Veritas™ Array Integration Layer Array Configuration Guide

AIX, HP-UX, Solaris

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Veritas™ Array Integration Layer
Array Configuration Guide

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Appendix A   Using the vaildiag CLI Tool

VAIL Requirements For AIX, HP-UX, and Solaris

Perform these configuration tasks only if you manually installed VAIL. If you installed using the Common Product Installer (CPI), the configuration was done as part of the installation.

The following configuration tasks are described:

■ "Joining the default domain" on page 9

■ "Enabling VAILAgent automatic restart on reboot" on page 10

Joining the default domain

Use the vaildiag CLI tool to enable VAIL functionality when you manually install VAIL:

1 Issue the vaildiag command to join the default domain. Use one of the following forms:

■ If you are running in an environment with a central management server:

```
/opt/VRTSvail/bin/vaildiag /JOINDOMAIN
-agentname VAILAgent -password Pword
-adminpasswd AdministratorPwd
```

Pword is the `vea_agent` account password that you created when you installed Storage Foundation Management Server (see the *Storage Foundation Management Server Installation Guide*).

AdministratorPwd is the password for the Authentication Broker administrator's account (see the *Storage Foundation Management Server Installation Guide*).

Note: If you enter passwords at the command line, they are displayed. To avoid displaying them, do not specify passwords when you enter the JOINDOMAIN command. The vaildiag CLI prompts you for the passwords and does not echo them to the command line.

■   If you are not running in an environment with a central management server:

```
/opt/VRTSvail/bin/vaildiag /JOINDOMAIN -agentname
VAILAgent -standalonemode
```

2   Start VAILAgent; issue the following at the command line:

```
/opt/VRTSobc/pal33/bin/vxpalctrl -a VAILAgent -c start
```

Enabling VAILAgent automatic restart on reboot

You can enable or disable the automatic restart of VAILAgent on system reboot. If VAIL was installed by CPI, automatic start on reboot was enabled as part of the installation. If you installed VAIL manually, you can issue the following vaildiag command to enable automatic start on reboot:

```
/opt/VRTSvail/bin/vaildiag /ENABLEAUTOSTART
-agentname VAILAgent
```

EMC CLARiiON Storage Array Requirement for Solaris

The following sections list requirements for EMC CLARiiON storage arrays:

- "Supported models" on page 11
- "Physical connection requirements" on page 11
- "Supported array vendor CLI and array firmware versions" on page 12
- "Device setup requirements/configuration" on page 12
- "VAIL provider setup requirements/configuration" on page 13
- "Verifying vendor CLI/API functionality" on page 14

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connection:

- Network connection between each array and the host where the CLARiiON VAIL provider is installed

Supported array vendor CLI and array firmware versions

For information about supported CLI and firmware versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

Storage array host

The CLARiiON array has two Storage Processors (SP). You can configure each SP with a separate IP address and configure the CLARiiON VAIL provider for both IP addresses. If you do this and one IP address stops responding, the CLARiiON VAIL provider can then access the array through the other IP address. See "VAIL provider setup requirements/configuration" on page 13 for information about configuring the CLARiiON VAIL provider for a second CLARiiON IP address. The CLARiiON VAIL provider does not use the second IP address until after a rescan. A rescan occurs whenever the provider or array polling interval elapses or when you manually issue a rescan. You can use the vaildiag CLI tool to issue a rescan (see "Rescanning array providers" on page 51).

Access Logix enabled

Storage array firmware must have Access Logix enabled.

Shared Access configuration

Storage array host must have "Shared Access Configuration," which requires Access Logix enabled.

NaviCLI

Install NaviCLI on the host where the CLARiiON VAIL provider is installed. Install NaviCLI at the default location `/opt/Navisphere/bin`. If you want to install NaviCLI at a location other than the default location, use the vaildiag CLI to change the path to NaviCLI (see "Setting an array provider CLI path" on page 54).

VAIL provider setup requirements/configuration

Configuring both CLARiiON storage processors

CLARiiON arrays have two Storage Processors (SP). If you want to enable use of the second SP in case the first SP stops responding, configure the CLARiiON VAIL provider for both IP addresses (see "Storage array host" on page 12). Configure the second IP address when you configure the array for discovery.

VAIL provider setup

You configure the CLARiiON VAIL provider through the vaildiag CLI (see "Using the vaildiag CLI Tool" on page 47). For CLARiiON storage arrays, specify the following arguments:

Table 2-1 CLARiiON VAIL Provider Setup Requirements

Argument	Value
/CONNECT	Required for array discovery
agentname	Name of the agent managing the array. Specify "VAILAgent"
agentport	The port number of the agent on the host. To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.
/ADDARRAY	Required for array discovery
provider	vx_emc_clariion
arrayid	IP address, name, or the fully qualified domain name for one array Storage Processor
optionalparam	To enable failover in case one SP fails, specify the IP address of the other SP as an optional parameter. `PeerSpName` can be a fully qualified domain name, host name, or IP address of the second SP: `PeerSpName=SecondSPIP.domain.com` .

Issue a command similar to the following to configure a CLARiiON array for discovery:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /ADDARRAY -provider
vx_emc_clariion -arrayid arrayIP optionalparam
PeerSpName=SecondSPIP.domain.com
```

When vaildiag queries for a username and password, enter null values.

> **Note:** If an SP fails, VAIL does not use the second IP address until after a rescan. A rescan occurs whenever the provider or array polling interval elapses or when you manually issue a rescan (see "Rescanning array providers" on page 51).

Verifying vendor CLI/API functionality

To verify that the required CLI/APIs are installed and functioning, perform the following tasks on the host where the CLARiiON VAIL provider is installed. Install all specified software on the host and storage array and perform any specified configuration described in this section for the array and host before performing these tasks.

To use the NaviCLI from the command line, log on as root. Ensure that the host where NaviCLI is installed has an entry in the agent configuration file in the storage array for `root`. The entry is similar to `root@DBED_host_IPaddress`.

To verify that NaviCLI is installed

◆ Issue the following command. If the NaviCLI is installed, information will be returned for NaviCLI:

```
pkginfo -l NAVICLI
```

To determine the NaviCLI version

◆ After verifying that NaviCLI is installed, enter the following at the command line:

