Veritas™ Dynamic Multi-Pathing Release Notes

Solaris

6.0 Platform Release 1

Symantec™

Veritas Dynamic Multi-Pathing Release Notes

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Product version: 6.0 PR1

Document version: 6.0PR1.2

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https://sort.symantec.com/documents

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

Dynamic Multi-Pathing Release Notes

This document includes the following topics:

- About this document
- About Veritas Dynamic Multi-Pathing
- About Symantec Operations Readiness Tools
- Important release information
- Changes introduced in 6.0 PR1
- Changes introduced in 6.0
- System requirements
- Known issues
- Software limitations
- Documentation

About this document

This document provides important information about Veritas Dynamic Multi-Pathing (Dynamic Multi-Pathing) version 6.0 PR1 for Solaris. Review this entire document before you install or upgrade Dynamic Multi-Pathing.

The information in the Release Notes supersedes the information provided in the product documents for Dynamic Multi-Pathing.

This is Document version: 6.0PR1.2 of the *Veritas Dynamic Multi-Pathing Release Notes*. Before you start, make sure that you are using the latest version of this guide. The latest product documentation is available on the Symantec Web site at:

https://sort.symantec.com/documents

About Veritas Dynamic Multi-Pathing

Veritas Dynamic Multi-Pathing (DMP) provides multi-pathing functionality for the operating system native devices configured on the system. DMP creates DMP metadevices (also known as DMP nodes) to represent all the device paths to the same physical LUN.

DMP is available as a component of Storage Foundation. DMP supports Veritas Volume Manager (VxVM) volumes on DMP metadevices, and Veritas File System (VxFS) file systems on those volumes.

DMP is also available as a stand-alone product, which extends DMP metadevices to support ZFS. You can create ZFS pools on DMP metadevices. DMP supports only non-root ZFS file systems.

Veritas Dynamic Multi-Pathing can be licensed separately from Storage Foundation products. Veritas Volume Manager and Veritas File System functionality is not provided with a DMP license.

DMP functionality is available with a Storage Foundation Enterprise license, SF HA Enterprise license, and Standard license.

Veritas Volume Manager (VxVM) volumes and disk groups can co-exist with ZFS pools, but each device can only support one of the types. If a disk has a VxVM label, then the disk is not available to ZFS. Similarly, if a disk is in use by ZFS, then the disk is not available to VxVM.

About Symantec Operations Readiness Tools

Symantec Operations Readiness Tools (SORT) is a Web site that automates and simplifies some of the most time-consuming administrative tasks. SORT helps you manage your datacenter more efficiently and get the most out of your Symantec products.

SORT can help you do the following:

Prepare for your next installation or upgrade	■ List product installation and upgrade requirements, including operating system versions, memory, disk space, and architecture.
	■ Analyze systems to determine if they are ready to install or upgrade Symantec products.
	■ Download the latest patches, documentation, and high availability agents from a central repository.
	■ Access up-to-date compatibility lists for hardware, software, databases, and operating systems.
Manage risks	■ Get automatic email notifications about changes to patches, array-specific modules (ASLs/APMs/DDIs/DDLs), and high availability agents from a central repository.
	■ Identify and mitigate system and environmental risks.
	■ Display descriptions and solutions for hundreds of Symantec error codes.
Improve efficiency	■ Find and download patches based on product version and platform.
	■ List installed Symantec products and license keys.
	■ Tune and optimize your environment.

Note: Certain features of SORT are not available for all products. Access to SORT is available at no extra cost.

To access SORT, go to:

https://sort.symantec.com

Important release information

■ For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:
http://www.symantec.com/docs/TECH164885

■ For the latest patches available for this release, go to:
http://sort.symantec.com/

■ The hardware compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware visit the following URL:
http://www.symantec.com/docs/TECH170013

Before installing or upgrading Storage Foundation and High Availability Solutions products, review the current compatibility list to confirm the compatibility of your hardware and software.

Changes introduced in 6.0 PR1

This section lists the changes in Veritas Dynamic Multi-Pathing 6.0 PR1.

Changes related to installation

The product installer includes the following changes.

New packaging framework in Solaris 11

Solaris 11 introduces the new IPS packaging framework. All of the Symantec packages have been modified to IPS packages.

Changes introduced in 6.0

This section lists the changes in Veritas Dynamic Multi-Pathing 6.0.

Changes related to Veritas Dynamic Multi-Pathing (DMP)

The following sections describe changes in this release related to Veritas Dynamic Multi-Pathing (DMP).

