Veritas™ Dynamic Multi-Pathing for Windows Installation and Upgrade Guide

Windows Server 2008 (x64), Windows Server 2008 R2 (x64)

6.0.1

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Veritas™ Dynamic Multi-Pathing for Windows Installation and Upgrade Guide

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Product version: 6.0.1

Document version: 6.0.1 Rev 4

Legal Notice

Technical Support

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Contacting Technical Support

Customers with a current support agreement may access Technical Support information at the following URL:

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Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

■ Product release level

■ Hardware information

- Available memory, disk space, and NIC information

- Operating system

- Version and patch level

- Network topology

- Router, gateway, and IP address information

- Problem description:

  - Error messages and log files

  - Troubleshooting that was performed before contacting Symantec

  - Recent software configuration changes and network changes

Licensing and registration

If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

www.symantec.com/business/support/

Customer service

Customer service information is available at the following URL:

www.symantec.com/business/support/

Customer Service is available to assist with non-technical questions, such as the following types of issues:

- Questions regarding product licensing or serialization

- Product registration updates, such as address or name changes

- General product information (features, language availability, local dealers)

- Latest information about product updates and upgrades

- Information about upgrade assurance and support contracts

- Information about the Symantec Buying Programs

- Advice about Symantec's technical support options

- Nontechnical presales questions

- Issues that are related to CD-ROMs or manuals

Support agreement resources

If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

Asia-Pacific and Japan	customercare_apac@symantec.com
Europe, Middle-East, and Africa	semea@symantec.com
North America and Latin America	supportsolutions@symantec.com

Documentation

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions. Include the title and document version (located on the second page), and chapter and section titles of the text on which you are reporting. Send feedback to:

doc_feedback@symantec.com

For information regarding the latest HOWTO articles, documentation updates, or to ask a question regarding product documentation, visit the Storage and Clustering Documentation forum on Symantec Connect.

https://www-secure.symantec.com/connect/storage-management/
forums/storage-and-clustering-documentation

About Symantec Connect

Symantec Connect is the peer-to-peer technical community site for Symantec's enterprise customers. Participants can connect and share information with other product users, including creating forum posts, articles, videos, downloads, blogs and suggesting ideas, as well as interact with Symantec product teams and Technical Support. Content is rated by the community, and members receive reward points for their contributions.

http://www.symantec.com/connect/storage-management

Contents

Preinstallation and planning

This chapter includes the following topics:

- About the preinstallation and planning tasks
- Installation requirements
- Verifying the system configuration using the Windows Data Collector
- Licensing
- Planning a DMPW installation

About the preinstallation and planning tasks

Before you begin to install DMPW, you must perform the following tasks as a part of product installation planning:

- Review the release notes for your product.
- Review the product installation requirements.
- Review the supported hardware and software list.
- Review the licensing details.
- Review the specific requirements for your configuration.
- Perform the applicable pre-requisite tasks.
- For latest updates refer to the Late Breaking News (LBN) http://www.symantec.com/docs/TECH161556
- Exit all running applications.

Installation requirements

Review the following product installation requirements for your systems.

For the latest information on requirements for this release, see the following Symantec Technical Support TechNote:

http://www.symantec.com/docs/TECH152806

Operating system requirements

The server and client components of the product run on specific Windows operating systems. For information about the supported Windows operating systems, refer to the following:

- Supported operating systems for DMP for Windows servers
  See "Supported operating systems for server components" on page 10.

- Supported operating systems for DMP for Windows clients
  See "Supported operating systems for client components" on page 11.

For the latest information on supported software, see the Software Compatibility List at:

http://www.symantec.com/docs/TECH153742

Supported operating systems for server components

Table 1-1   Supported operating systems for servers

Windows Server	Platform	Edition	Version
Windows 2008 Server Core	x64		RTM or SP2
Windows 2008 R2 Server Core	x64		RTM or SP1
Windows Server 2008	x64	Standard, Enterprise, Datacenter	RTM or SP2
Windows Web Server 2008	x64		RTM or SP2
Windows Server 2008 R2	x64	Standard, Enterprise, Datacenter	RTM or SP1
Windows Web Server 2008 R2	x64		RTM or SP1
Windows Storage Server 2008	x64		
Windows Storage Server 2008 R2	x64		

Table 1-1   Supported operating systems for servers *(continued)*

Windows Server	Platform	Edition	Version
Windows Small Business Server 2008	x64	Standard, Premium	
Windows Small Business Server 2011	x64	Standard, Premium	

Supported operating systems for client components

- Any one of the operating system versions, editions, and architectures that the Server Components are supported on except Server Core:
  See "Supported operating systems for server components" on page 10.

- Windows XP x86 (SP3 required), x64 (SP2 required)

- Windows Vista x86, x64: Ultimate Edition, Business Edition, Premium Edition (SP1 or SP2 required)

- Windows 7 x86, x64: Professional Edition, Ultimate Edition (RTM or SP1 required)

Disk space requirements

For installation, space required is calculated regardless of selected options or components.

Table 1-2 summarizes the disk space requirements for installing DMPW.

Table 1-2   Disk space requirements

Installation options	Required disk space
DMPW Server components (includes client)	672 MB
DMPW Client components	376 MB

Hardware requirements

Before you install DMPW, verify that your configuration meets the following criteria and that you have reviewed the Hardware Compatibility List to confirm supported hardware:

http://www.symantec.com/docs/TECH152806

Table 1-3 displays the required hardware requirements.

Table 1-3   Hardware requirements

Requirements	Specifications
Memory	1 GB of RAM required
32-bit processor requirements (for client components only)	800-megahertz (MHz) Pentium III-compatible or faster processor 1GHz or faster processor recommended
x64 processor requirements	1GHz AMD Opteron, AMD Athlon 64, Intel Xeon with Intel EM64T support, Intel Pentium IV with EM64T support processor or faster
Display	Minimum resolution: 1024 X 768 pixels or higher
System requirements	Ensure that you have a minimum of two IO paths from the server to the storage array for load balancing to happen.

Remote systems

Installation on remote systems is supported using CLI or Product Installer wizard. Installation using CLI can be done on one node at a time. Use the product installer wizard to install on multiple nodes. Remote Desktop Protocol (RDP) connections must use the console switch.

While installing on remote systems, ensure that systems are accessible over the network and you have local administrative privileges to each remote system.

Permission requirements for DMP

You must be a member of the Local Administrators group or a domain administrator for all the nodes where you are installing DMP.

Note: Ensure that local administrative privileges are granted to you or to the group to which you directly belong.

Verifying the system configuration using the Windows Data Collector

It is recommended to verify your system configuration before you begin to install the product. The Windows Data Collector enables you to gather information about the systems in your network. It thus helps you verify your system configuration before you begin with the product installation.

Installing the Windows Data Collector

To install and run the Windows Data Collector, your system must be running at a minimum Windows 2000 SP4.

You can download the Data Collector using the product software disc or from the Symantec Operations Readiness Tools (SORT) Web site.

■ To download the Data Collector using the product software disc, insert the product software disc into your system drive and double-click **setup.exe**. This launches the CD Browser.
Click **Windows Data Collector** and extract all the files on to your system.

■ To download the Data Collector from the SORT Web site,

■ Go to the Symantec Operations Readiness Tools (SORT) Web site:
https://sort.symantec.com

■ Under the SORT tab, select **My SORT**.

■ On the Custom Reports widget, follow the instructions to download the Data Collector.

Running the verification reports

The Data Collector uses the gathered information to generate the reports that enable you to perform the following:

■ Analyze the configuration of your current Symantec products and make recommendations about availability, use, performance, and best practices.

■ Get detailed information about your installed Symantec products, versions, and licenses.

The report contains a list of passed and failed checks and details about each of them. After the Data Collector completes the check, you can save a summary report as an HTML file and an XML file.