```
navicli -help
```

The NaviCLI version is returned. Verify the installed version is supported. See "Supported array vendor CLI and array firmware versions" on page 12.

To verify that Access Logix is installed on the array

◆ After verifying that NaviCLI is installed, enter the following at the command line:

```
navicli -h arrayIPAddress storagegroup -status
```

where *arrayIPAddress* is the IP address, the fully qualified domain name, or name of one of the Storage Processors in the array

If Access Logix is installed, information about Data Access Control is displayed. For example:

```
Data Access control: ENABLED
```

If Access Logix is not installed, an error message similar to the following is displayed:

```
This command is not supported by this version of Core
software.
```

To determine the Access Logix or Base (firmware) software version

◆ After verifying that NaviCLI is installed, list the software and versions installed in the array. Enter the following at the command line:

```
navicli -h arrayIPAddress getall -host
```

where *arrayIPAddress* is the IP address, the fully qualified domain name, or name of one of the Storage Processors in the array

Verify that the version of the Base software with Active State set to Yes has Access Logix enabled. If the Base software version is specified as supported in your product HCL, Access Logix is enabled in that version. See "Supported array vendor CLI and array firmware versions" on page 12.

To verify that the NaviCLI can communicate with CLARiiON arrays

◆ After verifying that NaviCLI is installed, enter the following at the command line:

```
navicli -h arrayIPAddress networkadmin -get
```

where *arrayIPAddress* is the IP address, the fully qualified domain name, or name of one of the Storage Processors in the array

If the NaviCLI can communicate with the array, information similar to the following is displayed:

```
Storage Processor:                 SP A
Storage Processor Network Name:    RENG_CX600A
Storage Processor IP Address:      10.150.90.95
Storage Processor Subnet Mask:     255.255.248.0
Storage Processor Gateway Address: 10.150.88.1
```

If this command succeeds, the *arrayIPAddress* can be used to communicate with the array. See "VAIL provider setup requirements/configuration" on page 13.

If the array address is incorrect or the Storage Processor is not accessible, an error message similar to the following is displayed:

```
Error: networkadmin command failed Cannot access device
```

EMC Symmetrix Storage Array Requirement for AIX, HP-UX, and Solaris

The following sections specify requirements and configuration information for EMC Symmetrix storage arrays:

- ■ "Supported models" on page 17
- ■ "Physical connection requirements" on page 17
- ■ "Supported array vendor CLI and array firmware versions" on page 18
- ■ "Device setup requirements/configuration" on page 18
- ■ "VAIL provider setup requirements/configuration" on page 19
- ■ "Verifying vendor CLI/API functionality" on page 19

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connections:

- ■ Fibre Channel connection between each array and the host where the Symmetrix VAIL provider is installed

Supported array vendor CLI and array firmware versions

For information about supported CLI and firmware versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

EMC Solutions Enabler (SYMCLI)

To support discovery, install EMC Solutions Enabler on the host where the Symmetrix VAIL provider is installed. For instructions on installing EMC Solutions Enabler, see your vendor documentation.

If you want to install EMC Solutions Enabler at a location other than the default location, use the vaildiag CLI to input the install location to the EMC Symmetrix VAIL provider (see"Setting an array provider CLI path" on page 54).

LUN visibility

To fully discover an array, the host on which EMC Solutions Enabler is installed must be able to see a VCMDB LUN in the storage array. In addition to the VCMDB LUN, one other LUN in the array should be visible to the host where Solutions Enabler is installed. This LUN acts as a "gatekeeper" and enables communication between the host and the storage array. If the VCMDB LUN is the only LUN in the array that is visible to the host, Solutions Enabler uses it as the gatekeeper, but this is not an optimal configuration. If a second LUN is not visible to the host, determine whether the LUNs in the array are all masked or zoned away from the host where Solutions Enabler is installed. Verify that the VCMDB and other gatekeeper devices are not in the NR (Not Ready) state. See the EMC Host Connectivity Guide documentation for information about performing Fabric Configuration, Device Mapping, and Device Masking operations required to make gatekeeper devices visible to the host where Solutions Enabler is installed.

Exclude the VCMDB and other gatekeeper devices from multipathing.

Configuration data corruption

Do not run more than one tool (GUI or CLI) at the same time that alters the device masks on an array because this can corrupt array configuration data.

World Wide Names (WWNs)

EMC limits the number of World Wide Names (WWNs) that can be assigned to a single FA port to 32. If more than 32 WWNs are assigned to an array port, EMC Solutions Enabler returns an error message. To assign new HBA WWNs to an array port that already has the maximum 32 WWNs assigned to it, first remove some of the WWNs from the port to create available slots in the database. For instructions, see your vendor documentation.

VAIL provider setup requirements/configuration

EMC Symmetrix and DMX arrays are discovered automatically; the Symmetrix VAIL provider does not require configuration to discover the arrays.

Verifying vendor CLI/API functionality

This section describes how to verify EMC Solutions Enabler functionality.

Installing and verifying Solutions Enabler Licenses

To enable EMC Symmetrix discovery, install and enable the following set of EMC licenses on the host where Solutions Enabler is installed:

Table 3-1   EMC Solutions Enabler Licenses

License	Purpose	Representative Command to Determine Presence or Absence of License
BASE	Enables the Base component, which includes routine commands such as `symdev`, `symcfg`, and `symdisk`	`symdev list`
Configuration Mgr	Enables the `symconfigure` command, which is used for management operations such as LUN binding and LUN creation and deletion	`symconfigure query`
Dev Masking	Enables the `symmask` and `symmaskdb` commands, which are used for management operations for LUN masking	`symmaskdb list database`

Table 3-1   EMC Solutions Enabler Licenses

License	Purpose	Representative Command to Determine Presence or Absence of License
TimeFinder	Enables the `symmir` command, which is used for discovery and management of Timefinder snapshots	`symmir -sid` *someSymArayID* `-f` *textFileName* `attach`
		someSymArayID is the ID of a Symmetrix array
		textFileName is a text file containing the device numbers of an STD and BCV device pairin the specified array that have no TimeFinder relationship
		If the attach operation succeeds, you can restore the original STD-BCV relationship by issuing the following command:
		`symmir -sid` *someSymArayID* `-f` *textFileName* `detach`

Verifying EMC Solutions Enabler licenses are installed

Before performing any license verification, verify that EMC Solutions Enabler is installed on the host where the EMC Symmetrix VAIL provider is installed.

To determine whether the EMC Solutions Enabler is installed

◆ EMC Solutions Enabler (SYMCLI) creates soft links for all SYMCLI binaries at `/usr/symcli/bin`. If these links are not present, issue the following command at the root directory:

    `find . -name symcfg -print`

The path to where Solutions Enabler is installed is displayed. For example:

    `./opt/emc/WideSky/V5.2.0/bin/symcfg`

If Solutions Enabler is not installed, a path is not returned. If no path is displayed, see "EMC Solutions Enabler (SYMCLI)" on page 18.

To determine what Solutions Enabler licenses are installed and enabled

1 To determine what Solutions Enabler licenses are installed and enabled, look at the contents of the symapi_licenses.dat file. The file is located at /usr/emc/API/symapi/config. The following is an example of the contents of the symapi_licenses.dat file:

