http://servername or https://servername. *The https usage is possible when the management station is set up for SSL.
-auth <user:password>	* The user name and password are the same as for the Configuration tab.
-pf <password_file>	May be used in place of -auth.
-?	Displays the usage message, and no parsing or sending is performed.

Notes:
* Only one input source is accepted in one invocation.
* Output rows to file or screen have fields separated by commas.
* Either -auth or -pf is accepted, but not both.
* There is no output to file or to the screen unless requested.
* The commands are not case-sensitive.
* The order of command options does not matter.
* When no command options are given, the streamed-in input will be checked.
* For validity with no output presented or sent to the management station.

3.15 Data Collection Configuration Script (DCOLCFG)

3.15.1 DCOLCFG Usage

This command sets the Data Collection Controls. You can use this command to set the data collection interval and specify if data is to be collected from a particular host. The device file, DCK serial number, and the Host Agent name are required fields because they are used to identify the host. You can use the –list switch to view the Data Collection Controls because they are currently configured on the management station. The command's general format is as follows:

dcolcfg –dev <device file> -dkc <serial #> -ha <Host Agent>
[-auth <user:passwd>] [-ms <URL>] [-freq <interval>] [-c]
[-L] [-d<char>] [-hr] [-?]

Required arguments:

-dev The device file on the Host Agent. It is not necessary if –list is used.

-dkc The DKC serial number of the array. This is used for identification purposes. It is not necessary if –list is used.

-ha The host name of the Host Agent. It is not necessary if –list is used.

Optional arguments:

-list Lists all of the data collection configurations stored on the management station.

-L The output should be labeled and delimited.

-d Must be followed by the delimiter character for delimited output.

-hr The output should be in a human-readable form.

-auth Authentication. Must be followed by a username and password pair in the form user:passwd.

-ms Management station. Must be followed by the URL of the management station.

-freq The interval between data collections in minutes. It has a maximum of 60 minutes. The default is 60.

-c Indicates that this host should collect data. Leaving out this argument disables collection for this host on this device file mapped to this dkc unit.

-? Prints the usage statement.

3.15.2 DCOLCFG Sample Output

```
dcolcfg –list –hr

Host Name: hpbs1428.user.server.com    Array ID: 30143
Cmd. Dev.: /dev/rdsk/c0t0d0
Last Updated: 2002-01-31 14:04:41
Collect Freq: 10   Collection Flag: true

++++++++++++++++++++++++++++++++++++++

Host Name: hpbs1428.user.server.com   Array ID: 512
Cmd. Dev.: /dev/rdsk/c0t1d0
Last Updated: 2002-01-31 14:04:41
Collect Freq: 60   Collection Flag: false

dcolcfg –list –L

Host Name,Array ID,Cmd Device,Last Update,Collection Frequency,Collection
Flag
hpbs1428.user.server.com,48,/dev/rdsk/c0t0d0,2002-01-31 14:04:41.076,10,
true
hpbs1428.user.server.com,48,/dev/rdsk/c0t1d0,2002-01-31 14:04:41.076,60,
```

```
false

dcolcfg –list

hpbs1428.user.server.com,48,/dev/rdsk/c0t0d0,2002-01-31 14:04:41.076,10,
true
hpbs1428.user.server.com,48,/dev/rdsk/c0t1d0,2002-01-31 14:04:41.076,60,
false
```

3.16 RAID Group Data Script (RAIDGRP)

Performance Advisor XP also maintains some information about the RAID groups of the array, such as the RAID level, ACP Pair, Control Unit, and some of the mechanics of the disks.

3.16.1 RAIDGRP Usage

raidgrp –dkc <serial #> -rg <raid group> [-auth <user:passwd>] [-ms <URL>]
[-L] [-d<char>] [-hr] [-?] [-pf <password file>]

Required options:

-dkc The array serial number.

-rg The RAID group that is being queried.

Other options:

-ms The URL of the management station.

-auth The username and password.

-pf May be used in place of -auth.

-d The delimiter for delimited display.

-hr Displays human-readable output.

-? Prints the usage statement.

3.16.2 RAIDGRP Sample Output

```
raidgrp -dkc 30143 -rg 1-1 –hr

Array: 30143
Raid Group: 1-1
Raid Level: 5
ACP Pair: BH
Control Unit: 0
Disk Mech 1: R100
Disk Mech 2: R110
Disk Mech 3: R120
Disk Mech 4: R130

raidgrp -dkc 127 -rg 1-1 –L

Array,Raid Group,Raid Level,ACP Pair,Control Unit,Disk Mech 1,
Disk Mech 2,Disk Mech 3,Disk Mech 4
127,1-1,5,BH,0,R100,R110,R120,R130

raidgrp -dkc 127 -rg 1-1

127,1-1,5,BH,0,R100,R110,R120,R130
```

3.17 Event Log Data Script (EVNTLOG)

Beginning with Performance Advisor XP version 1.50.00, event logging was introduced. The event log keeps track of certain events like data purge or collection configuration. With this command you can use the CLUI to access event log data.

3.17.1 EVNTLOG Usage

evntlog [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr]
[-?] [-type <type ID>] [-sev <severity>] [-st <mm.dd.yyyy hh:mm:ss>]
[-et <mm.dd.yyyy hh:mm:ss>]

where:

-type The type of the event.

