

Veritas™ Dynamic Multi-Pathing Release Notes

Solaris

6.0.1

Veritas™ Dynamic Multi-Pathing Release Notes

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Dynamic Multi-Pathing Release Notes

This document includes the following topics:

- [About this document](#)
- [About Veritas Dynamic Multi-Pathing \(DMP\)](#)
- [About Symantec Operations Readiness Tools](#)
- [Important release information](#)
- [Changes introduced in 6.0.1](#)
- [System requirements](#)
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About this document

This document provides important information about Veritas Dynamic Multi-Pathing (DMP) version 6.0.1 for Solaris. Review this entire document before you install or upgrade DMP.

The information in the Release Notes supersedes the information provided in the product documents for DMP.

This is "Document version: 6.0.1 Rev 0" 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 (DMP)

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 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 (SF) Enterprise license, a SF HA Enterprise license, and a Storage Foundation 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ 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. |
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Note: Certain features of SORT are not available for all products. Access to SORT is available at no extra cost.

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Important release information

- For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:
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- For the latest patches available for this release, go to:
<https://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 6.0.1

This section lists the changes in Veritas Dynamic Multi-Pathing 6.0.1.

New versioning process for SFHA Solutions products

Symantec made some changes to simplify the versioning process to ensure that customers have a unified experience when it comes to deploying our different products across Storage, Availability, Backup, Archiving and Enterprise Security products. With this change, all the products will have a 3 digit version. In complying with this approach, the current SFHA Solutions release is available as version 6.0.1.

New directory location for the documentation on the software media

The PDF files of the product documentation are now located in the `/docs` directory on the software media. Within the `/docs` directory are subdirectories for each of the bundled products, which contain the documentation specific to that product. The `sfha_solutions` directory contains documentation that applies to all products.

Dynamic Reconfiguration tool

Dynamic Multi-Pathing provides a Dynamic Reconfiguration tool. The Dynamic Reconfiguration tool is an interactive tool to automate dynamic reconfiguration of LUNs or HBAs. Dynamic reconfiguration includes addition, removal or replacement of LUNs, and replacement of certain HBAs, without requiring a reboot. The Dynamic Reconfiguration tool simplifies the process, so that you do not need a complex set of DMP and operating system related commands.

Support for DMP within multiple Solaris I/O Domains

In this release, DMP metanodes can be directly exported to the guest domains in the Oracle VM server environment. You can enable DMP in the control and alternate I/O domains. For details, see the *Veritas Storage Foundation and High Availability Solutions Virtualization Guide - Solaris*.

DMP support for Fusion-io iodrive and iodrive2 cards

This release introduces DMP support for Fusion-io iodrive and iodrive2 cards.

Changes related to installation and upgrades

The product installer includes the following changes in 6.0.1.

Locally-installed installation and uninstallation scripts now include the release version

When you run local scripts (`/opt/VRTS/install`) to configure Veritas products, the names of the installed scripts now include the release version.

Note: If you install your Veritas product from the install media, continue to run the `installdmp` command without including the release version.

To run the script from the installed binaries, run the `installdmp<version>` command.

Where `<version>` is the current release version with no periods or spaces.

For example, to configure the 6.0.1 version of your product, run this command:

```
# /opt/VRTS/install/installdmp601 -configure
```

Support for Solaris 11 Automated Installer

You can use the Oracle Solaris Automated Installer (AI) to install the Solaris 11 operating system on multiple client systems in a network. AI performs a hands-free installation (automated installation without manual interactions) of both x86 and SPARC systems. You can also use AI media (AI bootable image, provided by Oracle, which can be downloaded from the Oracle Web site) to install the Oracle Solaris OS on a single SPARC or x86 platform. All cases require access to a package repository on the network to complete the installation.

Support for tunables file templates

You can use the installer to create a tunables file template. If you start the installer with the `-tunables` option, you see a list of all supported tunables, and the location of the tunables file template.

Additional installation postcheck options

The `postcheck` option has been enhanced to include additional checks.

You can use the installer's post-check option to perform the following checks:

- General checks for all products.
- Checks for Volume Manager (VM).
- Checks for File System (FS).
- Checks for Cluster File System (CFS).

System requirements

This section describes 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 Solaris operating systems

This section lists the supported operating systems for this release of Veritas products.