```
License Key: XXXX-XXXX-XXXX-XXXX WIDESKY Feature: TimeFinder
/ Symmetrix
License Key: XXXX-XXXX-XXXX-XXXX WIDESKY Feature: BASE /
Symmetrix
License Key: XXXX-XXXX-XXXX-XXXX WIDESKY Feature:
ConfigChange / Symmetrix
License Key: XXXX-XXXX-XXXX-XXXX WIDESKY Feature: SERVER /
Symmetrix
License Key: XXXX-XXXX-XXXX-XXXX WIDESKY Feature: DevMasking
/ Symmetrix
```

Licenses can be bundled together, in which case you might not see all installed and enabled licenses in the symapi_licenses.dat file. If all of the required licenses are listed, continue at "Verifying CLI functionality" on page 22; otherwise, continue at the next step.

2 Change to the directory where the EMC Solutions Enabler is installed and run the commands shown in "EMC Solutions Enabler Licenses" on page 19. If the license for the command is not installed an error message is displayed. If that occurs, install the license following the procedure in "To Install the EMC Solutions Enabler licenses."

To Install the EMC Solutions Enabler licenses

1 Change to the directory where the EMC Solutions Enabler is installed. See "To determine whether the EMC Solutions Enabler is installed" on page 20.

2 Invoke the WideSky License Management Facility (LMF):

```
symlmf
```

The following is displayed:

```
E M C    W I D E S K Y

                        WIDESKY LICENSE MANAGEMENT FACILITY

Register WIDESKY License Key (y/[n]) ?
```

3 Enter **y** to input a license key.
   The following is displayed:

```
Enter WIDESKY License Key   :
```

4 Enter the license key in the format specified by EMC documentation. If you enter a valid key, a message similar to the following is displayed:

```
The WideSky License Key for the BASE feature was
successfully registered.

Register WIDESKY License Key (y/[n]) ?
```

5 To enter more license keys, continue at .

To exit, enter **n**.

Verifying CLI functionality

To verify that the required vendor CLIs are installed and functioning, perform the following tasks on the host where the EMC Solutions Enabler is installed. Install all specified software on the host and storage array and perform any specified configuration before performing these tasks. Log on as "root."

To determine where the EMC Solutions Enabler is installed

◆ EMC Solutions Enabler (SYMCLI) creates soft links for all SYMCLI binaries at /usr/symcli/bin. If these links are not present, issue the following command at the root directory:

```
find . -name symcfg -print
```

The path to where Solutions Enabler is installed is displayed. For example:

```
./opt/emc/WideSky/V5.2.0/bin/symcfg
```

If Solutions Enabler is not installed, a path is not returned. If no path is displayed, see "EMC Solutions Enabler (SYMCLI)" on page 18.

To determine the EMC Solutions Enabler version

1 At the command line, change to the directory where Solutions Enabler is installed. See "To determine where the EMC Solutions Enabler is installed" on page 22.

2 Enter the following at the command line:

```
./symcli
```

The SYMCLI version number and other information is displayed. For example:

```
Symmetrix Command Line Interface (SYMCLI) Version V5.2.0.0
(Edit Level: 425)

built with SYMAPI Version V5.2.0.0 (Edit Level: 425)
```

3 Verify the EMC Solutions Enabler version is supported.

To determine the array firmware version

1   At the command line, change to the directory where Solutions Enabler is installed. See "To determine where the EMC Solutions Enabler is installed" on page 22.

2   Enter the following at the command line:

```
./symcfg list
```

A list of all connected Symmetrix arrays is displayed. For example:

```
                    S Y M M E T R I X

                       Mcode   Cache      Num Phys   Num Symm
SymmID   Attachment Model Version Size (MB) Devices    Devices

000182504558 Local 3400   5266    2048       1         755
```

3   Determine the microcode version, which is 5266 in this example; verify that the version is supported.

To determine whether the Symmetrix arrays and physical devices are visible to the host

1   At the command line, change to the directory where Solutions Enabler is installed. See "To determine where the EMC Solutions Enabler is installed" on page 22.

2   Enter the following at the command line:

```
./symcfg discover
```

A message similar to the following is displayed:

```
This operation may take up to a few minutes. Please be
patient...
```

3   If the previous command did not return an error message, enter the following at the command line:

```
./symcfg list
```

```
A list of all connected Symmetrix arrays is displayed. For
example:
                    S Y M M E T R I X

                       Mcode   Cache      Num Phys   Num Symm
SymmID    Attachment  Model Version Size (MB) Devices   Devices
000182504558 Local    3400   5266    2048       1        755
```

4   Verify that all connected Symmetrix arrays are listed. If a connected array is not listed, this could mean that no device in that array is visible to the host. See "LUN visibility" on page 18 for more information.

5   If the previous command returned a list of arrays, enter the following at the command line for each array listed:

```
    ./sympd -sid symmetrixId list
```

symmetrixId is one of the IDs returned by the `symcfg list` command.
A list of all devices in the specified array that are visible to the host is
displayed. For example:

```
./sympd -sid 000182504558 list

Symmetrix ID: 000182504558

        Device Name              Directors           Device
--------------------------- ------------ ------------------