For more details on running a verification report, refer to the platform-specific README file located on the Custom Reports widget on the SORT Web site.

Ensure that the following Windows services are running on all the systems where you wish to run the Windows Data Collector report:

■ Windows Management Instrumentation (WMI)

■ IP Helper

■ Remote Registry

Licensing

DMPW is available in the standard edition.

Each of the license edition is further categorized based on the operating system edition. Depending on the operating system edition in use, you can choose a compatible product license edition.

Table 1-4 provides the compatibility matrix for the product license edition and the Windows operating system in use.

Table 1-4 Compatibility matrix with the Windows operating system

Windows operating system edition	Compatible DMPW edition	DMPW licensing terms
▪ Server Edition ▪ Standard Edition ▪ Web Edition	▪ Standard edition for standard, enterprise, and datacenter operating system	A separate license is required for each virtual or physical server, where the software is installed.
▪ Advanced Edition ▪ Enterprise Edition	▪ Standard edition for enterprise and datacenter operating system	For each license, you may run one instance on a physical server and up to four simultaneous instances on virtual servers located on that physical server.
Datacenter Edition	▪ Standard edition for datacenter operating system	For each license, you may run one instance on one physical server and an unlimited instances on virtual servers located on that physical server.

During installation, the product installer provides the following options to specify the license details.

- Keyless
- User Entered Key

Note: Evaluation licenses are now deprecated.

A keyless license installs the embedded keys and allows you to use all the available product options.

You can use the keyless license for 60 days. If you install the product using the keyless option, a message is logged everyday in the Event Viewer indicating that you must perform any one of the following tasks, within 60 days of product installation. Failing this, a non-compliance error is logged every four hours.

- Add the system as a managed host to a Veritas Operations Manager (VOM) Management Server.
  For more details, refer to the VOM documentation.

- Add an appropriate and valid license key on this system using the Symantec product installer from Windows Add or Remove Programs.

In case of an User Entered Key license, you must procure an appropriate license key from the Symantec license certificate and portal. The User Entered Key license allows you to use the product options based on the license key you enter.

https://licensing.symantec.com/

The product installer enables you to switch from a Keyless license to a User Entered Key license and vice-a-versa. It thus helps you to overcome the issues faced while removing the left-over temporary keys.

vxlicrep command

The `vxlicrep` command generates a report of the licenses in use on your system.

To use the vxlicrep command to display a license report

1 Open a command prompt window.

2 Enter the `vxlicrep` command without any options to generate a default report.

3 Enter the `vxlicrep` command with any of the following options to produce the type of report required:

-g	default report
-s	short report
-e	enhanced/detailed report
-l	print report for valid keys only
-k <key1, key2, ----	print report for input keys key1, key2, ----
-v	print version
-h	display this help

Planning a DMPW installation

Review the following pre-installation tasks that you must perform, if you plan to install DMPW.

Setting up access rights

DMPW uses the standard Microsoft Windows administrative privileges which govern the access rights of users to the DMPW servers and services.

The following services are associated with the product:

- Veritas Enterprise Administrator service (vxsvc)

- Veritas Installer Service (vxinstaller) used during installation

- Windows Management Instrumentation (WMI) service for DMPW functionality

By default, administrators have the right to load and unload device drivers and install and uninstall the Veritas Dynamic Multi-Pathing for Windows. For accessing and using the program you must have administrative rights.

As an administrator, you need to grant these same administrative privileges to other users. For example, you can grant these rights in the Local Users and Groups function under Windows Server 2008 Administrative Tools.

For details refer to the Microsoft Windows Server documentation.

Before proceeding, exit all programs and log on with administrative rights.

Choosing the load balancing settings

For environments where DMP DSMs are used, either Active/Active or Active/Passive load balance settings can be used. DMP DSMs automatically set the load balancing to Active/Passive for disks under SCSI-2 reservation. For Active/Active load balancing settings, the array must be enabled for SCSI-3 Persistent Group Reservations (SCSI-3 PGR).

For more information on DMP DSMs load balance settings and enabling or disabling SCSI-3 PGR, refer to the *Veritas Storage Foundation Administrator's Guide.*

Installing DMPW

This chapter includes the following topics:

- About installing DMPW

- Installing the DMPW server components using the product installer

- Installing the DMPW client components using the product installer

- Installing DMPW server or client components using CLI

About installing DMPW

This section describes the process for a new installation of DMPW.

You can perform the installation using either the product installation wizard or the command line interface (CLI).

Before you begin to install the product, ensure that you have reviewed and performed the required preinstallation and planning tasks.

Note: If the VOM Managed Host components of any version earlier to 5.0 are installed in your environment, then the guest components installer upgrades these components to its latest version.

During the installation you can choose to separately install the server components or the client components.

Note: The high availability agents that are installed with the product software are also available in the form of an agent pack. The agent pack is released on a quarterly basis. The agent pack includes support for new applications as well as fixes and enhancements to existing agents. You can install the agent pack on an existing DMPW installation.

Refer to the Symantec Operations Readiness Tools (SORT) Web site for information on the latest agent pack availability.

https://sort.symantec.com

Refer to the agent-specific configuration guide for more details about the application agents.

To install the server or client components using the product installation wizard,

Installing the DMPW server components using the product installer

The Symantec product installer enables you to install the server components for the following products:

- Veritas Storage Foundation for Windows (SFW)

- Veritas Storage Foundation and High Availability Solutions for Windows (SFW HA)

- Dynamic Multi-Pathing (DMP) for Windows

- Veritas Cluster Server for Windows

For installing SFW, SFW HA, or Veritas Cluster Server for Windows refer to the respective installation guide.

Perform the following steps to install DMPW server components

1   Insert the software disc containing the installation package into your system's disc drive or download the installation package from the following location:

https://fileconnect.symantec.com

2   Allow the autorun feature to start the installation or double-click **Setup.exe**.

The CD browser appears.

Note: If you are installing the software using the product software disc, the CD browser displays the installation options for all the products specified earlier. However, if you are downloading the installation package from the Symantec website, the CD browser displays the installation options only for the product to be installed.

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3   Click to download the required contents.

Note: The client components are installed by default along with the server components. However, on a server core machine, the client components will not be installed.

Veritas Dynamic Multi-pathing	Click to install the server components for Dynamic Multi-Pathing for Windows.
Late Breaking News	Click to access the latest information about updates, patches, and software issues regarding this release.
Windows Data Collector	Click to verify that your configuration meets all pertinent software and hardware requirements.
SORT	Click to access the Symantec Operations Readiness Tools site.
	In addition to the product download you can also download the custom reports about your computer and Symantec enterprise products, a checklist providing configuration recommendations, and system and patch requirements to install or upgrade your software.
Browse Contents	Click to view the software disc contents.
Technical Support	Click to contact Symantec Technical Support.

4   On the Welcome panel, review the list of prerequisites and click **Next**.

Note that the **Check for product updates** check box is selected by default. The product installer searches for the available product updates on the SORT website. You can then download and apply the available updates. If you do not want to apply the available patches, clear the selection of **Check for product updates** check box.

5   On the License panel, read the license terms, select **I accept the terms of License Agreement**, and then click **Next**.

The **Participate in the Symantec Product Improvement Program by submitting system and usage information anonymously** check box is selected by default. The Product Improvement Program allows the product installer to collect installation, deployment, and usage data and submit it anonymously to Symantec. The collected information helps identify how customers deploy and use the product. If you do not want to participate in the product improvement program, clear the selection of the check box.

6   On the Product Updates panel, review the list of available product updates.

This panel appears only if you have selected the **Check for product updates** check box on the Welcome panel.

The product updates comprise of the pre-installation patches, post-installation patches, High Availability Agents, and Array-Specific Modules. The panel lists the available pre-installation patches and the post-installation patches. Download and apply the pre-installation patches in the sequence shown in the table and rerun the wizard. After the successful installation of the product, apply the post-installation patches. Also download and install the High Availability Agents and Array-Specific Modules from the SORT website.