DMP detects "persist through power loss" storage device server capability

In this release, DMP detects when a storage device server has the capability "persist through power loss". Certain arrays, such as Oracle's Sun Storage 7310, use this capability to preserve the persistent reservation and registrations across power cycles, controller reboots, and other similar operations.

If DMP detects that the device supports this capability, then DMP sets the APTPL (Activate Persist Through Power Loss) bit to 1 in the PERSISTENT RESERVE OUT parameter data sent with a REGISTER, REGISTER AND IGNORE EXISTING KEY service action, according to SPC-3 specifications.

When APTPL is set to 1, the persistent reservation (PR) keys are preserved during array controller takeover or failback operations.

Tuning Dynamic Multi-Pathing with templates

Veritas Dynamic Multi-Pathing (DMP) has multiple tunable parameters and attributes that you can configure for optimal performance. In this release, DMP introduces a template method to update several tunable parameters and attributes with a single operation. The template represents a full or partial DMP configuration, showing the values of the parameters and attributes of the host.

To view and work with the tunable parameters, you can dump the configuration values of the DMP tunable parameters to a file. Edit the parameters and attributes, if required. Then, load the template file to a host to update all of the values in a single operation.

For more information about tuning DMP with templates, see the *Veritas Dynamic Multi-Pathing Administrator's Guide*.

Changes to DMP support for ALUA arrays

In this release, DMP has improved support for ALUA arrays. DMP now efficiently handles most implementations of the ALUA standard. The enhancements include the following:

- DMP now detects whether an ALUA array is A/A-A, A/A or A/P-F.

- DMP handles the array state correctly, when a node is taken out of the cluster. The enclosure level attribute failoverpolicy is now set internally.

- DMP handles Standby and unavailable LUN states for ALUA arrays.

- DMP monitors LUN ownership changes. DMP can shift the I/O load depending on the current state of the LUN.

Dynamic Multi-Pathing (DMP) detects and reports extended attributes from Veritas Operations Manager

If you have Veritas Operations Manager (VOM), and you have configured a central Management Server, the Device Discovery layer (DDL) of DMP can obtain extended attributes for managed hosts. DDL obtains these additional attributes out of band from the VOM database. DMP displays these attributes as output of the vxdisk -p list command.

See the *Administrator's Guide*.

DMP tunable parameter dmp_enable_restore renamed to dmp_restore_state

The DMP tunable parameter dmp_enable_restore has been renamed to dmp_restore_state. The dmp_restore_state tunable can have the following values:

- enabled
  Enables and starts the DMP path restoration thread.

- disabled
  Stops and disables the DMP path restoration thread.

- stopped
  Stops the DMP path restoration thread until the next device discovery cycle.

Command completion for DMP commands

Veritas Dynamic Multi-Pathing (DMP) now supports command completion for DMP commands. In this release, command completion is supported only on the bash shell. The shell must be bash version 2.4 or later.

To use this feature, press **Tab** while entering a supported VxVM or DMP command. The command is completed as far as possible. When there is a choice, the command completion displays the next valid options for the command. Enter one of the displayed values. A value in brackets indicates a user-specified value.

Note: Platform-specific options are not supported with command completion in this release.

The following commands support command completion:

- vxdisk

- vxdmpadm

- vxddladm

DMP enhancements

The following DMP enhancements have been made in this release:

- The `vxdmpadm enable` command and the `vxdmpadm disable` command now accept multiple controllers on the command line.

- In addition, you can now enable or disable paths between a given controller and a port-id pair. If you specify both an HBA controller and an array port, DMP disables I/O on the specific portion of the Storage Area Network (SAN).

- The `vxdmpadm stat errord` command and the `vxdmpadm stat restored` command are deprecated.
  To see status for the restore tasks, use the `vxdmpadm gettune` command.

- Excluding or including paths from DMP is deprecated.

Excluding paths from DMP but not from VxVM can lead to unsupported configurations. The command operations to exclude or include paths from DMP are now deprecated. You can exclude or include paths from VxVM. The deprecated commands are as follows:

`vxdmpadm exclude dmp`

`vxdmpadm include dmp`

`vxdiskadm`: DMP options under `Suppressing or including devices for VxVM`

- `vxddladm list devices` command now displays the name of the ASL even if the device is skipped.

- `vxddladm status eventsource` is added to show the status of the `vxesd` daemon

- `vxscsiinq` diagnostic utility is enhanced to take hexadecimal page numbers as arguments.

