

# 6 Using HP Command View EVAPerf

This chapter describes how to use HP Command View EVAPerf.

## Overview

HP StorageWorks Command View EVAPerf enables you to monitor and display the following EVA performance metrics:

- Arrays
- Array controllers
- Host connections
- Host port statistics
- Physical disks
- Port status
- Replication
- Virtual disks

When you install HP Command View EVAPerf, the software components are stored in the following directory:

```
c:\Program Files\Hewlett-Packard\HP Command View EVAPerf
```

## Components

HP Command View EVAPerf includes the following components:

- `evapdcs.exe`  
`evapdcs.exe` is the EVA Data Collection Service, which gathers data from the EVAs that are visible to the host and stores it in memory cache. You can then use either `evaperf.exe` or `evapmext.dll` to retrieve and view the information. The service is set to manual when you install HP Command View EVAPerf. When you run `evaperf.exe`, the service will start and remains running until you reboot the host. You can also start and stop the service using Windows Service Manager.
- `evaperf.exe`  
`evaperf.exe` is the utility you can use to view performance metrics in a command line interface. Ensure that you run `evaperf.exe` from the directory in which it was installed or it will not find the necessary configuration files.
- `evapmext.dll`  
`evapmext.dll` is the DLL extension for Windows Perfmon, which is the utility you can use to view performance metrics in a graphical user interface.

If you use Windows Perfmon for background logging, HP recommends that you set the EVA Data Collection Service to start automatically. If you execute logging before starting this service, the startup time for the service may exceed the time that Windows Perfmon waits for the first data samples.

The EVA Data Collection service uses TCP port 860. You may need to open this port on your firewall.

**NOTE:**

You can also view performance metrics in an external application, such as Microsoft Excel, after you export the data in either a CSV (comma-separated value) or TSV (tab-separated value) format.

## Enabling access to password-protected arrays

If the arrays you want to monitor for performance are password-protected, you must identify the array's worldwide name (WWN) and password in the HP Command View EVAPerf command line interface.

**NOTE:**

The array password is first entered on the operator control panel (OCP) of the array controller. When you enter the array WWN, you can use upper or lower case letters and either include or eliminate hyphen separators. For example, 5000-1FE1-5000-CD30, 5000-1fe1-5000-cd30, and 50001FE15000cd30 are all valid WWN entries.

To set the array password in HP Command View EVAPerf:

1. Open a command prompt window.
2. Change to the directory in which HP Command View EVAPerf is installed.
3. Enter the following command:

```
evaperf spw array_WWN array_password
```

where:

- *array\_WWN* is the WWN of the array.
- *array\_password* is the password entered on the OCP of the array controller.

HP Command View EVAPerf verifies that it can access the array before adding the information in encrypted form to the `arraypass.conf` file.

```
C:\evapmt>evaperf spw 5000-1FE1-5000-A9F0-RSCHSVxx
Setting the password for array WWN: 5000-1FE1-5000-A9F0
Password set
```

### Figure 16 Using the spw command

To verify the array password, enter the following command:

```
evaperf vpw
```

Passwords are verified before they are added to the `arraypass.conf` file. The only way you can enter an incorrect password is if it was changed on the array.

## Friendly names

In HP Command View EVA, you can associate the WWNs of objects, such as arrays, virtual disks, and hosts, with more easily readable identifiers called *friendly names*. For example, you can identify an array that is known by its WWN of 5000-1FE1-5000-A9F0 as RSG14HSV1.

If you choose, you can extract this information from HP Command View EVA and use it in HP Command View EVAPerf. To do so, you must know the user name and password used to access the HP Command View EVA user interface. The default user name and password combination is administrator | administrator. If you entered a different combination when you installed HP Command View EVA or another application using SmartStart, use that combination.

## Enabling HP Command View EVA access

Before you add friendly name information for an array, you must configure HP Command View EVA access to the array:

1. Open a command prompt window.
2. Change to the directory in which HP Command View EVAPerf is installed.
3. Enter the following command and press **Enter**:

```
evaperf fnh [hostname] [username] [password]
```

where:

- *hostname* is the name of the host running HP Command View EVA.
- *username* is the HP Command View EVA user interface user name.
- *password* is the HP Command View EVA user interface password.

HP Command View EVAPerf verifies that it can access HP Command View EVA before adding the information to the `fnamehosts.conf` file.