7   On the System Selection panel, select the systems and the desired Installation and Product options:

You can select the systems in one of the following ways:

■   In the System Name or IP text box, manually type the system name or its IP address and click **Add**.

> **Note:** The wizard does not support the internet protocol version 6. To add the systems having internet protocol version 6, you must type the system name.

The local host is populated by default.

■   Alternatively, browse to select the systems.

The systems that belong to the domain in which you have logged in are listed in the Available Systems list. Select one or more systems and click the right arrow to move them to the Selected Systems list. Click **OK**.

Once you add or select a system, the wizard performs certain validation checks and notes the details in the Verification Details box. To review the details, select the desired system.

To select the installation and product options, perform the following tasks on each of the selected system.

Note: To apply the selection to multiple systems, select the system for which you have selected the installation and product options and then click **Apply to multiple systems**.

See

- By default the wizard uses %ProgramFiles%\Veritas as the installation directory. To customize the installation directory, click **Browse** and select the desired location. Click **OK**.
  The installation directory is selected by default on the systems where the product is being upgraded.

Note: If you plan to configure the cluster for single sign-on authentication, the installation directory must contain only English characters.

In case your system runs a non-English locale operating system, ensure that the installation directory contains only English characters.

- Select the required license type from the **License key** drop-down list.

Note: The default license type is "Keyless".

If you select the "Keyless" license type, all the available product options are displayed and are selected by default.
If you select "User entered license key" as your license type, the License Details panel appears by default. On the License Details panel, enter the license key and then click **Add**. You can add multiple licenses for the various product options you want to use.
The wizard validates the entered license keys and displays the relevant error if the validation fails. After the validation is complete, click **OK**.

- From the list of product options, select the options to be installed. While you select the options, note the following points:

  - During the upgrade, do not choose to clear the selection for the DSMs you want to remove. Clearing the default selection does not remove the installed DSMs.

    To remove the DSMs, perform any one of the following:

    - Before you begin to upgrade the cluster, remove the required DSM, using the Windows Add Remove Program. Reboot the node and then perform the upgrade.

    - Upgrade the cluster and then use the Add Remove Program to remove the DSM.

    - Upgrade the cluster and then navigate to %ALLUSERSPROFILE%\Veritas\MPIO\. From the command prompt, run the following command:

      ```
      instdsm.exe -u DSMName.inf
      ```

    Note: If you clear the default selection during the upgrade, you cannot remove the DSM using the Add Remove Program. To remove the DSM in this case, you must run the command mentioned earlier.

  The following options are available for DMP:

| DMP Device Specific Modules (DSMs) | 3PARDATA (V3PARAA) Compellent array (VCOMPLNT) Dell EqualLogic array (VEQLOGIC) EMC Clarion (VEMCCLAR) EMC Symmetrix/DMX (VEMCSYMM) EMC VPLEX array (VEMCVPLX) FUJITSU ETERNUS 2000 array (VFUJITSUAA) Hitachi 95xx-AMS-WM (VHDSAP) Hitachi TagmaStore/HP XP (VHDSAA) HP 2000 array (VHPMSA2) HP EVA-MSA (VHPEVA) HUAWEI S5300/S2300 array (VHUAWEIAP) IBM DS AP (VIBMAPDS) IBM DS6000 (VIBMAP) IBM DS4000/SUN 6000 (VENGAP) IBM DS8000/ESS (VIBMAADS) IBM XiV Storage System (VXIV) NETAPP (VNETAPP) NEXSAN SATA/SAS Beast, E60/E18 array (VNEXSAN) PILLAR (VPILLAR) SUN Array - (VSUN) XioTech Array (VXIOTECH) |

Symantec maintains a Hardware Compatibility List (HCL) for Veritas Storage Foundation and High Availability Solutions for Windows. The HCL provides information on HBAs and firmware that have been tested with each supported array. Check the HCL for details about your hardware before installing or using DMP DSMs.

The HCL is located at:

http://www.symantec.com/docs/TECH152806

Note: Do not use a DMP DSM together with a third-party DSM for the same array. Only one DSM at a time can claim the LUNs in an array. According to Microsoft Multipath I/O (MPIO) documentation, if multiple DSMs are installed, the Microsoft MPIO framework contacts each DSM to determine which is appropriate to handle a device. There is no particular order in which the MPIO framework contacts the DSMs. The first DSM to claim ownership of the device is associated with that device. Other DSMs cannot claim an already claimed device. Therefore, to ensure that the DMP DSM claims the LUNs of an array, no other DSM should be installed for that same array.

8 On the System Selection panel, click **Next**.

Note that the wizard fails to proceed with the installation, unless all the selected systems have passed the validation checks and are ready for installation. In case the validation checks have failed on any of the system, review the details and rectify the issue. Before you choose to proceed with the installation, select the system and click **Re-verify** to re-initiate the validation checks for this system.

9 On the Pre-install Summary panel, review the summary and click **Next**.

Note that the **Automatically reboot systems after installer completes operation** check box is selected by default. This will reboot all the selected remote systems immediately after the installation is complete on the respective system. If you do not want the wizard to initiate this auto reboot, clear the selection of **Automatically reboot systems after installer completes operation** check box.

10 On the Installation panel, review the progress of installation and click **Next** after the installation is complete.

If an installation is not successful on any of the systems, the status screen shows a failed installation.

Note: During the upgrade, the Installation panel displays a list of services and processes running on the systems. Select a system to view the services and processes running on it and review the list.

The wizard stops the product-specific services and discovers the processes running, if any, on the systems. These processes need to be stopped to proceed with the operation. Click **Next** to forcefully stop the processes and proceed with the operation. Alternatively, you can manually stop the processes. If the services or processes cannot be stopped, the operation fails. Rectify the error and then click **Retry** to validate the affected system again. Click **Retry All** to validate all the systems again.

In case you wish to proceed with the upgrade without stopping a particular process, contact Symantec Technical Support.

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11 On the Post-install Summary panel, review the installation result and click **Next**.

If the installation has failed on any of the system, refer to the log file for details. You may have to re-install the software.

12 On the Finish panel, click **Finish**.

If you had chosen to initiate the auto reboot, a confirmation message to reboot the local system appears. Click **Yes** to reboot immediately or **No** to reboot later.

In case you had not selected to initiate the auto reboot, ensure that you manually reboot these systems.

This completes the product installation. You can now proceed to setup DMP.

For details, refer to *Veritas Dynamic Multi-Pathing for Windows Administrator's Guide*.

Applying the selected installation and product options to multiple systems

To apply the selected installation and product options to multiple systems, perform the following steps:

1   Click on any one of the selected systems and select the desired installation and product options.

2   Click **Apply to multiple systems**.

3   On the Apply Installation Options panel, select the installation options to be applied and then select the desired systems. Click **OK**.

Note: The installation directory is selected by default on the systems where the product is being upgraded. The selected **Install Directory** option does not apply to these systems.

Installing the DMPW client components using the product installer

The Symantec product installation wizard enables you to install the client components for the following products:

■   Veritas Storage Foundation for Windows (SFW)

■   Veritas Storage Foundation and High Availability Solutions for Windows (SFW HA)

■   Veritas Dynamic Multi-Pathing for Windows

■   Veritas Cluster Server for Windows

For installing SFW, SFW HA or VCS for Windows refer to the respective installation guide.

Note: Client components cannot be installed on server core systems.

Before you begin with the installation, ensure that there are no parallel installations, live updates, or Microsoft Windows updates in progress on the systems where you want to install the client components.

Perform the following steps to install Veritas Dynamic Multi-Pathing for Windows client components

1   Insert the software disk containing the installation package into your system's disc drive or download the installation package from the following location:

    https://fileconnect.symantec.com

2   Allow the autorun feature to start the installation or double-click **Setup.exe**.

    The CD browser appears.