Changes related to installation and upgrades

The product installer includes the following changes in 6.0 PR1.

Support for product deployment using Flash Archives on Solaris 10

Use a Flash archive to install the Storage Foundation and High Availability Suite of products and the Solaris 10 operating system in conjunction with JumpStart.

See the *Installation Guide* for more information.

Using the installer's postcheck option

You can use the installer's postcheck option to diagnose installation-related problems and to provide troubleshooting information.

Allow Response files to change tuning parameters

You can set non-default product and system tunable parameters using a tunables template file. With the file, you can set tunables such as the I/O policy or toggle native multi-pathing during or after the installation procedure.

See the *Installation Guide* for more information.

The installer can check product versions and hotfixes

You can check the existing product versions using the installer command with the `-version` option before or after you install. After you have installed the current version of the product, you can use the `showversion` script in the /opt/VRTS/install directory to find version information.

You can discover the following information with these commands:

■ The installed version of all released Strorage Foundation and High Availability Suite of products

■ The missing required packages or patches as applicable for platform

■ The available updates (including patches or hotfixes) from SORT for the installed products

Depending on the product, the script can identify versions from 4.0 onward.

Packaging updates

The following lists the package changes in this release.

■ New `VRTSsfcpi60` package for product installer scripts
The `VRTSsfcpi60` package is introduced in this release. The VRTSsfcpi60 package contains the installer scripts and libraries that the installer uses to install, configure and upgrade Veritas products.

For more information, see the *Installation Guide*.

Enhancements to collecting a VxExplorer troubleshooting archive

The Symantec Operations Readiness Tools (SORT) data collector contains functionality to collect and submit a VxExplorer archive. You can send this archive to Symantec Technical Support for problem diagnosis and troubleshooting. VxExplorer does not collect customer data.

The legacy `VxExplorer` script now works differently. When you run the script, it launches the SORT data collector on the specified local host with the `-vxexplorer` option.

To learn more about using the data collector to collect a VxExplorer archive, see:

www.symantec.com/docs/HOWTO32575

Changes related to product documentation

The Storage Foundation and High Availability Solutions 6.0 release includes the following changes to the product documentation.

Table 1-1 lists the documents introduced in this release.

Table 1-1   New documents

New documents	Notes
Veritas Storage Foundation Installation Guide	Installation and upgrade information for Storage Veritas Foundation.
Veritas Storage Foundation Administrator's Guide	Administration information for Veritas Storage Foundation.
Veritas Storage Foundation and High Availability Release Notes	Release-specific information for Veritas Storage Foundation and High Availability users.
Veritas Storage Foundation and High Availability Solutions Solutions Guide	Solutions and use cases for Veritas Storage Foundation and High Availability Solutions.
Veritas Storage Foundation and High Availability Solutions Troubleshooting Guide	Troubleshooting information for Veritas Storage Foundation and High Availability Solutions.
Symantec VirtualStore Release Notes	Release-specific information Symantec VirtualStore.
Veritas Storage Foundation for Sybase ASE CE Release Notes	Release-specific information for Veritas Storage Foundation for Sybase ASE CE.
Veritas Storage Foundation for Sybase ASE CE Installation Guide	Installation information for Veritas Storage Foundation for Sybase ASE CE.
Veritas Storage Foundation for Sybase ASE CE Administrator's Guide	Administration information for Veritas Storage Foundation for Sybase ASE CE.
Virtual Business Services–Availability User's Guide	Information about Virtual Business Services. This document is available online.

Table 1-2 lists the documents that are deprecated in this release.

Table 1-2   Deprecated documents

Deprecated documents	Notes
Veritas File System Administrator's Guide	Content now appears in the *Veritas Storage Foundation Administrator's Guide* and in the *Veritas Storage Foundation Cluster File System High Availability Administrator's Guide*.