-sev The severity of the alarm, range 1 - 10.

-st The time and date of the first alarm to display.

-et The time and date of the last alarm to display.

-ms The URL of the management station.

-auth The username and password.

-pf May be used in place of -auth.

-d The delimiter for delimited display.

-hr Displays human-readable output.

-? Prints the usage statement.

3.17.2 EVNTLOG Sample Output

```
evntlog –hr

Time: 16:20:37  Date: 02.14.2002
Type: 10        Severity: 5
Description:
Purged all performance data for array 30143.

++++++++++++++++++++++++++++++++++++++++

Time: 16:20:35  Date: 02.14.2002
Type: 10        Severity: 5
Description:
All records purged for array 30143

++++++++++++++++++++++++++++++++++++++++
```

```
2 Records displayed

evntlog –L

Time,Date,Type,Severity,Description
16:20:37,02.14.2002,10,5,Purged all performance data for array 30143.
16:20:35,02.14.2002,10,5,All records purged for array 30143.

evntlog

16:20:37,02.14.2002,10,5,Purged all performance data for array 30143.
16:20:35,02.14.2002,10,5,All records purged for array 30143.
```

3.18 User-Defined Group Script (USERGRP)

A script is provided for creating, listing, and removing user-defined groups.

3.18.1 USERGRP Usage

The –items switch is a required element.

usergrp [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr]
[-?] –items <item list> | -list | -details | -rem [-name <group name>]
[-gid <group id>]

Required options:

-items Indicates that a new user-defined group is to be created.
–name is required with this option. It is followed by a csv list of items to add to this group. Each item is in the form dkc+host::ldevlist, where:
dkc+host is a DKC and host combination.
ldevlist consists of LDEVs separated by a plus (+) character or LDEV ranges (2 LDEVs separated by a hyphen [-]).
Cannot be used with –list, -details, or -rem.

-list Lists all of the groups. Cannot be used with -name, -details, or -items.

-details Shows the details for one group. Either -name or –gid is required.

-rem Removes a particular user-defined group. Either –name or –gid is required.

Other options:

-name The name of the group to define or list details.

-gid The ID number for this group.

-ms URL of the management station.

-auth The username and password.

-pf May be used in place of -auth.

-d The delimiter for delimited display.

-L Shows column headers with the delimiter

-hr Displays human-readable output.

-? Prints the usage statement.

3.18.2 USERGRP Sample Output

```
usergrp –items 10033::CLPR1-CLPR2 –name custom1

       Operation completed successfully

usergrp –list –hr

Group ID, Group Name
1   demo1

usergrp –list –L
```

Group ID, Group Name
1,demo1

usergrp -list
1,demo1

usergrp –details –hr –gid 1

Array ID: 20112 **Array Type:** XP48
Lun ID: 6 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c3t15d6
LDEV ID: 1:FE **Emulation:** OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-7
Host Group:
LUSE: N **LUSE Master:** NA
CHP Port ID: CL1F **ACP Pair ID:** BL
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Business Copy Volume 2: SMPL

++++++++++++++++++++++++++++++++++++++

Array ID: 20112 **Array Type:** XP48
Lun ID: 7 **Volume-Grp.:**-/dev/vg00 **Dev. File:** /dev/rdsk/c3t15d7
LDEV ID: 1:FF **Emulation:** OPEN-3 **SS ID:** 0004 **Raid Grp.:** 1-8
Host Group:
LUSE: N **LUSE Master:** NA
CHP Port ID: CL1F **ACP Pair ID:** BL
Cont. Access Volume: SMPL **Business Copy Volume 0:** SMPL
Business Copy Volume 1: SMPL **Business Copy Volume 2:** SMPL
Business Copy Volume 2:SMPL

++++++++++++++++++++++++++++++++++++++

usergrp –details –L –gid 1

Host ID,Array ID,Array Type,Lun ID,Volume Grp.,Dev. File,LDEV ID, Emulation,SS ID,Raid Grp.,CHP Port ID,ACP Pair ID,Continuous Access, Business Copy Vol 0,Business Copy Vol 1,Business Copy Vol 2,Host Group, LUSE,LUSE Master
hpbs1428.user.server.com,20112,XP48,7,/dev/vg00,/dev/rdsk/c3t14d7,1:F7,
OPEN-
3,0004,1-8,CL1F,BL,SMPL,SMPL,SMPL,SMPL,,N,NA
hpbs1428.user.server.com,20112,XP48,0,/dev/vg00,/dev/rdsk/c3t15d0,1:F8,
OPEN-
3,0004,1-1,CL1F,BL,SMPL,SMPL,SMPL,SMPL,,N,NA

```
usergrp –details –gid 1

hpbs1428.user.server.com,20112,XP48,7,/dev/vg00,/dev/rdsk/c3t14d7,1:F7,
OPEN-
3,0004,1-8,CL1F,BL,SMPL,SMPL,SMPL,SMPL,,N,NA
hpbs1428.user.server.com,20112,XP48,0,/dev/vg00,/dev/rdsk/c3t15d0,1:F8,
OPEN-
3,0004,1-1,CL1F,BL,SMPL,SMPL,SMPL,SMPL,,N,NA
```

3.19 Database Configuration Script (DBCONFIG)

This script provides some database configuration capabilities. The user can modify data retention times, purge data based on an array or on a particular date, or modify the log level stored in the database.