                                                              Cap
Physical            Sym  SA :P DA :IT  Config Attribute Sts  (MB)
--------------------------- ------------ ---------------------
/dev/rdsk/c1t1d0s2 0000 01B:0 02A:D1 2-Way Mir N/Grp'd VCM WD 8
```

6 For each connected Symmetrix array, verify that at least one physical device
is listed. If you see an error message similar to "Gatekeeper not found," this
means that no LUNs in the specified array are visible to the host. If this
occurs, see "LUN visibility" on page 18.

To determine whether a VCMDB device for each array is visible to the host

---

Note: To enable full discovery and management of a Symmetrix array, the
VCMDB in that array must be visible to the host where the EMC Solutions
Enabler is installed.

---

1 At the command line, change to the directory where Solutions Enabler is
installed. See "To determine where the EMC Solutions Enabler is installed"
on page 22.

2 Determine the VCMDBs that are visible to the host. Enter the following at
the command line:

```
    ./vcmfind
```

Information is returned for each VCMDB that is visible to the host. For
example:

```
    # ./vcmfind
    @(#) vcmfind, Copyright EMC Corp. 2002 Revision: V5.2-425 $
     ADAPTER        WWN             PATHNAME          FA
     pci@1f,0       20000001730027b0  /dev/rdsk/c1t1d0s2  1ba
```

3 Determine the VCMDB for each Symmetrix array that is attached to the
host. Enter the following at the command line:

```
    ./sympd list -vcm
```

Information is returned listing the VCMDB for each array that is visible to
the host. For example:

```
C:\Program Files\EMC\WideSky\bin>sympd list -vcm

Symmetrix ID: 000182504558

Device Name                        Directors         Device
-------------------------- ------------- ------------------
                                                             Cap
Physical            Sym  SA :P DA :IT Config  Attribute  Sts (MB)
-------------------------- ------------- ---------------------
/dev/rdsk/c1t1d0s2 0000 01B:0 02A:D1 2-Way Mir N/Grp'd VCM WD 8
```

4 Verify that each VCMDB listed in the step 3 display is also listed in the step 2 display.

To determine whether a VCMDB device for each array is in the ready state

1 At the command line, change to the directory where Solutions Enabler is installed. See "To determine where the EMC Solutions Enabler is installed" on page 22.

2 Determine the state of each VCMDB that is visible to the host where Solutions Enabler is installed. Enter the following at the command line:

```
./symdev list -vcm
```

Information is returned listing the state of each VCMDB that is visible to the host. For example:

```
# ./symdev list -vcm

Symmetrix ID: 000182504558

        Device Name            Directors              Device
-------------------------- ------------- ---------------------
                                                             Cap
Sym   Physical           SA :P DA :IT Config Attribute   Sts (MB)
-------------------------- ------------- ---------------------
0000 /dev/rdsk/c1t1d0s2 01B:0 02A:D1 2-Way Mir N/Grp'd VCM WD 8
```

3 Notice that the status (Sts) of the VCMDB (VCM) is WD (Write Disabled), meaning the device is ready. If the status is NR, meaning Not Ready, the VCMDB cannot be used. If the VCMDB status is NR, make the device ready. Issue the following command:

```
symdev -sid symmetrixId ready symDeviceID
```

symmetrixId is the array ID and *symDeviceID* is the Symmetrix device ID

To make ready the VCMDB in the proceeding example (whose *symDeviceID* is 0000), issue the following at the command line:

```
./symdev -sid 000182504558 ready 000
```

Hitachi HiCommand Storage Array Requirements for HP-UX and Solaris

The following sections list requirements for Hitachi storage arrays that use the HiCommand® management framework:

■ "Supported models" on page 27

■ "Physical connection requirements" on page 27

■ "Supported array vendor CLI and array firmware versions" on page 28

■ "Device setup requirements/configuration" on page 28

■ "VAIL provider setup requirements/configuration" on page 29

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connections:

■ Network connection between the Hitachi HiCommand Server and the host where the HiCommand VAIL provider is installed

■ Network connection between the HiCommand storage arrays and the Hitachi HiCommand Server

For more information, consult the documentation supplied with your Hitachi HiCommand storage array or visit the Hitachi Web site (http://www.hds.com).

Supported array vendor CLI and array firmware versions

The Hitachi HiCommand VAIL provider does not require a vendor CLI to discover the HiCommand arrays. For information about supported array firmware and HiCommand server versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

Hitachi HiCommand server

Configured with:

■ An administrator-level account with valid login credentials (username and password)

■ An IP address

■ A separate administrative-level user account for the HiCommand VAIL provider to use to manage the HiCommand arrays. Ensure that no user is logged on to this account. "VAIL provider setup requirements/configuration" on page 29 describes how to configure the HiCommand VAIL provider to use this account information.

■ The Hitachi arrays to manage. Use the HiCommand DeVice Manager to configure the HiCommand server.

■ The host where the HiCommand VAIL provider is installed if the HiCommand Server is configured to accept requests from only specified hosts.

Hitachi HiCommand server software

The Hitachi HiCommand Server software *cannot* be co-resident with other software. See HiCommand documentation for more information.

Hitachi 9900 Series and 9900V Series

Configure SNMP on the storage array SerVice Processor (SVP) host. Use the storage array SVP to enter the IP address of the Hitachi HiCommand Server. Also ensure the following:

- SVP notebook on the array is running:
  - Microsoft Windows 98 (for the 9900 Series)

    or

  - Microsoft Windows 2000 (for the 9900V Series)
- SVP is running in View mode.
- SVP is *not* running in Modify mode; if it is, change the mode to View using the SVP console.
- SNMP traps are *not* enabled in the SVP

Configuring arrays for HiCommand server management

If an array is configured to accept requests from only specified hosts, ensure that the HiCommand Server is listed.

Hitachi LUN security license

To use LUN Security, the Hitachi LUN Security license must be installed. Contact Hitachi for purchase this license. If you already have it, see your vendor documentation for details.

Hitachi remote console

Disable any Hitachi Remote Consoles because they will interfere with array management. See your vendor documentation for details.

VAIL provider setup requirements/configuration

You configure the HiCommand VAIL provider for the Hitachi HiCommand servers (not the arrays) through the vaildiag CLI (see "Using the vaildiag CLI Tool" on page 47). For HiCommand servers, enter the following values:

Table 4-1   HiCommand VAIL Provider Setup Requirements

Field	Value
/CONNECT	Required for array configuration

Table 4-1   HiCommand VAIL Provider Setup Requirements

Field	Value
agentname	Name of the agent managing the HiCommand server. Specify "VAILAgent"
agentport	The port number of the agent on the host. To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.
/ADDARRAY	Required for array configuration
provider	vx_hicommand
arrayid	IP address, name, or the fully qualified domain name for the HiCommand server. The HiCommand VAIL provider communicates with the HiCommand server through default port 2001. You can change the HiCommand server communication port when you specify the HiCommand server IP Address by making an entry similar to the following: *myHiCommandServer.mydomain:*2010
username	Valid administrative-level username for the HiCommand server
password	Valid administrative-level password for the HiCommand server

Issue a command similar to the following to configure a HiCommand server for discovery:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /ADDARRAY -provider
vx_hicommand -arrayid HCserverIP:port -username
HICommandServerLogin -password
HiCommandServerPassword
```