Table 1-2   Deprecated documents *(continued)*

Deprecated documents	Notes
Veritas Volume Manager Administrator's Guide	Content now appears in the *Veritas Storage Foundation Administrator's Guide* and in the *Veritas Storage Foundation Cluster File System High Availability Administrator's Guide.*
Veritas Storage Foundation Advanced Features Administrator's Guide	Content now appears in the *Veritas Storage Foundation and High Availability Solutions Solutions Guide.*
Veritas Volume Manager Troubleshooting Guide	Content now appears in the *Veritas Storage Foundation and High Availability Solutions Troubleshooting Guide.*
Veritas Cluster Server Agents for Veritas Volume Replicator Configuration Guide	Content now appears in the *Veritas Cluster Server Bundled Agents Reference Guide.*
Veritas Volume Replicator Planning and Tuning Guide	Content now appears in the *Veritas Storage Foundation and High Availability Solutions Replication Administrator's Guide.*
Veritas Volume Replicator Advisor User's Guide	Content now appears in the *Veritas Storage Foundation and High Availability Solutions Replication Administrator's Guide.*

Table 1-3 lists documents that are no longer bundled with the binaries. These documents are now available online.

Table 1-3   Online documents

Document
Veritas Cluster Server Agent Developer's Guide
Veritas Cluster Server Application Note: Dynamic Reconfiguration of Oracle Sun Servers
Veritas File System Programmer's Reference Guide

System requirements

The following topics describe the system requirements for this release:

Hardware compatibility list

The compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware go to the following URL:

http://www.symantec.com/docs/TECH170013

Supported operating systems

Table 1-4 shows the supported operating systems for this release.

Table 1-4   Supported operating systems

Operating systems	Levels	Chipsets
Solaris 11	SRU 11.0.x.y.z	SPARC
Solaris 11	SRU 11.0.x.y.z	x64

Note: Supported Repository Update (SRU) digits in the table represent Release.Update.SRU.Build.Respin.

Veritas Storage Foundation memory requirements

Symantec recommends 2 GB of memory over the minimum requirement for the operating system.

Known issues

This section covers the known issues in this release.

See the corresponding Release Notes for a complete list of known issues related to that product.

See "Documentation" on page 24.

Importing a zpool created on a DMP device fails if DMP native support is off (2717076)

When DMP native support is enabled, a zpool can be created on a DMP device. If the zpool is exported and the DMP native support is disabled, the zpool cannot be imported again. The import operation fails with the following message:

```
cannot import 'zpool1': device size is less than the minimum (64M)
        Destroy and re-create the pool from
        a backup source
```

Workaround:

To import a zpool that was created on a DMP device, DMP native support must be on.

To enable the DMP native support and import the zpool

1   Enable the DMP native support with the following command:

    # **vxdmpadm settune dmp_native_support=on**

2   Import the zpool.

    The import operation now succeeds.

Creating a zpool fails with a incorrect disk size error (2277875)

When the tunable parameter dmp_native_support is turned on, creating a zpool on DMP devices may fail with the following error:

```
one or more devices is less than the minimum size (64 M)
```

This error may occur even if the device size is greater than the required minimum size.

Work-around:

To resolve this issue, use one of the following commands:

■   # **vxdisk scandisks**

■   # **format -e *dmp_device***

DMP aggregates EFI labelled LUNS to a 0_0 disk (2558408)

While performing `vxdiskunsetup` of some luns, if you format and label the disks as EFL, all the EFI labelled luns are aggregated to a 0_0 disk.

Workaround:

When changing the label of a disk from SMI to EFI, or vice-versa, Symantec recommends that the label be changed on all accessible paths to a disk. That is, use the `format -e` command to stamp the new label on all accessible paths. For Active/Passive (A/P) class of arrays, this should be done only on the active paths. For other arrays, all paths should be labeled.

Symantec also recommends the installation of the patch provided by Oracle for EFI label issues (IDR144101-01 or IDR144249-01 or release kernel patch 142909-17). If this patch is installed, you can run the `format -e` command only on one path. After that, perform a read operation (such as `dd if=/dev/rdsk/<path> of=/dev/null count=1`) on the other accessible paths to propagate the label.

Splitting a mirror from a zpool causes a core dump (2273367)

The following operation to split a mirror from a zpool fails:

```
# zpool split my_pool new_pool mirror
```

This issue is an Oracle issue with zpool. This issue occurs whether DMP is controlling the devices or not. That is, whether the dmp_native_support tunable is on or off.

I/O fails on some paths after array connectivity is restored, due to high restore daemon interval (2091619)

If a path loses connectivity to the array, the path is marked as suspected to fail and hence is not used for I/O. After the connectivity is restored, the restore daemon detects that the path is restored when the restore daemon probes the paths. The restore daemon makes the path available for I/O. The restore daemon probes the paths at the interval set with the tunable parameter dmp_restore_interval. If you set the dmp_restore_interval parameter to a high value, the paths are not available for I/O until the next interval.