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### NOTE:

If you enter the `fnh` command without parameters, HP Command View EVAPerf displays a list of known hosts running HP Command View EVA.

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## Adding friendly names

To add friendly name information for the arrays configured with the `fnh` command:

1. Open a command prompt window.
2. Change to the directory in which HP Command View EVAPerf is installed.
3. Enter the following command and press **Enter**:

```
evaperf fn
```

The `fnames.conf` file is created. Any friendly name information that exists for the hosts running HP Command View EVA and listed in the `fnamehosts.conf` file is extracted from HP Command View EVA and stored in the `fnames.conf` file.

Update the `fnames.conf` file when you make changes to the arrays.



#### NOTE:

The `fnames.conf` file must reside in the directory in which HP Command View EVAPerf was installed.

## Adding friendly names manually

You can create and maintain the `fnames.conf` file manually using a standard text editor.

Each line in the file contains a WWN that uniquely identifies an object, followed by the friendly name of the object. When reading this file, HP Command View EVAPerf ignores blank lines and lines that begin with `#`. Below is a listing from a manually created file.

```
# Sample friendly names file
#
# Storage Cells managed by http://hadmta1:2301
5000-1FE1-0013-A100-EVA3_V3
5000-1FE1-0015-0B50-Array1
#
# VDisks on Array1
6005-08B4-0000-0046-0002-4000-113B-0000-Nigel-001
#
# Storage Cells managed by http://rsg9ma4:2301
5000-1FE1-5000-A9F0-RSG14HSV1
5000-1FE1-0015-0EE0-test
5000-1FE1-0000-00D0-RGS11HSV2_new
```

**Figure 17 Sample friendly names file**

## Using short names

If the friendly names you created for objects in HP Command View EVA are lengthy, it may be difficult to view these long names using HP Command View EVAPerf. In the HP Command View EVAPerf command line interface, you can substitute contractions for full names.

When you install HP Command View EVAPerf, the `fnames_sample.dict` file is also installed. You can either:

- Rename this file to `fnames.dict` and modify its contents to include the short names.
- Create a separate file called `fnames.dict` using a standard editor.

Within the `fnames.dict` file, enter a short name for each long friendly name as follows:

```
<long name> <short name>
```

Consider the following when creating names:

- If either the long or short name contains spaces, enclose the name in quotes.
- If a backslash character occurs within a string enclosed in quotes, you must add another backslash .
- Enter one long and short name combination per line.

```
# Sample contractions dictionary.1
"Vasu\Copy of Vasu"·Vasu-c¶
chienchi·cc¶
Vasu\Vasu·VV¶
"Vasu·Vasu"·VV¶
```

**Figure 18 Sample fnames.dict file**

To use the short name you have entered in this file, add the `-cn` modifier to any command you enter in the HP Command View EVAPerf command line interface. The short name is substituted when a long name is encountered.

## Using Windows Perfmon

This section describes how to display and manage EVA performance metrics using the graphical user interface, Windows Perfmon. It assumes that you are familiar with Windows Perfmon and how to access and configure it to display EVA performance metrics.

Windows Perfmon does not permit more than a single object level of hierarchy. Therefore, objects, such as virtual disks, are grouped as a single list of instances, even though they may be located on different EVAs. For example, the instance name indicate the array on which the virtual disk is located.

Physical disks use the friendly name (if available) of the array plus the enclosure and bay number of the disk (for example, HSV\_CD20:Q700H - en:1 - bay:1).

## Objects and counters

The following table lists the EVA objects and performance counters you can select for monitoring. For more information, see the *Performance Analysis of the EVA Storage System using HP StorageWorks Command View EVAPerf* white paper, which is available from the white papers web site (<http://h18006.www1.hp.com/storage/arraywhitepapers.html>) and the HP Command View EVA web site (<http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html>).