Hewlett-Packard StorageWorks EVA Storage Array Requirements for Solaris

The following sections list requirements for CommandCentral Storage to properly discover and manage Hewlett-Packard StorageWorks EVA storage arrays:

- "Supported models" on page 31
- "Physical connection requirements" on page 31
- "Supported array vendor CLI and array firmware versions" on page 32
- "Device setup requirements/configuration" on page 32
- "VAIL provider setup requirements/configuration" on page 33
- "Verifying vendor CLI/API functionality" on page 34

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connections:

- Fibre Channel connection between each HP EVA storage array and the HP OpenView Storage Management Appliance (Management Appliance) host that is managing the array

- Network connection between each Management Appliance and the host where the HP EVA VAIL provider is installed

For more information, consult the documentation supplied with your Hewlett-Packard storage array or visit the Hewlett-Packard web site (http://www.hp.com).

Supported array vendor CLI and array firmware versions

For information about supported CLI and firmware versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

HP OpenView Storage Management Appliance host

Configure the following:

- the "administrator" account that the VAIL provider logs on to

- IP address

HP Storage System Scripting Utility (SSSU)

Install HP Storage System Scripting Utility (SSSU) on the host where the HP EVA VAIL provider is installed. To install SSSU at a location other than the default location, use the vaildiag CLI to set the array provider CLI path for the VAIL provider (see "Setting an array provider CLI path" on page 54).

For more information, consult the documentation supplied with your Hewlett-Packard storage array or visit the Hewlett-Packard web site (http://www.hp.com).

VAIL provider setup requirements/configuration

You configure the HP EVA VAIL provider through the vaildiag CLI ((see "Using the vaildiag CLI Tool" on page 47). For HP StorageWorks EVA storage arrays, enter the following values:

Table 5-1 HP EVA Storage Arrays VAIL Provider Setup Requirements

Argument	Value
/CONNECT	Required for array configuration
agentname	Name of the agent managing the HP EVA array. Specify "VAILAgent"
agentport	The port number of the agent on the host. To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.
/ADDARRAY	Required for array configuration
provider	vx_hp_eva
arrayid	IP address, name, or the fully qualified domain name for the HP OpenView Storage Management Appliance host.
username	"administrator" **Note:** This is the Command View EVA account that the HP EVA VAIL provider uses to manage HP EVA arrays
password	Password for the Command View EVA "administrator" user-name **Note:** Ensure that you are using the password to log in to the Command View EVA administrator account and not the password to log in to the Management Appliance administrator account. For more information, contact your Hewlett-Packard customer representative.

Issue a command similar to the following to configure an HP EVA for discovery:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /ADDARRAY -provider
vx_hp_eva -arrayid HPopenViewApplianceIP -username
administrator -password adminPassword
```

Verifying vendor CLI/API functionality

To verify that the required CLI/APIs are installed and functioning, perform the following tasks on the host where the SSSU is installed. Install all specified software on the host and storage array and perform any specified configuration before performing these tasks. Log on as root.

To verify the functionality of the SSSU CLI

◆ Run the SSSU in interactive mode by entering `/opt/CPQhsv/bin/sssu` (if you did not install the SSSU at this default location, enter the path to the SSSU). If the CLI is installed and functioning correctly, a message similar to the following is displayed:

```
SSSU Build 8 for hp command view eva 3.1
NoSystemSelected>
```

To verify that SSSU can communicate with HP Command View EVA

Note: Use this procedure to verify the SSSU can communicate with the HP Command View EVA and that the Command View EVA can communicate with the EVA arrays that it is managing.

---

1 Install the required software and perform any configuration specified for the Management Appliance and storage arrays. Use information in this section as a guide.

2 Start the SSSU in interactive mode (see "To verify the functionality of the SSSU CLI" on page 34).

3 On the host where the SSSU is installed, enter the following at the command line:

```
select manager Management_Appliance_IP_address
username=administrator password=administrator_password
```

Management_Appliance_IP_address is the IP address of the HP Management Appliance that is managing the HP EVA arrays.
`administrator` is the user name for the HP Command View EVA account that CommandCentral Storage uses to manage the HP EVA arrays.
administrator_password is the user-specified password to access the Command View EVA `administrator` account.

4 Enter the following at the command line:

```
show cell
```

The names of the HP EVA arrays that the Command View EVA is managing are displayed at the command line. The display looks similar to the following (where `Veritas` is the name of an HP EVA array):