3.19.1 DBCONFIG Usage

dbconfig [-auth <user:passwd>] [-ms <URL>] [-L] [-d<char>] [-hr] [-?]
–purge | -list | -loglvl <severity> [-days <days>] [-dkc <serial number>]
[-et <mm.dd.yyyy hh:mm:ss>]

Required options (one and *only* one of the following is required):

-purge	Purges data from the management station.
-loglvl	Sets the level of log messages to store. It is followed by a number between 1 and 10.
-list	Retrieves a list of current database settings.

Options:

-days	If used with -purge, indicates the day previous to the current day at which to begin purging data. May not be used with -loglvl or -list.
-dkc	The serial number of the array for which data is to be purged. May not be used with -loglvl or -list.

-et The time and date of the last stored data collection. May not be used with -loglvl or -list.

-ms The URL of the management station.

-auth The username and password.

-pf May be used in place of -auth.

-d The delimiter for delimited display.

-L Shows column headers with the delimiter.

-hr Displays human-readable output.

-? Prints the usage statement.

3.19.2 DBCONFIG Sample Output

```
dbconfig -list -hr

Possible days retention at current collection rate: 1425
Current Log Level: 5

dbconfig -list -L

Days Possible,Log Level
1425,5

dbconfig -list

1425,5
```

3.20 Aggregate Script (AGGREGATE)

3.20.1 AGGREGATE Usage

The report CLUI application provides a command that displays Cache Partitioning data. Use the aggregate

command to request performance data that is added together to get some total performance metric, which is displayed based on time, to view the related metrics for the specific RAID Group/LDEVs.

The –items switch is a required element to produce a list of array items to aggregate. Optionally, you can specify a username and password pair by using –auth <user:passwd>. You can use –pf <password file> in place of –auth. The command's general format is as follows:

aggregate [-items <item list>] [-L] [-hr] [-st<MM.DD.YYYY hh:mm:ss>]
[-et<MM.DD.YYYY hh:mm:ss>] [-?]

where:

-items <item list>	A CSV list of DKCs, metrics, and items on the DKC on which to aggregate data. It uses the form Metric:dkc serial:itemlist, or Metric: User Defined Group.
Itemlist	A list of LDEVs, ports, ACP Pairs, RAID Groups, or ranges of each (except for RAID Groups) separated by a "+". Ranges are in the form lowitem-highitem separated by a "-". Items must be entered in their string form (case insensitive, no "-" within the port). For example: ldev_io_total:20031:1:f4-1:f9+1:fc port_io_max:10033:CL1E
-st <MM.DD.YYYY hh:mm:ss>	The lower bound on time.
-et <MM.DD.YYYY hh:mm:ss>	The upper bound on time.
-ms <URL>	The URL of the management station.
-auth <user:pass>	A username and password pair in the form username:password.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
-d<delim>	An optional parameter used to specify delimited output data.
-display	Prints all of the supported metrics.
-?	Prints the usage statement.

The following metrics are available:

LDEV_IO_TOTAL – Total LDEV IOs/sec
LDEV_IO_RAND_TOTAL - Total Random LDEV IOs/sec
LDEV_IO_RAND_READ – LDEV Random IO reads/sec

LDEV_IO_RAND_READCACHE – LDEV Random IO Reads/sec from cache
LDEV_IO_RAND_WRITE – LDEV Random IO writes/sec
LDEV_IO_SEQ_TOTAL - LDEV Total Sequential Ldev IOs/sec
LDEV_IO_SEQ_READ – LDEV Sequential IO reads/sec
LDEV_IO_SEQ_READCACHE – LDEV Sequential IO reads/sec from cache
LDEV_IO_SEQ_WRITE - LDEV Sequential IO writes/sec
LDEV_IO_CFW_TOTAL - LDEV CFW total IOs/sec
LDEV_IO_CFW_READ - LDEV CFW read IOs/sec
LDEV_IO_CFW_READCACHE - LDEV CFW read IOs/sec from cache
LDEV_IO_CFW_WRITE - LDEV CFW write IOs/sec
LDEV_IO_CFW_WRITECACHE - LDEV CFW write IOs/sec from cache
LDEV_IO_DFW_COUNT - LDEV DFW total IOs
LDEV_IO_DFW_NRML_COUNT - LDEV DFW normalized IOs
LDEV_IO_DFW_SEQ_ACCESS - LDEV DFW sequential access
LDEV_IO_DFW_WRITE_HITS - LDEV DFW writes found in cache
LDEV_IO_DFW_SA_WRITE_HITS - LDEV CFW sequential access writes found in cache
LDEV_IO_CACHEMODE_INHIBIT - LDEV cachemode inhibit IOs
LDEV_IO_CACHEMODE_BYPASS - LDEV cachemode bypass IOs
LDEV_MB_TOTAL - LDEV total MB/sec
LDEV_MB_RAND_TOTAL - LDEV total random MB/sec
LDEV_MB_RAND_READ - LDEV random read MB/sec
LDEV_MB_RAND_WRITE - LDEV random write MB/sec
LDEV_MB_SEQ_TOTAL - LDEV sequential total MB/sec
LDEV_MB_SEQ_READ - LDEV sequential read MB/sec
LDEV_MB_SEQ_WRIT - LDEV sequential write MB/sec
LDEV_BACKEND_SEQ_READ - LDEV backend sequential reads (tracks)
LDEV_BACKEND_NONSEQ_READ - LDEV backend non-sequential reads (tracks)
LDEV_BACKEND_WRITE - LDEV backend writes (tracks)
PORT_IO_MAX - Port maximum IO's/sec
PORT_IO_MIN - Port minimum IO's/sec
PORT_IO_AVE - Port average IO's/sec
PORT_MB_MAX - Port maximum MB/sec
PORT_MB_MIN - Port minimum MB/sec
PORT_MB_AVE - Port average MB/sec
ACP_PAIR_IO_TOTAL - ACP pair total IO's/sec
ACP_PAIR_IO_RTOTAL - ACP pair total random IO's/sec
ACP_PAIR_IO_RREAD - ACP pair random read IO's/sec
ACP_PAIR_IO_RREAD_HITS - ACP pair random read IO's/sec in cache
ACP_PAIR_IO_RWRITE - ACP pair random write IO's/sec
ACP_PAIR_IO_STOTAL - ACP pair total sequential IO's/sec
ACP_PAIR_IO_SREAD - ACP pair sequential read IO's/sec
ACP_PAIR_IO_SREAD_HITS - ACP pair sequential read IO's/sec in cache
ACP_PAIR_IO_SWRITE - ACP pair sequential write IO's/sec
ACP_PAIR_MB_TOTAL - ACP pair total MB/sec
ACP_PAIR_MB_RTOTAL - ACP pair total random MB/sec