Changes in enclosure attributes are not persistent after an upgrade to VxVM 6.0 PR1 (2082414)

The Veritas Volume Manager (VxVM) 6.0 PR1 includes several array names that differ from the array names in releases prior to release 5.1SP1. Therefore, if you upgrade from a previous release to VxVM 6.0 PR1, changes in the enclosure attributes may not remain persistent. Any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 6.0 PR1. Manually reconfigure the enclosure attributes to resolve the issue.

Table 1-5 shows the Hitachi arrays that have new array names.

Table 1-5   Hitachi arrays with new array names

Previous name	New name
TagmaStore-USP	Hitachi_USP
TagmaStore-NSC	Hitachi_NSC
TagmaStoreUSPV	Hitachi_USP-V
TagmaStoreUSPVM	Hitachi_USP-VM
<New Addition>	Hitachi_R700
Hitachi AMS2300 Series arrays	New array names are based on the Model Number 8x. For example, AMS_100, AMS_2100, AMS_2300, AMS_2500, etc.

In addition, the Array Support Library (ASL) for the enclosures XIV and 3PAR now converts the cabinet serial number that is reported from Hex to Decimal, to correspond with the value shown on the GUI. Because the cabinet serial number has changed, any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 6.0 PR1. Manually reconfigure the enclosure attributes to resolve the issue.

The cabinet serial numbers are changed for the following enclosures:

- IBM XIV Series arrays

- 3PAR arrays

Adding a DMP device or its OS device path as a foreign disk is not supported (2062230)

When DMP native support is enable, adding a DMP device or its OS device path as a foreign disk using the `vxddladm addforeign` command is not supported. Using this command can lead to unexplained behavior.

ZFS pool creation on a DMP device fails when the LUN size is between 1 TB and 2TB (2010919)

Creating a ZFS pool on a DMP device using the whole disk of size > 1TB and < 2TB that contains a SMI SUN label fails. The issue is that zpool create on a whole disk changes the device label from SMI to EFI. This causes confusion between the OS device paths of the same DMP device due to a bug in the Sun SCSI layer. This is due to SUN BugID: 6912703.

DMP native support is not persistent after upgrade to 6.0 (2526709)

The DMP tunable parameter dmp_native_support is not persistent after upgrade to DMP 6.0. After you upgrade, set the tunable parameter using the following command:

```
# vxdmpadm settune dmp_native_support=on
```

After changing the preferred path from the array side, the secondary path becomes active (2490012)

For EVA arrays, DMP requires that the prefer bit is static. If the prefer bit is not static, issues like the following may occur. After changing the prefer path of LUN from the array side, and performing a disk discovery (vxdisk scandisks) from the host, the secondary path becomes active for the LUN.

Work-around:

To work around this issue

1   Set the pref bit for the LUN.

2   Perform disk discovery again:

```
# vxdisk scandisks
```

Issues related to installation

This section describes the known issues during installation and upgrade.

Incorrect error messages: error: failed to stat, etc. (2120567)

During installation, you may receive errors such as, "error: failed to stat /net: No such file or directory." Ignore this message. You are most likely to see this message on a node that has a mount record of /net/x.x.x.x. The /net directory, however, is unavailable at the time of installation.

During product migration the installer overestimates disk space use (2088827)

The installer displays the space that all the product packages and patches needs. During migration some packages are already installed and during migration some packages are removed. This releases disk space. The installer then claims more space than it actually needs.

Workaround: Run the installer with `-nospacecheck` option if the disk space is less than that installer claims but more than actually required.

The `-help` option for certain commands prints an erroneous argument list (2138046)

For installsf, installat, and the installdmp scripts , although the `-help` option prints the `-security`, `-fencing`, `-addnode` options as supported, they are in fact not supported. These options are only applicable for high availability products.

On Solaris 11, uninstalling an IPS package does not always remove the package's SMF services from the SMF database

On Solaris 11, after uninstalling an IPS package, some of the SMF services owned by the package that was uninstalled continue to exist in the SMF database. This issue is due to a defect in the Solaris 11 operating system.

For more information, refer to the Oracle bug ID#7104300 (Removing an external dependency manifest and its manifest the instance is masked).

This issue sometimes prevents you from reinstalling the same package. For example, if you uninstall the `VRTSvxvm` package, reinstalling the package completes, but some SMF services fail to get added to the repository, which leads to VxVM drivers not getting loaded, as well as `vxconfigd` and other VxVM daemons not starting.