3   Click to download the required contents.

Late Breaking News	Click to access the latest information about updates, patches, and software issues regarding this release.
Windows Data Collector	Click to verify that your configuration meets all pertinent software and hardware requirements.
SORT	Click to access the Symantec Operations Readiness Tools site.
	In addition to the product download you can also download the custom reports about your computer and Symantec enterprise products, a checklist providing configuration recommendations, and system and patch requirements to install or upgrade your software.
Browse Contents	Click to view the software disc contents.
Technical Support	Click to contact Symantec Technical Support.

4   On the Welcome panel, review the list of prerequisites and click **Next**.

    Note that the **Check for product updates** check box is selected by default. The wizard searches for the available product updates on the SORT website. You can then download and apply the available updates. If you do not want to apply the available updates, clear the selection of **Check for product updates** check box.

5   On the License Agreement panel, read the license terms, select **I accept the terms of License Agreement**, and then click **Next**.

The **Participate in the Symantec Product Improvement Program by submitting system and usage information anonymously** check box is selected by default. The Product Improvement Program allows the wizard to collect installation, deployment, and usage data and submit it anonymously to Symantec. The collected information helps identify how customers deploy and use the product. If you do not want to participate in the Product Improvement Program, clear the selection of the check box.

6   On the Product Updates panel, review the list of available product updates.

This panel appears only if you have selected the **Check for product updates** check box on the Welcome panel.

The product updates comprise of the pre-installation patches, post-installation patches, High Availability Agents, and Array-Specific Modules. The panel lists the available pre-installation patches and the post-installation patches. Download and apply the pre-installation patches in the sequence shown in the table and rerun the wizard. After the successful installation of the product, apply the post-installation patches. Also download and install the High Availability Agents and Array-Specific Modules from the SORT website.

7   On the System Selection panel, select the systems and the installation directory.

You can select the systems in one of the following ways:

■   In the System Name or IP text box, manually type the system name or its IP address and click **Add**.

Note: The wizard does not support the Internet Protocol version 6. To add the systems having Internet Protocol version 6, you must type the system name.

Local host is populated by default.

■   Alternatively, browse to select the systems.
    The systems that belong to the domain in which you have logged in are listed in the Available Systems list. Select one or more systems and click the right arrow to move them to the Selected Systems list. Click **OK**.

Once you add or select a system, the wizard performs certain validation checks and notes the details in the Verification Details box. To review the details, select the desired system.

By default the wizard uses %ProgramFiles%\Veritas as the installation directory. To customize the installation directory, click **Browse** and select the desired location. Click **OK**.

To apply the customized directory to multiple systems, click **Apply to multiple systems**. On the Apply Installation Options panel, select the systems to apply the customized directory. Click **OK**.

The installation directory is selected by default on the systems where the product is being upgraded. The selected **Install Directory** option does not apply to these systems.

Note: If you plan to configure the cluster for single sign-on authentication, the installation directory must contain only English characters. In case your system runs a non-English locale operating system, ensure that the installation directory contains only English characters.

---

8   On the System Selection panel, click **Next**.

Note that the wizard fails to proceed with the installation, unless all the selected systems have passed the validation checks and are ready for installation. In case the validation checks have failed on any of the system, review the details and rectify the issue. Before you choose to proceed with the installation, select the system and click **Re-verify** to re-initiate the validation checks for this system.

9   On the Pre-install Summary panel, review the summary and click **Next**.

10 On the Installation panel, review the progress of installation and click **Next** after the installation is complete.

If an installation is not successful on any of the systems, the status screen shows a failed installation.

Note: During the upgrade, the Installation panel displays a list of services and processes running on the systems. Select a system to view the services and processes running on it and review the list.

The wizard stops the product-specific services and discovers the processes running, if any, on the systems. These processes need to be stopped to proceed with the operation. Click **Next** to forcefully stop the processes and proceed with the operation. Alternatively, you can manually stop the processes. If the services or processes cannot be stopped, the operation fails. Rectify the error and then click **Retry** to validate the affected system again. Click **Retry All** to validate all the systems again.

In case you wish to proceed with the upgrade without stopping a particular process, contact Symantec Technical Support.

---

11 On the Post-install Summary panel, review the installation result and click **Next**.

If the installation has failed on any of the system, refer to the log file for details. You may have to re-install the software.

12 On the Finish panel, click **Finish**.

This completes the installation of the client components.

Installing DMPW server or client components using CLI

You can perform a silent installation using the command line interface at the command prompt with the Setup.exe command. With a silent installation, you can only install on one system at a time.

During the installation, ensure that you verify the following points:

- There are no parallel installations, live updates, or Microsoft Windows updates in progress.

- A third-party DSM is not installed for the array you want to use.
  DMP DSM is not used together with a third-party DSM for the same array. Only one DSM at a time can claim the LUNs in an array. According to Microsoft Multipath I/O (MPIO) documentation, if multiple DSMs are installed, the Microsoft

MPIO framework contacts each DSM to determine which is appropriate to handle a device. There is no particular order in which the MPIO framework contacts the DSMs. The first DSM to claim ownership of the device is associated with that device. Other DSMs cannot claim an already claimed device. Therefore, to ensure that the DMP DSM claims the LUNs of an array, no other DSM should be installed for that same array.

- All CLI commands must run in the command window in the "run as administrator" mode.

To install from the command line

1   If you are installing the package from the software disc, insert the product software disc into your system's drive.

2   Log into a console session.

3   Open a command window by clicking **Start** > **Run**.

4   Enter `cmd` in the Open field and click **OK**.

5   Navigate to the root directory of your software disc.

   If you are downloading the installation software from the Symantec web site, then navigate to the download path where the setup.exe is located.

6   Use the following command syntax to install the product software.

   For example,

   ```
   Setup.exe /s Solutions="Solution ID"
   install_mode=Install_mode
   Telemetry=Telemetry
   installdir="Installdir"reboot=Reboot
   node="NodeName"
   licensekey="licensekey"options="options"
   NoOptionDiscovery=NoOptionDiscovery
   GetPatchInfo=GetPatchInfo
   ```

   Where the maximum length of the argument string is 2,048 characters and the syntax is not case sensitive.

Note: The "Licensekey" parameter is applicable only if you plan to use the "User entered license key" as your license type. You need not specify this parameter for "Keyless" license type.

Parameters for setup.exe

Table 2-1 contains information about the possible parameter values.

Table 2-1   Parameters for setup.exe

Parameter	Use
/s	Set for silent mode. If not set, boots the product installer GUI.
INSTALL_MODE	Set to indicate an installation or uninstallation. 1 = To install 4 = To repair 5 = To uninstall Example: INSTALL_MODE=1 **Note:** The parameter, INSTALL_MODE=1 is used for both a new installation, as well as an upgrade. The installer switches to the correct mode (installation or upgrade) depending upon what has already been installed on the selected system.
SOLUTIONS	Set to the type of installation. 8 = DMP Server Components (includes client components) 9 = DMP Client Components Example: SOLUTIONS="8"
Telemetry	Set this parameter to participate in the Symantec Product Improvement Program by submitting system and usage information anonymously. The Product Improvement Program allows the product installer to collect installation, deployment, and usage data and submit it anonymously to Symantec. The collected information helps identify how customers deploy and use the product. If you do not want to participate in the product improvement program, set this parameter to 0.