ACP_PAIR_MB_RREAD - ACP pair random read MB/sec
ACP_PAIR_MB_RWRITE - ACP pair random write MB/sec
ACP_PAIR_MB_STOTAL - ACP pair total sequential MB/sec
ACP_PAIR_MB_SREAD - ACP pair sequential read MB/sec
ACP_PAIR_MB_SWRITE - ACP pair sequential write MB/sec
ACP_PAIR_UTIL_TOTAL - ACP pair utilization total
ACP_PAIR_UTIL_MP0 - ACP pair MP 0 utilization
ACP_PAIR_UTIL_MP1 - ACP pair MP 1 utilization
ACP_PAIR_UTIL_MP2 - ACP pair MP 2 utilization
ACP_PAIR_UTIL_MP3 - ACP pair MP 3 utilization
ACP_PAIR_UTIL_MP4 - ACP pair MP 4 utilization
ACP_PAIR_UTIL_MP5 - ACP pair MP 5 utilization
ACP_PAIR_UTIL_MP6 - ACP pair MP 6 utilization
ACP_PAIR_UTIL_MP7 - ACP pair MP 7 utilization
ACP_PAIR_UTIL_LEFT_MP0 - ACP pair MP 0 utilization left side
ACP_PAIR_UTIL_LEFT_MP1 - ACP pair MP 1 utilization left side
ACP_PAIR_UTIL_LEFT_MP2 - ACP pair MP 2 utilization left side
ACP_PAIR_UTIL_LEFT_MP3 - ACP pair MP 3 utilization left side
ACP_PAIR_UTIL_LEFT_MP4 - ACP pair MP 4 utilization left side
ACP_PAIR_UTIL_LEFT_MP5 - ACP pair MP 5 utilization left side
ACP_PAIR_UTIL_LEFT_MP6 - ACP pair MP 6 utilization left side
ACP_PAIR_UTIL_LEFT_MP7 - ACP pair MP 7 utilization left side
ACP_PAIR_UTIL_RIGHT_MP0 - ACP pair MP 0 utilization right side
ACP_PAIR_UTIL_RIGHT_MP1 - ACP pair MP 1 utilization right side
ACP_PAIR_UTIL_RIGHT_MP2 - ACP pair MP 2 utilization right side
ACP_PAIR_UTIL_RIGHT_MP3 - ACP pair MP 3 utilization right side
ACP_PAIR_UTIL_RIGHT_MP4 - ACP pair MP 4 utilization right side
ACP_PAIR_UTIL_RIGHT_MP5 - ACP pair MP 5 utilization right side
ACP_PAIR_UTIL_RIGHT_MP6 - ACP pair MP 6 utilization right side
ACP_PAIR_UTIL_RIGHT_MP7 - ACP pair MP 7 utilization right side
ACP_PAIR_BE_STRACKS - ACP pair backend sequential tracks
ACP_PAIR_BE_NON_STRACKS - ACP pair backend non-sequential tracks
ACP_PAIR_BE_WTRACKS - ACP pair backend tracks written
RAIDGRP_IO_TOTAL - Raid group total IO's/sec
RAIDGRP_IO_RTOTAL - Raid group total random IO's/sec
RAIDGRP_IO_RREADS - Raid group random read IO's/sec
RAIDGRP_IO_RREAD_HITS - Raid group random read IO's/sec in cache
RAIDGRP_IO_RWRITES - Raid group random write IO's/sec
RAIDGRP_IO_STOTAL - Raid group sequential total IO's/sec
RAIDGRP_IO_SREADS - Raid group sequential read IO's/sec
RAIDGRP_IO_SREAD_HITS - Raid group sequential read IO's/sec in cache
RAIDGRP_IO_SWRITES - Raid group sequential write IO's/sec
RAIDGRP_MB_TOTAL - Raid group total MB/sec
RAIDGRP_MB_RTOTAL - Raid group total random MB/sec
RAIDGRP_MB_RREADS - Raid group random read MB/sec