```
NoCellSelected> show cell
Cells available on this Manager:
  Veritas

NoCellSelected>
```

IBM TotalStorage Enterprise Storage Server (ESS/Shark) Storage Array Requirements for AIX and Solaris

The following sections list requirements for IBM ESS (Shark) storage arrays:

- "Supported models" on page 37
- "Physical connection requirements" on page 37
- "Supported array vendor CLI and array firmware versions" on page 38
- "Device setup requirements/configuration" on page 38
- "VAIL provider setup requirements/configuration" on page 38
- "Verifying vendor CLI/API functionality" on page 39

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connection:

■ Network connection between each array and the host where the IBM Shark VAIL provider is installed

For more information, consult the documentation supplied with your IBM storage array or visit the IBM web site (http://www.ibm.com).

Supported array vendor CLI and array firmware versions

For information about supported CLI and firmware versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

IBM Enterprise Storage Server (ESS/Shark)

Configure the ESS (shark) with an:

■ Administrator-level account with valid login credentials (username and password)

■ IP address

IBM Enterprise Storage Server Command Line Interface (ESSCLI)

Install IBM Enterprise Storage Server Command Line Interface (ESSCLI) on the host where the IBM Shark VAIL provider is installed. The ESSCLI requires jre 1.3.1 or higher installed on the host where the ESSCLI is installed. Install ESSCLI at the default location /opt/ibm2105cli. If you want to install ESSCLI at a location other than the default location, use the vaildiag CLI to change the path to ESSCLI (see "Setting an array provider CLI path" on page 54).

VAIL provider setup requirements/configuration

You configure the Shark VAIL provider through the vaildiag CLI (see "Using the vaildiag CLI Tool" on page 47). For IBM ESS Storage Arrays, enter the following values:

Table 6-1   ESS Storage Arrays VAIL Provider Setup Requirements

Field	Value
/CONNECT	Required for array configuration

Table 6-1   ESS Storage Arrays VAIL Provider Setup Requirements

Field	Value
agentname	Name of the agent managing the IBM shark array. Specify "VAILAgent"
agentport	The port number of the agent on the host. To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.
/ADDARRAY	Required for array configuration
provider	vx_ibmshark
arrayid	IP address, name, or the fully qualified domain name for the IBM Enterprise Storage Server (ESS) (the host running the IBM ESS software)
username	Valid administrator-level username for the ESS
password	Valid administer-level password for the ESS
optionalparam	If you are using the failover capability of the array, specify the failover IP address optional parameter: `-optionalparam "FailoverIP=`*`failoverIPaddress`*`"`

Issue a command similar to the following to configure an IBM Shark for discovery:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /ADDARRAY -provider
vx_ibmshark -arrayid Specialist1IP -username
specialistName -password password -optionalparam
"FailoverIP=failoverIPaddress"
```

If there is more than one ESS array in your storage network, you can designate one of the Enterprise Storage Servers (ESS) to manage all the ESS arrays. If this is the case, then only configure the IBM Shark provider for the primary ESS; otherwise, you must configure the IBM Shark provider for each ESS array separately.

Verifying vendor CLI/API functionality

To verify that the required CLI/APIs are installed and functioning, perform the following tasks on the host where ESSCLI is installed. Install all specified software on the host and storage array and perform any specified configuration before performing these tasks. Log on as root.

To determine whether ESSCLI can access a Shark array

1   Issue the following command at the command line:

    pathToESSCLI esscli -s *specialistIP* -u *userName* -p
    passWord list server

pathToESSCLI is the path to the location where ESSCLI is installed. On UNIX, the path is similar to the following:

    /opt/ibm2105cli/

specialistIP is the IP address, fully qualified domain name, or array name of a Shark array

userName is the username that the Shark provider uses to log on to the Shark array

passWord is the password for *userName*

2   If ESSCLI is functioning correctly and can access the Shark array, information about the array is displayed in a format similar to the following:

```
Mon Nov 04 16:35:09 PST 2002 IBM ESSCLI 2.1.0.0

Server    Model Mfg    WWN              CodeEc   Cache
Nvs   Racks
----------------------------------------------------------
------------
2105.23029  800    013  5005076300C0978D  2.0.1.48   8GB
2048MB    1
```

If the specified Shark array is unreachable or the IP address is incorrect, an error message similar to the following is displayed:

```
esscli 202: The specified server address is not known to the
network.
java.net.UnknownHostException: adjf
    at
    java.net.InetAddress.getAllByName0(InetAddress.java:591)
    at
    java.net.InetAddress.getAllByName0(InetAddress.java:560)
    at java.net.InetAddress.getByName(InetAddress.java:469)
    at java.net.Socket.<init>(Socket.java:121)
    at com.ibm.jsse.JSSESocket.<init>(Unknown Source)
    at com.ibm.jsse.JSSESocketFactory.createSocket(Unknown
    Source)
    at
    com.ibm.net.ssl.internal.www.protocol.https.n.e(Unknown
    Source)
    at
    com.ibm.net.ssl.internal.www.protocol.https.e.a(Unknown
    Source)
    at
    com.ibm.net.ssl.internal.www.protocol.https.s.m(Unknown
    Source)
```

```
              at
              com.ibm.net.ssl.internal.www.protocol.https.s.<init>(Unk
              nown Source)
              at
              com.ibm.net.ssl.internal.www.protocol.https.n.<init>(Unk
              nown Source)
              at
              com.ibm.net.ssl.internal.www.protocol.https.n.a(Unknown
              Source)
              at
              com.ibm.net.ssl.internal.www.protocol.https.n.a(Unknown
              Source)
              at
              com.ibm.net.ssl.internal.www.protocol.https.HttpsURLConn
              ection.conne
              at
              rsCliSeascape.rsCliSecConnectThread.run(rsCliSenderImpl.
              java:2528)
      Operation Failed. RC=2
```

IBM TotalStorage DS6000 and DS8000 Series Storage Array Requirements for AIX

The following sections list requirements for IBM TotalStorage DS6000 and DS8000 series storage arrays:

■ "Supported models" on page 43

■ "Physical connection requirements" on page 43

■ "Supported array vendor CLI and array firmware versions" on page 44

■ "Device setup requirements/configuration" on page 44

■ "VAIL provider setup requirements/configuration" on page 44

Supported models

For information about supported array models, see the Hardware Compatibility List (HCL) for your product.

Physical connection requirements

For full discovery, make the following physical connection:

■ Network connection between each IBM TotalStorage Management Console and the host where the IBM DS8000 VAIL provider is installed

For more information, consult the documentation supplied with your IBM storage array or visit the IBM web site (http://www.ibm.com).

Supported array vendor CLI and array firmware versions

For information about supported CLI and firmware versions, see the Hardware Compatibility List (HCL) for your product.

Device setup requirements/configuration

IBM DS6000 and DS8000 array

Configure the IBM TotalStorage Management Console with an IP address and an administrator-level account with valid login credentials (username and password).

IBM DSCLI

Install the IBM DSCLI on the host where the IBM DS8000 VAIL provider is installed. It is recommended that you use a DSCLI from the same microcode release bundle as the array microcode. The DSCLI requires JRE 1.4.1 or higher installed on the host where the DSCLI is installed. Install DSCLI at the default location /opt/ibm/dscli. If you want to install DSCLI at a location other than the default location, use the vaildiag CLI to change the path to DSCLI (see "Setting an array provider CLI path" on page 54).