Table 2-1   Parameters for setup.exe *(continued)*

Parameter	Use
INSTALLDIR	Set the installation directory path. The path must start and end with a quotation mark.
	The default setting is SystemDrive: \Program files\Veritas
	Example: INSTALLDIR="C:\InstallationDirectory"
	This is an optional parameter.
	Note: If you plan to configure the cluster for single sign-on authentication and your system runs a non-English locale operating system, ensure that the installation directory contains only English characters.
Reboot	Set for the automatic reboot of the system at the completion of the installation.
	0 = No reboot
	1 = Reboot
	The default setting is 0 for no system reboot.
	Example: Reboot=1
	Note: This is an optional parameter.
Node	Set the node name. Specify only one node at a time.
	The local node is the default setting when the node is unspecified.
	The machine name of the node must start and end with a quotation mark (").
	Example: Node="PC177VM-3"
LICENSEKEY	Set the license key for the installation. Enter multiple keys by separating them with a comma (e.g. 123-345-567-789-123, 321-543-765-789-321, etc.) The license key must start and end with a quotation mark (").
	LicenseKey has no default setting.
	Example:
	LICENSEKEY="123-234-123-234-345"
	Note: This parameter is applicable only if you plan to use the "User entered license key" as your license type. You need not specify this parameter for "Keyless" license type.

Table 2-1 Parameters for setup.exe *(continued)*

Parameter	Use
Options	Set the desired options, if any. The option must start and end with a quotation mark ("). Multiple options can be entered, using a comma as a separator.
	Options differ depending on your product and environment.
	There are no default settings.
	Refer to Table 2-2 for the list of available options.
	Note: During an upgrade, you must specify the previously installed options in the OPTIONS parameter, else they will be uninstalled. To include the previously installed options in this parameter, either specify these options individually in the OPTIONS parameter or specify "Installed" in the OPTIONS parameter to upgrade all options (example: options="Installed,flashsnap").
NoOptionDiscovery	Set this parameter to uninstall the previously installed options during an upgrade.
	Default value is 0.
	If this parameter is set to 0, the setup discovers the previously installed options which are not specified in the OPTIONS parameter, and the setup exits. Rerun the setup and either include the previously installed options individually in the OPTIONS parameter or specify "Installed" in the OPTIONS parameter.
	If you set this parameter to 1 during an upgrade, the setup uninstalls the previously installed options which are not specified in the OPTIONS parameter.

Table 2-1   Parameters for setup.exe *(continued)*

Parameter	Use
GetPatchInfo	Set this parameter to search for available product updates. 1 = Lists available updates 0 = Does not list available updates Default value is 1. The product updates comprise of the pre-installation patches, post-installation patches, High Availability Agents, and Array-Specific Modules. If you set this parameter to 1, then the available pre-installation patches and post-installation patches are listed. If any pre-installation patches are available, then the setup exits to let you download and apply the pre-installation patches. Apply the pre-installation patches in the sequence displayed and rerun the setup with GetPatchInfo = 0. After the successful installation of the product, apply the post-installation patches. Also download and install the High-Availability Agents and Array-Specific Modules from the SORT website.

Table 2-2   Available options

Option	Description
Installed	During an upgrade, you can use this option if you do not want to uninstall the previously installed options.
All	You can use this option to install all the available options.
V3PARAA	3PARDATA
VCOMPLNT	Compellent array
VEQLOGIC	Dell EqualLogic array
VEMCCLAR	EMC Clarion
VEMCSYMM	EMC Symmetrix/DMX
VEMCVPLX	EMC VPLEX array
VFUJITSUAA	FUJITSU ETERNUS 2000 array
VHDSAP	Hitachi 95xx-AMS-WM
VHDSAA	Hitachi TagmaStore/HP XP
VHPMSA2	HP 2000 array

Table 2-2 Available options *(continued)*

Option	Description
VHPEVA	HP EVA-MSA
VHUAWEIAP	HUAWEI S5300/S2300 array
VIBMAPDS	IBM DS AP
VIBMAP	IBM DS6000
VENGAP	IBM DS4000/SUN 6000
VIBMAADS	IBM DS8000/ESS
VXIV	IBM XiV Storage System
VNETAPP	NETAPP
VNEXSAN	NEXSAN SATA/SAS Beast, E60/E18 array
VPILLAR	PILLAR
VSUN	SUN Array- NEW
VXIOTECH	XioTech Array

Silent installation example: DMPW server and client

This sample command installs the server components in the directory E:\product and tells the system not to reboot at the end of the installation. It also installs with a license key of AJZE-W49W-RT7U-ZZPPPPPP- P3PP-PPPC-BYV8-P, and with the VEQLOGIC,VEMCSYMM,VEMCCLAR,VHDSAA options.

```
Setup.exe /s INSTALL_MODE="1"
licensekey="AJZE-W49W-RT7U-ZZPPPPPP-P3PP-PPPC-BYV8-P" SOLUTIONS="1"
installdir="E:\product"
OPTIONS="VEQLOGIC,VEMCSYMM,VEMCCLAR,VHDSAA"
NODE=Localhost REBOOT="0"
```

Administering DMPW installation

This chapter includes the following topics:

- Adding or removing product options
- Managing DMPW licenses
- Repairing the DMPW installation
- About reinstalling DMPW

Adding or removing product options

After you install DMPW, you may need to add or remove the DSMs. The product installer wizard lets you add or remove DSMs.

Note the following points before you begin to add or remove the product options:

- You cannot add or remove the product options on a system that runs Server Core operating system. To add or remove the product options on these systems you must uninstall the product and then install it again using the new licenses.
- You can add or remove the product options on the local system only.
- You can add or remove the product options only if you have installed the server components.

Before you choose to add any product option, ensure that you have reviewed and performed the required pre-installation and planning tasks, if any, for the option you want to install.

To add or remove features

1   Open the Windows Control Panel and click **Programs and Features**.

2   Select **Veritas Dynamic Multi-pathing for Windows** and click **Change**.

3   On the Mode Selection panel, select **Add or Remove** and then click **Next**.

4   On the System Selection panel, the wizard performs the verification checks and displays the applicable installation and product options. In case the verification checks have failed, review the details and rectify the issue. Before you choose to proceed with the installation, click **Re-verify** to re-initiate the verification checks.

    Note that the wizard proceeds only if the system passes the validation checks.

    To add or remove the options, select or clear the product option check boxes to add or remove the respective component.

Note: You can add or remove the features only if you have selected **User entered license key** as your license type. Only the options included in your product license, will be enabled for selection. To select any other option, you must first enter the required license details.

For details on managing your licenses, See "Managing DMPW licenses" on page 39.

---

5   On the System Selection panel, click **Next**.

    The wizard performs the verification checks and proceeds to the Pre-install Summary panel.

    Note that the wizard proceeds only if the system passes the validation checks.

6   On the Pre-install Summary panel, review the summary and click **Next**.

    Note that the **Automatically reboot systems after installer completes operation** check box is selected by default. This will reboot all the selected remote systems immediately after the installation is complete on the respective system. If you do not want the wizard to initiate this auto reboot, clear the selection of **Automatically reboot systems after installer completes operation** check box.

7   On the Installation panel, review the progress of installation and click **Next** after the installation is complete.

    If an installation is not successful, the status screen shows a failed installation. Refer to the Post-install summary for more details. Rectify the issue and then proceed to re-install the component.

8   On the Post-install Summary panel, review the installation result and click **Next**.

If the installation has failed, refer to the log file for details.

9   On the Finish panel, click **Finish**.

If you had chosen to initiate the auto reboot, a confirmation message to reboot the local system appears. Click **Yes** to reboot immediately or **No** to reboot later.

In case you had not selected to initiate the auto reboot, ensure that you manually reboot these systems.

For adding the DMP DSMs, if you had disconnected all but one path, you must reconnect the additional physical path now.

You can now proceed to configure the service groups for the newly added options.

Managing DMPW licenses

After you have installed DMPW, you may need to manage the product licenses to add or remove the product options.

You can manage your licenses by performing any of the following tasks:

- Changing the license type that you had selected during the installation.
  You can change the type of license you had selected during the installation.
  For the **Keyless** license type, all the product options are enabled by default. You can choose to clear the options that you do not intend to use.
  For the **User entered license key**, the product options available are based on the licenses you enter.