RAIDGRP_MB_RWRITES - Raid group random write MB/sec
RAIDGRP_MB_STOTAL - Raid group sequential total MB/sec
RAIDGRP_MB_SREADS - Raid group sequential read MB/sec
RAIDGRP_MB_SWRITES - Raid group sequential write MB/sec
RAIDGRP_BE_SREADS - Raid group backend sequential reads (tracks)
RAIDGRP_BE_NON_SREADS - Raid group backend non-sequential reads (tracks)
RAIDGRP_BE_WRITES - Raid group backend writes (tracks)
SM_CHIP_FBUS_HI_UTIL - Front end bus utilization
SM_ACP_FBUS_LO_UTIL - Front end bus utilization
CM_CHIP_MBUS_HI_UTIL - Back end bus utilization
CM_ACP_MBUS_LO_UTIL - Back end bus utilization

3.20.2 AGGREGATE Sample Output

```
aggregate -items ldev_io_total:10033:CLPR2 -st 09.16.2003 06:00:00 -et
09.16.2003 07:15:00 -hr
2003-09-16 06:00:00.0: 2606.0 2003-09-16 06:00:00.0: 2606.0
2003-09-16 06:15:00.0: 1433.0 2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0 2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0 2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0 2003-09-16 07:00:00.0: 1386.0

aggregate -items port_io_max:50129:CL1E -st 09.16.2003 05:00:00 -et
09.16.2003 07:15:00 -hr
2003-09-16 05:00:00.0: 1574.0 2003-09-16 05:00:00.0: 1169.0
2003-09-16 05:15:00.0: 1406.0 2003-09-16 05:15:00.0: 1574.0
2003-09-16 05:30:00.0: 1736.0 2003-09-16 05:30:00.0: 1736.0
2003-09-16 05:45:00.0: 1271.0 2003-09-16 05:45:00.0: 1271.0
2003-09-16 06:00:00.0: 2606.0 2003-09-16 06:00:00.0: 2606.0
2003-09-16 06:15:00.0: 1433.0 2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0 2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0 2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0 2003-09-16 07:00:00.0: 1386.0

aggregate -items port_io_max:50129:CL1E-CL1G -st 09.16.2003 05:00:00 -et
09.16.2003 07:15:00 -hr
2003-09-16 05:00:00.0: 3238.0 2003-09-16 05:00:00.0: 3248.0
2003-09-16 05:15:00.0: 2547.0 2003-09-16 05:15:00.0: 2715.0
2003-09-16 05:30:00.0: 5130.0 2003-09-16 05:30:00.0: 5130.0
2003-09-16 05:45:00.0: 3579.0 2003-09-16 05:45:00.0: 3381.0
2003-09-16 06:00:00.0: 5062.0 2003-09-16 06:00:00.0: 5062.0
2003-09-16 06:15:00.0: 2797.0 2003-09-16 06:15:00.0: 2696.0
2003-09-16 06:30:00.0: 1784.0 2003-09-16 06:30:00.0: 1805.0
2003-09-16 06:45:00.0: 4169.0 2003-09-16 06:45:00.0: 2604.0
2003-09-16 07:00:00.0: 1574.0 2003-09-16 07:00:00.0: 4226.0
```

```
Using user-defined group Fred

aggregate -items ldev_io_total:Fred
4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4396.0

aggregate -items ldev_io_total:Fred -L
2002-06-12 11:08:00.0,2002-06-12 11:09:00.0,2002-06-12 11:10:00.0,2002-
06-12 11:11:00.0,2002-06-12 11:12:00.0,2002-06-12 11:13:00.0,2002-06-12
 11:14:00.0,2002-06-12 11:15:00.0,2002-06-12 1:16:00.0,2002-06-12
11:16:33.0
4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4320.0,4396.0

aggregate -items ldev_io_total:Fred -hr
2002-06-12 11:08:00.0: 4320.0        2002-06-12 11:09:00.0: 4320.0
2002-06-12 11:10:00.0: 4320.0        2002-06-12 11:11:00.0: 4320.0
2002-06-12 11:12:00.0: 4320.0        2002-06-12 11:13:00.0: 4320.0
2002-06-12 11:14:00.0: 4320.0        2002-06-12 11:15:00.0: 4320.0
2002-06-12 11:16:00.0: 4320.0        2002-06-12 11:16:33.0: 4396.0

Using normal item list
aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc
5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5114.0

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc -L
2002-06-12 11:08:00.0,2002-06-12 11:09:00.0,2002-06-12 11:10:00.0,2002-
06-12 11:11:00.0,2002-06-12 11:12:00.0,2002-06-12 11:13:00.0,2002-06-12
11:14:00.0,2002-06-12 11:15:00.0,2002-06-12 11:16:00.0,2002-06-12
11:16:33.0
5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5040.0,5114.0

aggregate -items ldev_io_total:20031:1:f4-1:f9+1:fc -hr
2002-06-12 11:08:00.0: 5040.0        2002-06-12 11:09:00.0: 5040.0
2002-06-12 11:10:00.0: 5040.0        2002-06-12 11:11:00.0: 5040.0
2002-06-12 11:12:00.0: 5040.0        2002-06-12 11:13:00.0: 5040.0
2002-06-12 11:14:00.0: 5040.0        2002-06-12 11:15:00.0: 5040.0
2002-06-12 11:16:00.0: 5040.0        2002-06-12 11:16:33.0: 5114.0

aggregate -items port_io_max:50129:CL1E -st 09.16.2003 05:00:00 -ct
09.16.2003 07:15:00 -hr
2003-09-16 05:00:00.0: 1574.0        2003-09-16 05:00:00.0: 1169.0
2003-09-16 05:15:00.0: 1406.0        2003-09-16 05:15:00.0: 1574.0
2003-09-16 05:30:00.0: 1736.0        2003-09-16 05:30:00.0: 1736.0
2003-09-16 05:45:00.0: 1271.0        2003-09-16 05:45:00.0: 1271.0
2003-09-16 06:00:00.0: 2606.0        2003-09-16 06:00:00.0: 2606.0
```

```
2003-09-16 06:15:00.0: 1433.0        2003-09-16 06:15:00.0: 1288.0
2003-09-16 06:30:00.0: 1412.0        2003-09-16 06:30:00.0: 1433.0
2003-09-16 06:45:00.0: 1329.0        2003-09-16 06:45:00.0: 1412.0
2003-09-16 07:00:00.0: 1386.0        2003-09-16 07:00:00.0: 1386.0

aggregate -items port_io_max:50129:CL1E-CL1C -st 09.16.2003 05:00:00 -et
09.16.2003 07:15:00 -hr
2003-09-16 05:00:00.0: 3238.0        2003-09-16 05:00:00.0: 3248.0
2003-09-16 05:15:00.0: 2547.0        2003-09-16 05:15:00.0: 2715.0
2003-09-16 05:30:00.0: 5230.0        2003-09-16 05:30:00.0: 5130.0
2003-09-16 05:45:00.0: 3579.0        2003-09-16 05:45:00.0: 3381.0
2003-09-16 06:00:00.0: 5062.0        2003-09-16 06:00:00.0: 5062.0
2003-09-16 06:15:00.0: 2797.0        2003-09-16 06:15:00.0: 2696.0
2003-09-16 06:30:00.0: 1784.0        2003-09-16 06:30:00.0: 1805.0
2003-09-16 06:45:00.0: 4169.0        2003-09-16 06:45:00.0: 2604.0
2003-09-16 07:00:00.0: 1574.0        2003-09-16 07:00:00.0: 4226.0
```