Workaround: Update your Solaris 11 systems to Solaris 11 Support Repository Update 1.

On Solaris 11, uninstalling an IPS package moves some files to the $IMAGE_META/lost+found directory

After uninstalling an IPS package, some of the files related to the package get moved to the `$IMAGE_META/lost+found` directory. The value of `$IMAGE_META` generally is `/var/pkg`. These files are not part of the package, but reside in the directories created by the package.

One example is the log files. In the `VRTSvxvm` package, the CBR log files are kept in `/var/adm/vx`. During the uninstallation of the `VRTSvxvm` package, the following warning message displays:

```
The following unexpected or editable files and directories were
salvaged while executing the requested package operation; they
have been moved to the displayed location in the image:
```

```
var/adm/vx -> /var/pkg/lost+found/var/adm/vx-20120221T114835Z
usr/lib/vxvm/bin -> /var/pkg/lost+found/usr/lib/vxvm/bin-20120221T114835Z
etc/vx/vras -> /var/pkg/lost+found/etc/vx/vras-20120221T114835Z
```

Workaround: There is no workaround for this issue. This is Solaris 11 IPS behaviour.

Software limitations

This section covers the software limitations of this release.

See the corresponding Release Notes for a complete list of software limitations related to that component or product.

See "Documentation" on page 24.

DMP support for the Solaris format command (2043956)

When DMP is enabled to support Solaris ZFS pools, the Solaris `format` command displays either a path or the corresponding dmpnode. The result depends on the order in which the `format` command parses the entries in the `/dev/rdsk` directory.

DMP settings for NetApp storage attached environment

To minimize the path restoration window and maximize high availability in the NetApp storage attached environment, change the default values for the DMP tunable parameters.

Table 1-6 describes the DMP tunable parameters and the new values.

Table 1-6   DMP settings for NetApp storage attached environment

Parameter name	Definition	New value	Default value
dmp_restore_internal	DMP restore daemon cycle	60 seconds.	300 seconds.
dmp_path_age	DMP path aging tunable	120 seconds.	300 seconds.

The change is persistent across reboots.

To change the tunable parameters

1   Issue the following commands:

    # **vxdmpadm settune dmp_restore_internal=60**

    # **vxdmpadm settune dmp_path_age=120**

2   To verify the new settings, use the following commands:

    # **vxdmpadm gettune dmp_restore_internal**

    # **vxdmpadm gettune dmp_path_age**

ZFS pool in unusable state if last path is excluded from DMP (1976620)

When a DMP device is used by a ZFS pool, do not exclude the last path to the device. This can put the ZFS pool in an unusable state.

DMP and EMC PowerPath coexistence

EMC PowerPath (EMCPP) currently does not claim support for Solaris 11. Therefore, DMP and EMCPP coexistence is not supported in Solaris 11.

Documentation

Product guides are available in the PDF format on the software media in the `/product_name/docs` directory. Additional documentation is available online.

Make sure that you are using the current version of documentation. The document version appears on page 2 of each guide. The publication date appears on the title page of each document. The latest product documentation is available on the Symantec website.

http://sort.symantec.com/documents

Documentation set

Table 1-7 lists the documentation for Veritas Dynamic Multi-Pathing.

Table 1-7   Veritas Dynamic Multi-Pathing documentation

Document title	File name
Veritas Dynamic Multi-Pathing Release Notes	dmp_notes_60pr1_sol.pdf

Table 1-7   Veritas Dynamic Multi-Pathing documentation *(continued)*

Document title	File name
Veritas Dynamic Multi-Pathing Installation Guide	dmp_install_60pr1_sol.pdf
Veritas Dynamic Multi-Pathing Administrator's Guide	dmp_admin_60pr1_sol.pdf

If you use Veritas Operations Manager (VOM) to manage Veritas Storage Foundation and High Availability products, refer to the VOM product documentation at:

http://sort.symantec.com/documents

Manual pages

The manual pages for Veritas Storage Foundation and High Availability Solutions products are installed in the /opt/VRTS/man directory.

Set the MANPATH environment variable so the man(1) command can point to the Veritas Storage Foundation manual pages:

■ For the Bourne or Korn shell (sh or ksh), enter the following commands:

```
MANPATH=$MANPATH:/opt/VRTS/man
  export MANPATH
```

■ For C shell (csh or tcsh), enter the following command:

```
setenv MANPATH ${MANPATH}:/opt/VRTS/man
```

See the man(1) manual page.