- Adding or removing the license keys.
  You can add or remove the license keys only if the license type selected is "User entered license key".

Note the following points before you begin to manage the licenses:

- You cannot manage licenses on a system that runs Server Core operating system. To manage licenses on these systems, you must uninstall the product and then install it again using the new licenses.

- You can manage the licenses on the local system only.

- You can manage the licenses only if you have installed the server components.

To manage licenses

1   Open the Windows Control Panel and click **Programs and Features**.

2   Select **Veritas Dynamic Multi-pathing for Windows** and click **Change**.

3 On the Mode Selection panel, select **Add or Remove** and then click **Next**.

4 On the System Selection panel, the wizard performs the verification checks and displays the applicable installation and product options. In case the verification checks have failed, review the details and rectify the issue. Before you choose to proceed with the installation click **Re-verify** to re-initiate the verification checks.

Note that the wizard proceeds only if the system passes the validation checks.

To manage the licenses, perform any of the following applicable task:

- To change the license type, select the required license type from the **License key** drop-down list.
  If you change your license type to "Keyless", all the available product options appear and are selected by default. Clear the selection for the product options that you do not intend to use and then proceed through step 7.
  If you change your license type to "User entered license key", the License Details panel appears by default. Proceed through step 5 to add the license keys.

- To add or remove the licenses, click **Edit**.

5 On the License Details panel, enter the license key and then click **Add**.

Repeat the step to add multiple licenses for the various product options you want to use.

The wizard validates the entered license keys and displays the relevant error if the validation fails.

6 On the License Details panel, click **OK**.

The wizard displays the applicable installation and product options on the System Selection panel.

7 On the System Selection panel, select or clear the required product options and then click **Next**.

The wizard performs the verification checks and proceeds to the Pre-install Summary panel. In case the verification checks have failed, review the details and rectify the issue. Before you choose to proceed with the installation click **Re-verify** to re-initiate the verification checks.

Note that the wizard proceeds only if the verification checks are passed.

8   On the Pre-install Summary panel, review the summary and click **Next**.

Note that the **Automatically reboot systems after installer completes operation** check box is selected by default. This will reboot all the selected remote systems immediately after the installation is complete on the respective system. If you do not want the wizard to initiate this auto reboot, clear the selection of **Automatically reboot systems after installer completes operation** check box.

9   On the Installation panel, review the progress of installation and click **Next** after the installation is complete.

If an installation is not successful, the status screen shows a failed installation. Refer to the Post-install summary for more details. Rectify the issue and then proceed to re-install the component.

10   On the Post-install Summary panel, review the installation result and click **Next**.

If the installation has failed, refer to the log file for details.

11   On the Finish panel, click **Finish**.

If you had chosen to initiate the auto reboot, a confirmation message to reboot the local system appears. Click **Yes** to reboot immediately or **No** to reboot later.

In case you had not selected to initiate the auto reboot, ensure that you manually reboot these systems.

Note: If you make any changes to the licenses, the changes take effect when the vxsvc service starts again. If you remove all the licenses, the vxsvc service fails to start and the service recovery options are changed to "Take No Action". To start the service you must enter the licenses and then manually start the service and change the service recovery option to "Restart the Service".

Repairing the DMPW installation

The product installer can repair an existing installation of the DMPW client and server components.

The **Repair** option restores the installation to its original state. This option fixes missing or corrupt files, shortcuts, and registry entries on the local system.

You can repair the installation only on the local system.

Note: Before you proceed to repair the installation, you must save your configuration to another system and failover the service groups for your applications to another node.

To repair the installation

1   Open the Windows Control Panel and click **Programs and Features**.

2   Select **Veritas Dynamic Multi-Pathing for Windows**. If you have installed the client components, select **Veritas Dynamic Multi- Pathing for Windows (Client Components)**.

3   Click **Change**.

4   On the Mode Selection panel, select **Repair**. Click **Next**.

5   On the System Selection panel, installer performs the verification checks. Click **Next** once the status is "Ready for repair".

   In case the verification checks have failed, review the details and rectify the issue. Before you choose to proceed with the installation, click **Re-verify** to re-initiate the verification checks.

   Note: You cannot select the installation and product options.

6   On the Pre-install Summary panel, review the information and click **Next** to begin the repair process.

   Note that if you are repairing the server installation, the **Automatically reboot systems after installer completes operation** check box is selected by default. This will reboot the node immediately after the repair operation is complete. If you do not want the wizard to initiate this auto reboot, clear the selection of **Automatically reboot systems after installer completes operation** check box.

7   On the Installation panel, review the list of services and processes running on the systems. Select a system to view the services and processes running on it.

   The wizard stops the product-specific services and discovers the processes running, if any, on the systems. These processes need to be stopped to proceed with the operation. Click **Next** to forcefully stop the processes and proceed with the operation. Alternatively, you can manually stop the processes.

   If the services or processes cannot be stopped, the operation fails. Rectify the error and then click **Retry** to validate the affected system again. Click **Retry All** to validate all the systems again.

8   On the Post-install Summary panel, review the summary and click **Next**.

9   On the Finish panel, click **Finish**.

In case you had not selected to initiate the auto reboot, ensure that you manually reboot the node.

About reinstalling DMPW

If your product installation has failed due to some reason, you can choose to reinstall it without uninstalling the components that were installed during the failed attempt.

Note: You must reboot your system before you begin to reinstall the product.

To reinstall the product, rectify the cause of failure and then procced with the installation.

See "Installing the DMPW server components using the product installer" on page 18.

See "Installing the DMPW client components using the product installer" on page 26.

See "Installing DMPW server or client components using CLI" on page 30.

If you choose to install the product using the product installer wizard, during the installation a confirmation message is displayed on the System Selection panel. Click **Yes** to proceed with the installation.

Uninstalling DMPW

This chapter includes the following topics:

- About uninstalling DMPW
- Uninstalling DMPW using the product installer
- Uninstalling DMPW using the command line

About uninstalling DMPW

You can completely uninstall the product using the product installation wizard or through CLI. However, if you want to uninstall any of the installed product options, you must choose the Windows Add or Remove Programs feature.

Uninstalling DMPW using the product installer

The Symantec product installation wizard enables you to uninstall the product. You can simultaneously uninstall the product from multiple remote nodes. To uninstall the product from remote nodes, ensure that the product is installed on the local node.

Uninstalling the Server components, uninstalls the client components.

To uninstall using the product installer

1   In the Windows Control Panel, select **Programs and Features**.

2   Select **Veritas Dynamic Multi-Pathing for Windows**.

    If you had installed the client components, click **Veritas Dynamic Multi-Pathing for Windows (Client Components)**.

3   Click **Uninstall**.

4   Review the information on the Welcome panel and then click **Next**.

5   On the System Selection panel, add the nodes from which you want to uninstall the product.

Note: By default the local system is selected for uninstallation. In case you are performing a remote uninstallation and do not want to uninstall the software from the local system, you must remove the node from the list.

You can add the nodes in one of the following ways:

■   In the System Name or IP text box, manually type the node name and click **Add**.

Note: The wizard does not support the Internet Protocol version 6. To add the systems having Internet Protocol version 6, you must type the system name.

■   Alternatively, browse to select the nodes.
The nodes that belong to the domain in which you have logged in are listed in the Available Systems list. Select one or more nodes and click the right arrow to move them to the Selected Systems list. Click **OK**. Once you add or select a node, wizard performs the verification checks and notes the verification details.

6   Click **Next**.

Note that the wizard fails to proceed with the uninstallation, unless all the selected nodes have passed the verification checks and are ready for uninstallation. In case the verification checks have failed on any of the system, review the details and rectify the issue. Before you choose to proceed with the uninstallation click **Re-verify** to re-initiate the verification checks for this node.