3.21 Properties Utility Script (PROPUTILITY)

3.21.1 PROPUTILITY Usage

You can use the proputility script to manipulate the property file. The script's general format is as follows:

proputility [-i] [-ms <management station>] [-rauth <report username:password>]
[-cauth <config username:password>]

where:

-i	Interactive mode. The user is prompted for the management station.
ID	The report username and password pair, and the config username and password pair. For any of these items, press **Enter** to keep the current value.
-rauth	The report username and password pair. The default value for this entry is paxp:xparray.
-ms	The management station ID or IP address. The default value for this entry is localhost.
-cauth	The configuration username and password pair. The default value for this entry is confmonxp: redstar.

In interactive mode, pressing **Enter** for each entry keeps the current or default values.

4. Database Administration Commands

Database Administration functions are available as part of the CLUI as well. A separate document (ExportingPerfData.pdf) relating to the use of these commands is available in the Tools directory on the HP StorageWorks Performance Advisor XP 2.0 CD.

5. CLUI for Partially Supported Hosts

For some hosts (such as Linux), PA XP can retrieve performance data, but is unable to obtain configuration information directly from the host. To allow some level of support, a set of CLUI commands has been provided for administrators to manually enter configuration information, so that these hosts can still be used to monitor performance. A separate document (UserHostConfig.pdf) relating to the use of these commands is available in the Tools directory on the HP StorageWorks Performance Advisor XP 2.0 CD.

A. Troubleshooting

This section addresses questions and problems that customers have experienced while using the Performance Advisor XP CLUI. The following are some common error messages, their causes, and suggested solutions.

A.1 Classpath Error

Problem:
Unable to initialize threads: cannot find class java/lang/Thread Could not create Java VM

Solution:
Earlier versions of the Performance Advisor XP CLUI required the user to set some environment variables.

This error message indicates that the classpath environment variable was not set correctly. (This error should not occur with new install scripts.) Report this error directly to your HP contact.

A.2 Install Script Exits with an Error

Problem:
Install script exits with the message:
JRE was not found in path <jre_location>.
Check the location and try again.

Solution:
The location the user entered for the java environment was not valid. In UNIX variants, execute install.sh and enter the correct path to the java environment. In Windows, edit the JAVA_HOME environment variable, and

run the install.bat script again.

Problem:
Install script exits with the message:
install.sh: this script must be run as root....exiting.

Solution:
You are not logged in as the root user. Please log in as root, and run install.sh again.

A.3 Common Command Errors

Problem:
Command outputs this message:
Error reading console output.