VAIL provider setup requirements/configuration

You configure the DS8000 VAIL provider through the vaildiag CLI (see "Using the vaildiag CLI Tool" on page 47). For IBM DS6000 and DS8000 Storage Arrays, enter the following values:

Table 7-1   DS6000 and DS8000 Storage Arrays VAIL Provider Setup Requirements

Field	Value
/CONNECT	Required for array configuration
agentname	Name of the agent managing the IBM DS6000 or DS8000 array. Specify "VAILAgent" unless you created a different agent

Table 7-1   DS6000 and DS8000 Storage Arrays VAIL Provider Setup
Requirements

Field	Value
agentport	The port number of the agent on the host. To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.
/ADDARRAY	Required for array configuration
provider	vx_ibmds8000
arrayid	IP address, name, or the fully qualified domain name for the IBM TotalStorage Management Console
username	Valid administrator-level username for the IBM TotalStorage Management Console
password	Valid administer-level password for the IBM TotalStorage Management Console

Issue a command similar to the following to configure an IBM DS6000 or
DS8000 for discovery:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /ADDARRAY -provider
vx_ibmds8000 -arrayid TSMCIP -username TSMCName
-password password
```

Using the vaildiag CLI Tool

VERITAS Array Integration Layer (VAIL) software interfaces third-party hardware storage arrays with Symantec storage software. VAIL providers are software modules that enable Symantec applications to discover, query, and manage third-party storage arrays. A VAIL provider manages a specific type of third-party storage array.

The following topics are covered:

- "Verifying that VAILAgent is running" on page 48
- "Using the /CONNECT option" on page 48
- "Getting the port number to communicate with VAILAgent" on page 48
- "Listing VAIL providers" on page 49
- "Listing discovered storage arrays" on page 50
- "Listing configured arrays" on page 50
- "Rescanning array providers" on page 51
- "Setting the VAIL provider polling interval" on page 52
- "Viewing the VAIL provider polling interval" on page 53
- "Setting array provider optional parameters" on page 53
- "Setting an array provider CLI path" on page 54
- "Enabling and disabling VAILAgent automatic start on system reboot" on page 55
- "Joining the default domain" on page 56

The `vaildiag` CLI tool is installed at the default location of `/opt/VRTSvail/bin` on all hosts where VAIL is installed, so you can run `vaildiag` on the host that you are querying. Use the `vaildiag` /CONNECT option to specify the agent (VAILAgent in most cases) that is managing the array and the communication

port. See the vaildiag manpage for information in addition to what is provided here.

Verifying that VAILAgent is running

Before you issue an array configuration vaildiag command, verify that VAILAgent is running. Issue the following:

```
/opt/VRTSobc/pal33/bin/vxpalctrl -a VAILAgent -c status
```

If VAILAgent is running, the following is displayed:

```
Agent State: RUNNING
```

If you do not see this message, issue the following to start VAILAgent:

```
/opt/VRTSobc/pal33/bin/vxpalctrl -a VAILAgent -c start
```

Using the /CONNECT option

The /CONNECT option connects to the specified VAIL agent on the host where you are running vaildiag; you cannot connect to a VAIL agent on a different host. Use the /CONNECT option whenever you issue an array configuration vaildiag option.

/CONNECT specifies the agent to connect to and the port number to use. The syntax is as follows:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port
```

where *port* specifies the port to communicate with VAILAgent.

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Getting the port number to communicate with VAILAgent

You can query PBX for the agent port to use with the /CONNECT option. Issue the following command:

```
/opt/VRTSpbx/bin/pbxcfg -p
```

Output similar to the following is displayed:

```
Auth User:0 : root
Secure Mode: false
Debug Level: 10
Port Number: 1556
```

```
PBX service is not cluster configured
```

In this example the port number to use with the /CONNECT option is 1556. For example:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport 1556 /PROVIDERS
```

Yields an output similar to the following:

```
Connecting to localhost
Provider : vx_emc_clariion [version]
Provider : vx_emc_symmetrix [version]
Provider : vx_hicommand [version]
Provider : vx_hp_eva [version]
Provider : vx_ibmshark [version]
```

Listing VAIL providers

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can use vaildiag to get a list of all providers running under VAILAgent.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

The provider names displayed by this command are the names that you can use to specify an individual VAIL provider to vaildiag if, for example, you want vaildiag to execute a command for only one provider. Only the providers that are supported on a specific platform are installed and will be listed.

To get a list of VAIL providers running under VAILAgent

◆ Enter a command similar to the following:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /PROVIDERS
```

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Listing discovered storage arrays

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can get a list of storage arrays discovered by the providers running under VAILAgent.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

To get a list of discovered arrays

◆ Enter a command similar to the following:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname
VAILAgent -agentport port /SHOWARRAYS -all
```

A list of discovered arrays, similar to the following, for the providers running under VAILAgent is displayed:

```
Connecting to server: sol8.mydomain.com

Name      : HITACHI  9960 (30646)
Provider  : vx_hicommand
State     : Normal
State Desc:

Name      : EMC CLARiiON (APM00031201102)
Provider  : vx_emc_clariion
State     : Normal
State Desc:
```

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Listing configured arrays

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can get a list of all out-of-band storage arrays, HP EVA management appliances, and Hitachi HiCommand servers that are configured for discovery by the providers running under VAILAgent on a specified host.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

The arrays that are listed using the configured switch include all out-of-band arrays, HP EVA management appliances, and HiCommand servers that are configured for discovery and all discovered in-band arrays.

If all attached out-of-band arrays are not listed by /SHOWARRAYS -all, use the configured switch to get a list of all arrays that are configured for discovery.

Hitachi arrays are managed through the HiCommand framework, a vendor server. In this case, the individual arrays are not configured for discovery. Instead, the HiCommand server is configured for discovery.

Compare the configured list with the discovered list to determine which configured arrays or servers are not being discovered.

To get a list of configured servers

◆ Enter a command similar to the following:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname VAILAgent
-agentport port /SHOWARRAYS -configured
```

Use this list to determine whether all of the configured HiCommand servers and out-of-band arrays are also discovered.

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Rescanning array providers

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

The vaildiag tool has commands that you can use to update status information for storage arrays discovered by providers under VAILAgent.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

Syntax for this command is:
```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname VAILAgent
        -agentport port /RESCAN -all | -provider ProviderName
[-array ArrayID]
```

Rescans the specified storage arrays that are running under VAILAgent for updated status information. You can rescan all arrays under VAILAgent, all arrays managed by a specified VAIL provider, or a single array.

`all` rescans all storage arrays managed through VAILAgent for updated status.