7   On the Pre-install Summary panel, review the summary and click **Next**.

Note that the **Automatically reboot systems after installer completes operation** check box is selected by default. This will reboot the remote systems immediately after the installation is complete on the respective system. If you do not want the wizard to initiate this auto reboot, clear the selection of **Automatically reboot systems after installer completes operation** check box.

8 On the Uninstallation panel, review the list of services and processes running on the systems. Select a system to view the services and processes running on it.

The wizard stops the product-specific services and discovers the processes running, if any, on the systems. These processes need to be stopped to proceed with the operation. Click **Next** to forcefully stop the processes and proceed with the operation. Alternatively, you can manually stop the processes.

If the services or processes cannot be stopped, the operation fails. Rectify the error and then click **Retry** to validate the affected system again. Click **Retry All** to validate all the systems again.

9 On the Post-uninstall Summary panel, review the uninstallation results and click **Next**.

If the uninstallation has failed on any of the system, review its summary report and check the log file for details.

10 On the Finish panel, click **Finish**.

In case you had not selected to initiate the auto reboot for the remote nodes, ensure that you manually reboot these nodes.

Uninstalling DMPW using the command line

You can silently uninstall the product software through the command prompt, using the VPI.exe command.

The VPI.exe command syntax is as follows:

```
%Installation Directory%\Veritas Shared\VPI\
{F834E070-8D71-4c4b-B688-06964B88F3E8}\{.xxx}\VPI.exe install_mode=5
solutions=1 telemetry=1 reboot=1
```

Table 4-1 displays information about the possible parameter values for uninstalling the software:

Table 4-1   Parameters for uninstalling the product

Parameter	Use
/s	Set for silent mode.

Table 4-1   Parameters for uninstalling the product *(continued)*

Parameter	Use
INSTALL_MODE	Set to indicate an install or uninstall.
	1 = To install
	4 = To repair
	5 = To uninstall
	The default setting is *1* to install. Set this parameter to 5 for uninstall.
	Example: INSTALL_MODE=*5*
SOLUTIONS	Set to the type of uninstallation.
	8 = DMPW Server (includes client components)
	9 = DMPW Client
	The default setting is *1* for DMPW Server.
	Example: SOLUTIONS=1
TELEMETRY	Set this parameter to participate in the Symantec Product Improvement Program by submitting system and usage information anonymously.
	The Product Improvement Program allows the product installation wizard to collect installation, deployment, and usage data and submit it anonymously to Symantec. The collected information helps identify how customers deploy and use the product. If you do not want to participate in the Product Improvement Program, set this parameter to 0.
REBOOT	Set for the automatic reboot of the system at the completion of the uninstallation.
	0 = No reboot
	1 = Reboot
	The default setting is *0* for no system reboot.
	Example: REBOOT=*1*

Table 4-1 Parameters for uninstalling the product *(continued)*

Parameter	Use
NODE	Set the node name.
	You can enter only one node at a time.
	The local node is the default setting when the node is unspecified.
	The system name of the node must start and end with a quotation mark (").
	Example: Node="*SysA*"
	Note: Reboot the system at the end of uninstallation to ensure that all components are uninstalled correctly. You do not have to reboot after uninstalling the client.

The following procedure describes how to uninstall the software from the command prompt.

To uninstall from the command prompt

1   Open a command window by clicking **Start > Run**.

2   Enter cmd in the Open field and click **OK**.

3   In the command window, navigate to the root directory of the product software disk.

4   Use the following command syntax to uninstall DMPW:

```
VPI.exe /s INSTALL_MODE=InstallMode
 SOLUTIONS="1'
Telemetry=Telemetry
[REBOOT=RebootMode ] [NODE="SysA"]
```

Upgrading DMPW

This chapter includes the following topics:

■ Preparing the systems for upgrade

■ Upgrading DMPW

Preparing the systems for upgrade

Perform the following tasks before you begin to upgrade your cluster configuration.

Checking the supported minimum product versions

Before upgrading, you must ensure that your systems meets the minimum product version requirement.

Note: While you plan to install the product, you may have to upgrade your Windows operating system to the supported minimum level. Symantec recommends performing the Windows upgrade before upgrading the product.

See "Operating system requirements" on page 10.

Table 5-1 lists the supported upgrade paths.

Table 5-1 Supported upgrade paths

Upgrade from	Upgrade to
DMPW 5.1 DMPW 6.0	DMPW 6.0.1

> **Note:** If you had selected Microsoft FoC option while installing SFW , then upgrading from SFW to SFW HA is not supported.

If your current installation does not meet this minimum required level, you must manually apply the appropriate product upgrades to meet the minimum product level required before proceeding with the installer. You can get intermediate versions of the products on the Symantec Support site:

http://www.symantec.com/business/support/index.jsp

For license keys, contact Symantec Sales. You can also uninstall the older versions of the product and install the new product.

General preparations

Before you begin to upgrade the cluster, perform the following general tasks:

- Back up all your data.

- Check the hardware requirements for software upgrade.

- Check to see if you need to update the Microsoft Active Directory to support the upgraded software.

Upgrade notes

Note the following points before you begin with the upgrade:

- During the upgrade, verify the selected installation and product options. All the installed options are selected by default.
  If you do not want to include any of the installed options in the upgraded environment, you must uninstall the same before you proceed with the upgrade. Use the Add Remove feature to uninstall the option.
  If you want to add any additional options, you must select the same.

- It is recommended to physically disconnect all but one path of the multipath storage to shorten the upgrade time.

- During an upgrade, you might encounter messages while the installer validates the selected systems. These informational messages do not indicate an error. If an error occurs, the system's status confirms the problem.

Upgrading DMPW

This section describes the tasks to upgrade Veritas Dynamic Multi-Pathing for Windows.

Table 5-2   Tasks to upgrade DMPW

Step	Task
1	Review the pre-installation tasks
	See "About the preinstallation and planning tasks" on page 9.
2	Review the pre-upgrade tasks to be performed
	See "Preparing the systems for upgrade" on page 49.
3	Install DMPW 6.0.1
	See "About installing DMPW" on page 17.

Migrating from EMC PowerPath to Veritas Dynamic Multi-Pathing for Windows

This chapter includes the following topics:

- Uninstalling EMC PowerPath and Installing DMPW

- Configuring DMPW for Active/Active load balancing in a cluster

Uninstalling EMC PowerPath and Installing DMPW

This section describes removing devices from EMC PowerPath (PP) control and enabling DMPW on the devices.

Prerequisites

Plan for system downtime. The migration steps may involve some system downtime on a host due to the following procedures:

- Stopping applications

- Stopping VCS services if using VCS

To uninstall EMC PowerPath and install Veritas Dynamic Multi-Pathing for Windows, perform the following:

To remove devices from EMC PowerPath control and enable DMPW

1   Disable/disconnect all but one path from the host to the storage.

2   Remove the EMC PowerPath (PP).

   Refer to the EMC instructions for removing PowerPath.

3   Reboot the system after the PowerPath has been removed.

4   Install the Veritas Dynamic Multi-Pathing for Windows.

5   Under Dynamic Multi-Pathing, select MPIO Device Specific modules (DSMs) for the attached storage (for example, EMC CLARiiON and Hitachi AMS).

6   Reboot the node.

Configuring DMPW for Active/Active load balancing in a cluster

SCSI-3 is required for configuring Active/Active (A/A) load balancing in a clustered environment. SCSI-3 is enabled by default when DMPW is installed in a clustered environment.

If the disk resources have already been created before setting SCSI-3 support at array level, then they are reserved using SCSI-2 and A/A load balancing policies will not work on those disks.

To use A/A load balancing, enable SCSI-3 reservation for all disk under an array using the vxdmpadm setarray command. This ensures that the disks under the selected array will be reserved using SCSI-3 even if the cluster application issues SCSI-2 reservation for these disks.