Solution:
If you are connecting to a *nix system remotely using telnet, your terminal emulation is not supported. You can try running the command using a different terminal emulation, such as xterm or ansi. Otherwise, contact your HP representative.

Problem:
Command outputs this message:
ERROR: No data returned for command.

Solution:
One of your parameters has been mistyped or the management station does not have a data collector running for the requested data set.

B. ExportDB Command

You can use the ExportDB command to export data, including E-Lun information, to a data visualization program, such as Microsoft Excel, for charting or graphing.

The exportdb command has the following required parameters:

- -st <time string>
- -et <time string>
- -dkc <serial #>
- -file <filename>

Optionally, you can specify a management station by using –ms <URL>, and specify a username and password pair by using –auth <user:passwd>. You can use –pf <password file> in place of –auth. The -dver <XXXXXX> displays E-Lun information. The command's general format is as follows:

exportdb [-d<delim>] [-L] [-hr] [-ms <URL>] [-auth <user:passwd>]
[-st <mm.dd.yyyy hh:mm:ss>] [-et <mm.dd.yyyy hh:mm:ss>]
[-file <filename>] –dkc <serial #> -dver <XXXXXX> [-?]

where:

-d<delim>	An optional parameter used to specify delimited output data. If <delim> is not specified, a comma character is used as the default to separate the output fields. There is no space between –d and the delimiter character.
-L	An optional parameter used to specify labeled and delimited output data.
-hr	Alternatively, an optional parameter used to request the data in a human-readable format.
-ms <URL>	The address of a management station in the form http://path.to.managementstation/.
-auth <user:passwd>	A username and password pair in the form username:password.
<serial #>	The array serial number.
-st <mm.dd.yyyy hh:mm:ss>	A string in the form mm.dd.yyyy hh:mm:ss.
-et <mm.dd.yyyy hh:mm:ss>	A string in the form mm.dd.yyyy hh:mm:ss.
-file <filename>	The filename of where to send the data that is retrieved. (If the file exists, the data will be appended.)
-dver <XXXXXX>	The display version. You must choose 020000 to display the E-Lun information.
-?	Prints the usage statement.

To export the data, follow these instructions:

1. Make sure that the CLUI is installed and set up according to the CLUI installation documentation, which is located in the Tools folder on the product CD.
2. After the CLUI is installed, execute the following command at the command prompt in the working directory:

   Exportdb –st MM.DD.YYYY hh:mm:ss -et MM.DD.YYYY hh:mm:ss –file myfilename.txt -dkc <serial number>

   Exportdb is the command.
   -*st* is the date and time to begin the export.
   -*et* is the last date and time to include in the export.

-file is the full path to the file to which the data is to be exported.
-dkc <#> is the serial number of the specific disk controller from which you want to export data.
-dver <XXXXXX> is the version number of the output type. This is an optional switch. The current acceptable values for this switch are 010500, 010600, 016000, and 020000. The default is 010500.

EXAMPLE 1:
Exportdb –st 07.06.2001 11:00:00 –et 07.06.2001 12:00:00 –file 0706export.txt –dkc 31045

In Example 1, performance data will be retrieved and collected between 11 am and noon and placed in a single text file named 0706export.txt. Used in this manner (without the –dver switch), the output produced is consistent with PA Version 1.05.00. Beginning with PA Version 1.06.00, new data has been made available. By using the –dver switch (see Example 2, below), you can have the output formatted with this new data.

EXAMPLE 2:
Exportdb –st 07.06.2001 11:00:00 –et 07.06.2001 12:00:00 –file 0706export.txt –dkc 31045 -dver 010600

Note: If you specify –dver 010600, the output will be in three separate text files: one containing DKC-specific performance data (dkc_filename), one containing LDEV-specific performance data (ldev_filename), and one containing port-specific performance data (port_filename).

The data is exported in a comma-delimited file. The first line contains the "column" headers for the data that follows. All other lines contain performance data.

To import the data into Excel, follow these instructions:

1. Open your exportdb file in Excel (0706export.txt as referred to in Example 1 above). This launches the Text Import Wizard.

2. In Step 1 of 3 in the Text Import Wizard, select **Delimited** (default).

3. Enter **1** in the **Start import at row** field, and select **Windows (ANSI)** in the **File origin** field.

4. Click **Next**.

5. In Step 2 of 3 in the Text Import Wizard, select **Comma**, and clear any other delimiters if checked. Leave all other fields as the defaults.

6. Click **Next**.

7. In Step 3 of 3 in the Text Import Wizard, note the highlighted column in the **Data preview** panel. You must highlight all of the columns in your spreadsheet. To do so, press the Shift key while navigating to the last column using the scroll bar, and then click the last column. All columns should be highlighted.

8. Click **Text** in the **Column data format** panel.

9. Click **Finish**. The spreadsheet is populated with Performance Advisor XP data.

10. Select the corner cell between cells **A** and **1**. This highlights the entire spreadsheet. Go to **Format** on the menu bar, select **Column**, and then select **AutoFit Selection**. This sizes all of the columns to fit the text. The Excel performance data sheet is now complete.

B.1 ExportDB Sample Output

```
exportdb -st 09.16.2003 05:00:00 -et 09.16.2003 07:15:00 -file output.txt
-dkc 10033 -dver 020000 -hr
```

The following is the portion of data in output file ldev_output.txt, which contains the E-Lun configuration data and Cache Partitioning information. The information is appended to the end of each record. E-Port list could have one or more Port names because of the dual paths configuration. If the -hr option is not used, the E-Port list, E-DEV, and LDEV ID are in integer format.