<p><b>HP EVA Continuous Access Tunnels</b></p> <ul style="list-style-type: none"> <li>• Copy retries</li> <li>• Round trip delay</li> <li>• Write retries</li> <li>• Copy in KB/s</li> <li>• Copy out KB/s</li> <li>• Write in KB/s</li> <li>• Write out KB/s</li> </ul>	<p><b>HP EVA Host Connection</b></p> <ul style="list-style-type: none"> <li>• Queue depth</li> </ul>	<p><b>HP EVA Host Port Statistics</b></p> <ul style="list-style-type: none"> <li>• Av Queue Depth</li> <li>• Read KB/s</li> <li>• Read Latency (µ sec)</li> <li>• Read Req/s</li> <li>• Write KB/s</li> <li>• Write Latency (µ sec)</li> <li>• Write Req/s</li> </ul>
<p><b>HP EVA Physical Disk</b></p> <ul style="list-style-type: none"> <li>• Drive Latency (ms)</li> <li>• Drive Queue Depth</li> <li>• Read KB/s</li> <li>• Read Req/s</li> <li>• Write KB/s</li> <li>• Write Req/s</li> </ul>	<p><b>HP EVA Storage Array</b></p> <ul style="list-style-type: none"> <li>• Total Host KB/s</li> <li>• Total Host Req/s</li> </ul>	

<b>HP EVA VDisk</b>	<b>HP EVA Storage Controller</b>	
<ul style="list-style-type: none"> <li>Read Hit KB/s</li> <li>Read Hit Latency (ms)</li> <li>Read Hit Req/s</li> <li>Read Miss KB/s</li> <li>Read Miss Latency (ms)</li> <li>Read Miss Req/s</li> <li>Write KB/s</li> <li>Write Latency (ms)</li> <li>Write RP/s</li> </ul>	<ul style="list-style-type: none"> <li>% Data Transfer Time</li> <li>% Processor Time</li> </ul>	
KB/s = kilobytes per second RP/s = requests per second.		



**NOTE:**

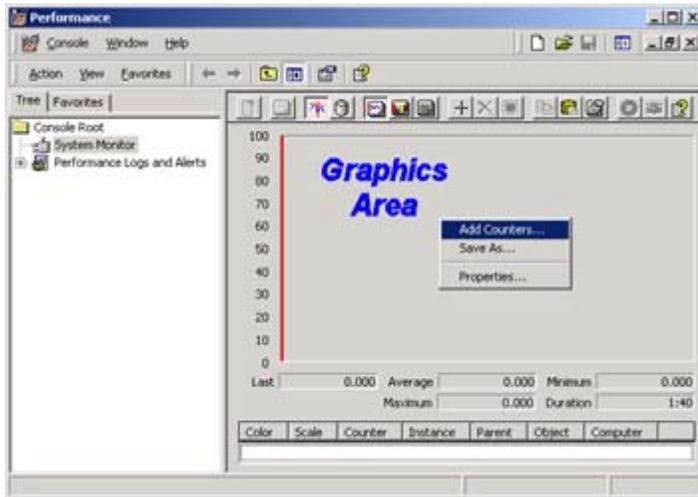
The Drive Latency counter for the HP EVA Physical Disk object reports different information, depending on the controller. On the HSV200 series of controllers, this counter reports write latency only. On the HSV100 series controllers, this counter reports both read and write latency.

## Displaying metrics

To display EVA performance metrics using Windows Perfmon:

1. Start Windows Perfmon.

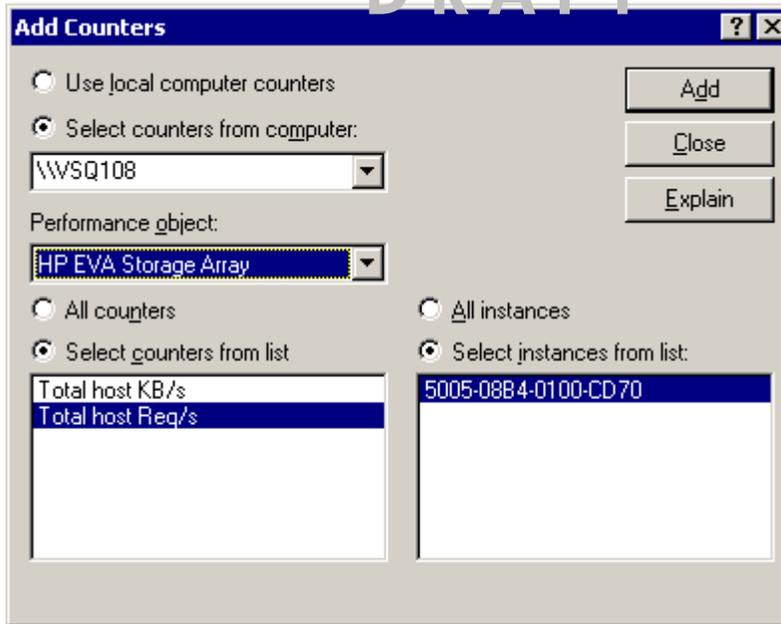
The Perfmon window appears.