`provider` *ProviderName* specifies the provider (running under VAILAgent) whose arrays you are rescanning. The names of the providers running under VAILAgent can be obtained using `vaildiag /PROVIDERS` command (see "Listing VAIL providers" on page 49).

`array` *ArrayID* optionally, rescans the array specified by *ArrayID* managed by the provider specified by *ProviderName*. You can obtain Array IDs for the discovered storage arrays managed by providers running under VAILAgent by issuing the `vaildiag /SHOWARRAYS` command (see "Listing discovered storage arrays" on page 50).

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Setting the VAIL provider polling interval

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can use `vaildiag` to set the polling interval for array providers running under VAILAgent. The polling interval determines how often the VAIL provider queries the storage arrays it manages for updated status.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

To set the provider polling interval

◆ Issue a command similar to the following:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agentname VAILAgent
-agentport port /SETDEFPOLLINGINT -provider ProviderName
-pollinginterval minutes
```

`provider` *ProviderName* specifies the VAIL provider running under VAILAgent whose polling interval you are setting. To obtain a *ProviderName* list for all VAIL providers running under VAILAgent, issue the `/PROVIDERS` command (see "Listing VAIL providers" on page 49).

pollinginterval *minutes* specifies the polling interval in minutes for the VAIL provider. If you enter an invalid value, the default value is used. The minimum interval is 1 minute; the default value is 30 minutes.

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Viewing the VAIL provider polling interval

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can use vaildiag to view the polling interval for array providers running under VAILAgent. The polling interval determines how often the VAIL provider queries the storage arrays it manages for updated status.

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

To view a provider polling interval

◆ Issue a command similar to the following:

    /opt/VRTSvail/bin/vaildiag /CONNECT -agenthost *hostIP* -agentname
    VAILAgent -agentport *port* /GETDEFPOLLINGINT   -provider
    ProviderName
    provider *ProviderName* specifies the VAIL provider running under
    VAILAgent whose polling interval you are getting. To obtain a
    ProviderName list for all VAIL providers running under VAILAgent, issue
    the vaildiag /PROVIDERS command.

Setting array provider optional parameters

Note: VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

You can use vaildiag to set optional parameters for array providers that use them.

> **Note:** If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

Syntax for this command is:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agenthost hostIP -agentname
VAILAgent -agentport port /SETOPTIONALPROVPARAM [-provider
ProviderName] [-parameter1\ Value1] [-parameter2 Value2][...]
```

provider *ProviderName* specifies the array provider whose optional parameters you are setting. To obtain a *ProviderName* list for all array providers on the host, issue the vaildiag /PROVIDERS command.

-parameter1 *Value1* -parameter2 *Value2* ... specify key/value pairs for the optional parameters

Optional parameters can be used to specify the location of a CLI or API that an array provider uses to communicate with a storage array, or for other purposes. To get a list of a provider's optional parameters, issue /GETOPTIONALPROVPARAM command on the provider.

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Setting an array provider CLI path

> **Note:** VAILAgent must be running before issuing the vaildiag command described in this section (see "Verifying that VAILAgent is running" on page 48).

Some array providers use a CLI or API installed on the host to communicate with the arrays they are managing. If you install the CLI in a location other than the default location, you can use vaildiag to specify the location where the CLI is installed. The following table lists the provider and the property key to specify CLI location:

Table A-2

Array Provider	CLI	Property Name/Key
EMC CLARiiON	NAVICLI	cliexepath
EMC Symmetrix	EMC Solutions Enabler (SYMCLI)	cliexepath

Table A-2

Array Provider	CLI	Property Name/Key
HP EVA	SSSU	cliexepath
IBM ESS (Shark)	ESS CLI	cliexepath
IBM DS8000	DSCLI	cliexepath

Note: If you are running on a Solaris host where VxFAS is installed, the Symmetrix VAIL provider runs under StorageAgent rather than VAILAgent.

The following example shows how to use `vaildiag` to set the EMC Solutions Enabler install path:

```
/opt/VRTSvail/bin/vaildiag /CONNECT -agenthost hostIP -agentname
VAILAgent -agentport port /SETOPTIONALPROVPARAM -provider
vx_emc_symmetrix -cliexepath "/opt/SYMCLI"
```

To determine the port for the agent, see "Getting the port number to communicate with VAILAgent" on page 48.

Enabling and disabling VAILAgent automatic start on system reboot

VAIL is installed as part of the Storage Foundation for Oracle and Storage Foundation for DB2 installations. VAILAgent is automatically started after the install and automatic start on system reboot is enabled. You can use vaildiag to enable and disable automatic start on reboot.

To disable automatic start of VAILAgent on system reboot

◆ Issue the following command from the host where VAILAgent is running:

```
/opt/VRTSvail/bin/vaildiag /DISABLEAUTOSTART -agentname
VAILAgent
```

To enable automatic start of VAILAgent on system reboot

◆ Issue the following command from the host where VAILAgent is running:

```
/opt/VRTSvail/bin/vaildiag /ENABLEAUTOSTART -agentname VAILAgent
```

Note: If you installed VAIL manually, automatic start on reboot is disabled. You can enable VAILAgent automatic start on system reboot with this command.

Joining the default domain

Use the vaildiag CLI tool to enable VAIL functionality when you manually install VAIL:

1   Issue the vaildiag command to join VAILAgent to the default domain. Use one of the following forms:

■   If you are running in an environment with a central management server:

```
/opt/VRTSvail/bin/vaildiag /JOINDOMAIN -
agentname VAILAgent -password Pword -adminpasswd
AdministratorPwd
```

Pword is the `vea_agent` account password that you created when you installed Storage Foundation Management Server (see the *Storage Foundation Management Server Installation Guide*).

AdministratorPwd is the password for the Authentication Broker administrator's account (see the *Storage Foundation Management Server Installation Guide*).

Note: If you enter passwords at the command line, they are displayed. To avoid displaying them, do not specify passwords when you enter the JOINDOMAIN command. The vaildiag CLI prompts you for the passwords and does not echo them to the command line.

■   If you are not running in an environment with a central management server:

```
/opt/VRTSvail/bin/vaildiag /JOINDOMAIN -agentname
VAILAgent -standalonemode
```

2   Start VAILAgent; issue the following at the command line:

```
/opt/VRTSobc/pal33/bin/vxpalctrl -a VAILAgent -c start
```