Sample usage and output:

```
...,E-Port list, E-Seq, E-LDEV, CLPR
..., -1, -1, -1, -1
..., CL1C, 20074, 0:90, CLPR0
..., CL1C, 20074, 0:91, CLPR0
..., CL1C, 20074, 0:92, CLPR1
..., CL1C, 20074, 0:93, CLPR1
..., CL1B CL1C, 20074, 0:94, CLPR2
..., -1, -1, -1, CLPR3
```

E-Port list is the E-Lun Initiator port(s) that is connected to the external array.
E-Seq is the external array serial number.
E-LDEV is the L-DEV ID at the external array.
CLPR is the Cache Partitioning ID.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

The following is the portion of data in the output file ldev_output.txt, which contains the port attribute and external array serial number. The information is appended to the end of each record. The E-Seq list could have one or more array serial numbers because one E-Lun Initiator can connect to multiple arrays in a SAM. If the -hr option is not used, the Port ID is in integer format.

```
..., Port Type, E-Seq list
..., Fibre (E-Lun Initiator), 10099 20099
```

```
..., Fibre (E-Lun Initiator), 10099 20099
..., Fibre (E-Lun Initiator), 10088
..., Fibre (Normal), -1
..., Fibre (CV Initiator), -1
..., Fibre, -1
..., -, -1

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

The following is the portion of data in the output file ldev_output.txt, which contains the CLPR configuration data and metrics. All units for Cache size are in MB. If the -hr option is not used, the CLPR is in integer format.

```
Disk Array Serial Number, CLPR, Date, Cache Size (MB), Write Pending
(MB), Sidefile Usage (MB), Read Hits
10033, CLPR0, 2003-05-19 13:01:00.103, 8000, 96, 23, 8778
10033, CLPR1, 2003-05-19 13:01:00.103, 64000, 76, 23, 870
10033, CLPR2, 2003-05-19 13:01:00.103, 8000, 67, 23, 86
10033, CLPR3, 2003-05-19 13:01:00.103, 16000, 45, 12, 778
10033, CLPR4, 2003-05-19 13:01:00.103, 8000, 0, 0, 0
```

B.2 Translating LDEV from PA XP Data into a cu:ldev Pair

The cu:ldev mapping is obtained by dividing the LDEV value by 256. The quotient is the CU value and the remainder is the LDEV value.

The following examples illustrate how the cu:ldev mapping is done.

LDEV from Performance Advisor	cu:ldev in Decimal	cu:ldev in Hex
6	0:06	0:06
285	1:29	1:1D
289	1:33	1:21
512	2:00	2:00
515	2:03	2:03

B.3 Array Mapping

To correctly map the ACP and CHIP pairs, see the following table for the respective array.

XP 48/128 (1 ACP Pair) **Note:** The cards are lettered A-M, omitting I.		
B, L	ACP Pair 1	ACP B = 0; L = 4
C, G	CHIP Pair 1	Chip C = 0; G = 4
D, J	CHIP Pair 2	Chip D = 1; J = 5
F, K	CHIP Pair 3	Chip F = 2; K = 6

XP 48/128 (2 ACP Pairs) **Note:** The cards are lettered A-M, omitting I.		
B, L	ACP Pair 1	ACP B = 0; L = 4
F, K	ACP Pair 1	ACP F = 1; K = 5
C, G	CHIP Pair 1	Chip C = 0; G = 4
D, J	CHIP Pair 2	Chip D = 1; J = 5

XP 256/512/1024 **Note:** The cards are lettered A-Z, omitting I and O. There are 12 cards on the back (A-M) and 12 on the front (N-Z).		
B, H	ACP Pair 1	ACP B = 0; H = 4
C, J	ACP Pair 2	ACP C = 1; J = 5
D, K	ACP Pair 3	ACP D = 2; K = 6
E, L	ACP Pair 4	ACP E = 3; L = 7
P, V	CHIP Pair 1	Chip P = 0; V = 4
Q, W	CHIP Pair 2	Chip Q = 1; W = 5
R, X	CHIP Pair 3	Chip R = 2; X = 6
S, Y	CHIP Pair 4	Chip S = 3; Y = 7

XP 12000		
A, M	ACP Pair 1	ACP A = 0; M = 4
B, N	ACP Pair 2	ACP B = 1; N = 5
L, X	ACP Pair 3	ACP L = 2; X = 6
K, W	ACP Pair 4	ACP K = 3; W = 7
E, Q	CHIP Pair 1	Chip E = 0; Q = 4
F, R	CHIP Pair 2	Chip F = 1; R = 5
G, T	CHIP Pair 3	Chip G = 2; T = 6
H, U	CHIP Pair 4	Chip H = 3; U = 7
A, M	CHIP Pair 5	Chip A = 8; U = 12
B, N	CHIP Pair 6	Chip B = 9; N = 13
L, X	CHIP Pair 7	Chip L = 10; X = 14
K, W	CHIP Pair 8	Chip K = 11; W = 15

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Warranty and Trademark Statement

Nothing herein should be construed as constituting an additional warranty.

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