**Figure 19 Perfmon window**

2. Right-click in the graphics area (a menu appears). Select Add Counters and click OK.

The Add Counters dialog box appears.



**Figure 20 Add Counters dialog box**



**NOTE:**

To view a description of a counter, select a counter and click Explain.

3. In the Select counters from computer box, select the host on which HP Command View EVAPerf is running.
4. From the Performance object list box, select an HP EVA object to monitor (for example, HP EVA Storage Array).
5. Click All counters, or select the counters you wish to view. Click Explain to view descriptions of the EVA counters.
6. Click All instances, or select the instances you wish to view.
7. Click Add to add the counters to the window. The utility begins displaying the performance metrics of the selected EVA object.
8. To add other objects, repeat the steps. To remove metrics, select the metric from the list and click the remove icon (.
9. To close the utility, click Close.

## Using the command line interface

You can use a command prompt window to display EVA performance data in a tabular format. The following example assumes that you are familiar with command prompt use.

To display EVA performance metrics using the command line interface:

1. Open a command prompt window.

2. Change to the directory in which HP Command View EVAPerf is installed.
3. To display a list of arrays visible to HP Command View EVAPerf, enter `evaperf ls` and press Enter.

```

Device      Path ID Target LUN Product Product Ctlr Serial      Name      Node
-----
\\.\Scsi3: 0 8      0      0      HSU100 3020  A      P66C5D2910100U 5000-1FE1-5000-B800 5000-1FE1-5000-B800
\\.\Scsi3: 0 9      0      0      HSU100 3020  B      P66C5D2910100E 5000-1FE1-5000-B800 5000-1FE1-5000-B800

C:\Program Files\Hewlett-Packard\EVA Performance Monitor>_
    
```

**Figure 21 Arrays visible to HP Command View EVAPerf**

4. The output that displays is not updated automatically while you are viewing it. To continuously display refreshed array data, enter the following command and press Enter:

`evaperf as -cont`

The output is refreshed every second or you can use the `-cont n` parameter to specify the refresh frequency.



**NOTE:**

MB/s values are based on 1 MB = 1,000,000 bytes.  
 KB/s values are based on 1 KB=1,024 bytes.

## Commands

The general syntax for commands is:

`evaperf <command> [options]`



**NOTE:**

You can specify the options in any order.

The following table lists the available commands and corresponding descriptions.

**Table 9 HP Command View EVAPerf commands**

Command	Description
all	Displays a summary of the array status by running the following commands together: <code>ls</code> , <code>as</code> , <code>cs</code> , <code>vd</code> , <code>vdg,hc</code> , <code>ps</code> , <code>hps</code> , <code>pd</code> , <code>pdg</code> , and <code>drt</code> .
as	Displays array status.
cs	Displays controller status.
drt	Displays data replication tunnel statistics.
dpw wwn	Deletes the password for the specified array from the host's Windows registry. The password is not deleted on the array.

Command	Description
fnh	Manages friendly name hosts as follows: <ul style="list-style-type: none"> <li>Displays a list of known hosts running HP Command View EVA.</li> <li>Adds a host to the friendly name host list.</li> </ul>
fn	Performs the following series of tasks: <ul style="list-style-type: none"> <li>Scans the friendly name host list.</li> <li>Queries HP Command View EVA about the hosts on this list for all friendly name hosts known to HP Command View EVA.</li> <li>Adds the friendly name information found to the <code>fnames.conf</code> file.</li> </ul>
h, help, or evaperf	Displays help for HP Command View EVAPerf.
hc	Displays host connection information. The Port column in the output does not display data for the HSV200 series of controllers. Therefore, a hyphen (-) appears in the Port column.
hps	Displays host port statistics.
ls	Displays a list of EVAs that are visible to the host.
luns	Displays LUNs visible to the host.
pd	Displays physical disk data.
pda	Displays statistics for physical disk activity.
pdg	Displays the total physical disk data by disk group.
ps	Displays port status.
rc	Resets the error counters reported by the <code>ps</code> command.
spw WWN password	Sets the password for the specified array so HP Command View EVAPerf can access the array for performance metrics. This password must match the password entered on the OCP of the array controller.
vd	Displays virtual disk statistics. Only virtual disks that have been presented to a host are displayed.
vdg	Displays the total virtual disk data by disk group.
vdts	Displays virtual transfer size histograms. This command is only available on the HSV200 series of controllers.
vdts [lunwwn]	Graphs virtual disk transfer size histograms for all LUNs or a given WWN. This command is only available on the HSV200 series of controllers.
vdrl	Displays virtual disk read latency histograms. This command is only available on the HSV200 series of controllers.
vdrl [lunwwn]	Graphs virtual disk read latency histograms for all LUNs or a specific WWN. This command is only available on the HSV200 series of controllers.
vdwl	Displays virtual disk write latency histograms. This command is only available on the HSV200 series of controllers.
vdwl [lunwwn]	Graphs virtual disk write latency histograms for all LUNs or a specific WWN. This command is only available on the HSV200 series of controllers.
vpw	Verifies array passwords for use with HP Command View EVAPerf.