Syntax for `vxdmpadm setarray` command:

```
vxdmpadm setarrayscsi3 scsi3support=1 Harddisk name.
```

Refer to the *Veritas Dynamic Multi-Pathing for Windows Administrator's Guide* for details.

Migrating Hitachi Data Link Manager to Veritas Dynamic Multi-Pathing for Windows

This chapter includes the following topics:

- Uninstalling Hitachi Dynamic Link Manager (HDLM) and installing DMPW

- Configuring DMPW for Active/Active load balancing in a cluster

Uninstalling Hitachi Dynamic Link Manager (HDLM) and installing DMPW

This section describes removing devices from HDLM control and enabling DMPW on the devices.

Note: DMPW cannot co-exist with HDLM and hence, HDLM must be removed from a system before installing DMPW.

Plan for system downtime. The migration steps involve system downtime on a host due to the following:

- Stopping applications

- Stopping VCS services if using VCS

- Rebooting one or more hosts after uninstalling HDLM

Prerequisites

Back up all the data on the host where HDLM is installed. Also, if necessary, back up the data on the management target device. Depending on the environment, uninstalling HDLM might take some time. Do not terminate the uninstallation process while a progress bar for uninstallation is displayed.

After HDLM is uninstalled, sometimes the following files listed below would not be deleted. The following files will be deleted when you restart the host:

- HDLM-installation-folder\DLMTools\perfhdlm\provhdlm.dll

- HDLM-installation-folder\lib\libdlm.dll

- HDLM-installation-folder\lib\hdlmhcc60.dll

The default installation folder for HDLM is Windows-installation-drive:

C: \Program Files\HITACHI\DynamicLinkManager. For Windows Server 2003 (excluding the x86 edition) or Windows Server 2008 (excluding the x86 edition), Program Files is Program Files (x86).

Refer to HDLM documentation for details.

Uninstalling HDLM in a non-clustered environment

To uninstall HDLM in a non-clustered environment, perform the following steps. Refer to HDLM documentation for details:

1   Log on to Windows as a member of the Administrators group.

2   Stop all the processes and services that use the HDLM management-target paths.

    Stop any processes or application services, such as a DBMS, that are using the HDLM management-target paths.

    In Windows Server 2008, if you are not logged on as an administrator, use the Run as administrator functionality.

3   If the host and the storage subsystem are connected via multiple paths, reconfigure it so that only one path connects the host to the storage subsystem.

    After uninstalling HDLM, if you start the host in a multi-path configuration, the disk contents might become corrupted.

4   Start the uninstallation procedure.

5   When uninstallation finishes, a dialog box appears prompting you to restart the host.

   Click **OK** to restart the host.

6   Now, install the Veritas Dynamic Multi-Pathing for Windows (DMPW) .

See "Installing the DMPW server components using the product installer" on page 18.

See "Installing DMPW server or client components using CLI" on page 30.

Uninstalling HDLM in a clustered (MSCS or VCS) environment

To uninstall HDLM in an MSCS or VCS environment perform the following steps. Refer to HDLM documentation for details.

Uninstalling HDLM in a clustered (MSCS or VCS) environment

1   Log on to Windows as a member of the Administrators group.

2   Stop all the processes and services that use the HDLM management-target paths.

   Stop any processes or application services, such as a DBMS, that are using the HDLM management-target paths.

3   In Windows Server 2008, if you are not logged on as an administrator, use the Run as administrator functionality.

4   Stop MSCS or VCS on all the hosts that make up the cluster. When MSCS is used, follow this procedure:

   Choose **Administrative Tools** and then **Services**. In the list of services, right-click **Cluster Service**, and then from the **Action** menu choose **Stop** to stop the service.

   A message prompting you to restart the system might be displayed. If this happens, choose No.

5   If a host and a storage subsystem are connected via multiple paths, reconfigure it so that only one path connects the host to the storage subsystem.

   Uninstalling HDLM in a multi-path configuration, might cause the disk contents to become corrupted when the host restarts. Make sure that you uninstall HDLM from a single path configuration only.

6   Start the uninstallation procedure.

7 When uninstallation finishes, a dialog box appears prompting you to restart the host.

Click **OK** to restart the host.

8 Now, Install the Veritas Dynamic Multi-Pathing for Windows.

See "Installing the DMPW server components using the product installer" on page 18.

See "Installing DMPW server or client components using CLI" on page 30.

Configuring DMPW for Active/Active load balancing in a cluster

SCSI-3 is required for configuring Active/Active (A/A) load balancing in a clustered environment. SCSI-3 is enabled by default on Windows Server 2008 when DMPW is installed in a clustered environment.

For Windows Server 2003, SCSI-2 is enabled by default. Ensure to set SCSI-3 at array level before creating any disk resources in a cluster.

Note: If you are using MSCS on Windows Server 2003 or VCS for Windows and there are disk resources in the cluster, then the disks would get reserved using the SCSI-2 reservation policy. In this case, the DSM will support only Active/ Passive (A/P) load balancing policy even if other load balancing policies are set.

If the disk resources have already been created before setting SCSI-3 support at array level, then they are reserved using SCSI-2 and A/A load balancing policies will not work on those disks.

To use A/A load balancing, enable SCSI-3 reservation for all disk under an array using the `vxdmpadm setarray` command. This ensures that the disks under the selected array will be reserved using SCSI-3 even if the cluster application issues SCSI-2 reservation for these disks.

Syntax for `vxdmpadm setarray` command:

```
vxdmpadm setarrayscsi3 scsi3support=1 Harddisk name.
```

Refer to the *Veritas Dynamic Multi-Pathing for Windows Administrator's Guide* for details.

About SORT

This appendix includes the following topics:

- About Symantec Operations Readiness Tools

About Symantec Operations Readiness Tools

Symantec Operations Readiness Tools (SORT) is a website that automates and simplifies some of the most time-consuming administrative tasks. It helps you identify risks in your datacenters and improve operational efficiency, enabling you to manage the complexity that is associated with datacenter architectures and scale.

Table A-1 lists three major datacenter tasks and the SORT tools that can help you accomplish them.

Table A-1   Datacenter tasks and the SORT tools

Task	SORT tools
Prepare for installations and upgrades	■ Installation and Upgrade checklists Display system requirements including memory, disk space, and architecture. ■ Installation and Upgrade custom reports Create reports that determine if you're ready to install or upgrade a Symantec enterprise product. ■ Array-specific Module Finder List the latest Array Support Libraries (ASLs) and Array Policy Modules (APMs) for UNIX servers, and Device Driver Installers (DDIs) and Device Discovery Layers (DDLs) for Windows servers. ■ High Availability Agents table Find and download the agents for applications, databases, replication, and Symantec partners.

Table A-1 Datacenter tasks and the SORT tools *(continued)*

Task	SORT tools
Identify risks and get server-specific recommendations	■ Patch notifications Receive automatic email notifications about patch updates. (Sign in required.) ■ Risk Assessment check lists Display configuration recommendations based on your Symantec product and platform. ■ Risk Assessment custom reports Create reports that analyze your system and give you recommendations about system availability, storage use, performance, and best practices. ■ Error code descriptions and solutions Display detailed information on thousands of Symantec error codes.
Improve efficiency	■ Patch Finder List and download patches for your Symantec enterprise products. ■ License/Deployment custom reports Create custom reports that list your installed Symantec products and license keys. Display licenses by product, platform, server tier, and system. ■ Symantec Performance Value Unit (SPVU) Calculator Use the calculator to assist you with the pricing meter transition. ■ Documentation List and download Symantec product documentation, including manual pages, product guides, and support articles. ■ Related links Display links to Symantec product support, forums, customer care, and vendor information on a single page.

SORT is available at no additional charge.

To access SORT, go to:

https://sort.symantec.com

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