The following table lists the modifiers you can use in the command line interface. Modifiers must be preceded by the minus sign (-).

**Table 10 Command modifiers**

Modifier	Description
-cn	Substitutes contractions from the <code>fnames.dict</code> file.
-cont <i>n</i>	Runs an HP Command View EVAPerf command continuously. You can specify the interval by adding a number ( <i>n</i> ). Otherwise, the default interval is one second. Press <b>Ctrl+C</b> to exit from this mode.
-csv	Displays data in CSV (comma-separated value) format and automatically includes a time stamp. The time stamp format can be modified using the <code>-ts1</code> or <code>-ts2</code> modifiers.
-dur <i>n</i>	Specifies the duration of a continuous mode session. For example, if you enter <code>evaperf vd -csv -cont -dur 30</code> , virtual disk data is displayed in CSV format at one second intervals for a total of 30 seconds.
-fd <i>keyword</i>	Displays data that contains the specified keywords. You must enter at least one keyword. To enter multiple keywords, separate each keyword with a space. For example, if you enter <code>evaperf -fd test prelim good</code> , the data that displays contains the words <code>test</code> , <code>prelim</code> , and <code>good</code> .
-fo <i>filename</i>	Copies output to a file as well as displaying it in the command prompt. You can combine this modifier with <code>-cont</code> and <code>-dur</code> for a fixed-time data capture. For example, if you enter <code>evaperf vd -cont 5 -dur 30 -fo capture.log</code> , virtual disk data is displayed in CSV at five second intervals for a total of 30 seconds and is also written to the <code>capture.log</code> file.
-fvd <i>vdisk [vdisk]*</i>	Limits virtual disk data collection to the specified virtual disk(s). You must enter at least one virtual disk. You can also combine this modifier with <code>-sz</code> to limit data collection to the specified array(s). For example, if you enter <code>evaperf vd -test1 -test2 -sz server1</code> , data is collected for virtual disks <code>test1</code> and <code>test2</code> on array <code>server1</code> only. You can use this modifier with the <code>vd</code> , <code>vdrl</code> , <code>vdwl</code> , and <code>vdts</code> commands.
-KB	Displays output data in kilobytes per second (1024). The default is megabytes per second (1,000,000).
-nfn	Specifies that friendly names should <i>not</i> be used.
-nh	Specifies that no headings be included in CSV (comma-separated value) output.
-nots	Specifies that a time stamp not be included in the CSV output.
-sz <i>array [array]*</i>	Limits array data collection to the specified array(s). You must enter at least one array and you can use this modifier with any command. When specifying arrays, you can use either the array's WWN or friendly name. For example, if you enter <code>evaperf as -server1 -server3</code> , data is displayed for arrays <code>server1</code> and <code>server3</code> only. If you do not include this modifier, data is collected from all arrays visible to the host.
-tsv	Displays output in tab-separated variable format with a time stamp.
-ts1	Adds a time stamp to the <code>-csv</code> output in the following format: <code>Fri Jul 23 16:23:05 2004</code> .
-ts2	Adds a time stamp to the <code>-csv</code> output in the following format: <code>23/Jul/2004 16:23:05 2004</code> . This is the default format.
-us	Display times in microseconds (the default is milliseconds). Latencies are displayed in milliseconds (ms) by default. Time that is less than one millisecond appears as zero. Use the <code>-us</code> option to show times in microseconds for more accuracy.