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

Table 1-1 Supported operating systems

Operating systems	Levels	Chipsets
Solaris 10	Update 8, 9, and 10	SPARC
Solaris 10	Update 8, 9, and 10	x86
Solaris 11	SRU1 or later	SPARC
Solaris 11	SRU1 or later	x86

Fixed issues

This section covers the incidents that are fixed in this release.

Installation and upgrades fixed issues

This section describes the incidents that are fixed related to installation and upgrades in this release.

Table 1-2 Fixed issues related to installation and upgrades

Incident	Description
2526709	DMP-OSN tunable value not get persistence after upgrade from 5.1SP1 to 6.0.
2088827	During product migration the installer overestimates disk space use.

Dynamic Multi-Pathing fixed issues

This section describes the incidents that are fixed for Dynamic Multi-Pathing in this release.

Table 1-3 Veritas Dynamic Multi-Pathing fixed issues

Incident	Description
2826958	pwnv no is not displayed in the output of command "vxddm adm list dmpnode dmpnodename=".
2818840	Enhance the vxddmraw utility to support permission and root:non-system ownership be set and make it persistent.
2792242	I/O hang after performing zone remove/add operations.
2743926	DMP restored fails to restart during system boot in 6.0.
2729501	exclude path not working properly and can cause system hang while coming up after enabling native support.
2700086	EMC BCV (NR) established devices are resulting in multiple dmp events messages (paths being disabled/enabled).
2684558	vxesd dumps core on startup in libc.
2653143	VxVM: System panic while loading vxddm driver during installation.
2652485	Inactive snapshot luns cause trespassing.
2626199	vxddm adm list dmpnode printing incorrect path-type.
2605444	vxddm adm disable/enable of primary path (EFI labelled) in A/PF array results in all paths getting disabled.

Table 1-3 Veritas Dynamic Multi-Pathing fixed issues (*continued*)

Incident	Description
2564092	[VxVM][Usability]Automate the lun provisioning (addition) / removal steps using vxdiskadm /or new VxVM CLI command.
2556467	DMP-ASM: disable all paths and reboot host cause /etc/vx/vxdmprawdev records losing.

Known issues

This section covers the known issues in this release.

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.

Workaround:

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 EFI, 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/rdisk/<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.

Suppressing the primary path of an encapsulated SAN boot disk from Veritas Volume Manager causes the system reboot to fail (1933631)

If you suppress the primary path of an array from VxVM control and then reboot the system, the system boot fails.

If you have an encapsulated SAN boot device with multiple primary paths, the issue occurs when you suppress the first primary path. When you configure a SAN boot device, the primary path is set as a boot device. In general, the first path of the SAN boot device corresponds to the first configured path during SAN boot. Even if another primary path is configured as a boot device, suppressing the first device from VxVM causes the boot to fail.

Workaround:

When the boot device is suppressed from VxVM, change the OS boot device sequencing accordingly.

For Solaris SPARC system, use the `eeeprom boot-device` command to set the boot device sequencing.

For Solaris x86-64 systems, use the `eeeprom bootpath` command to set the boot device sequencing.

Changes in enclosure attributes are not persistent after an upgrade to VxVM 6.0.1 (2082414)

The Veritas Volume Manager (VxVM) 6.0.1 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 6.0.1, 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 6.0.1. Manually reconfigure the enclosure attributes to resolve the issue.

[Table 1-4](#) shows the Hitachi arrays that have new array names.

Table 1-4 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 6.0.1. 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.

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.

Workaround:

To work around this issue

- 1 Set the pref bit for the LUN.
- 2 Perform disk discovery again:

```
# vxdisk scandisks
```

Continuous trespass loop when a Clariion LUN is mapped to a different host than its snapshot (2761567)

If a Clariion LUN is mapped to a different host than its snapshot, a trespass on one of them could cause a trespass on the other. This behavior could result in a loop for these LUNs, as DMP tries to fail back the LUNs if the primary paths are available.

Workaround

To avoid this issue, turn off the `dmp_monitor_ownership` tunable:

```
# vxddmpadm settune dmp_monitor_ownership=off
```

After excluding devices managed by PowerPath from VxVM, the devices still show as DMP devices (2494632)

The issue happens after EMC PowerPath is installed and all devices are under PowerPath control. If you want to maintain the devices under PowerPath control, you use the following command to exclude the device that is managed by PowerPath from VxVM:

```
# vxddmpadm exclude dmpnodename=PowerPath_device_name
```

After system reboot, the PowerPath device still shows as a DMP device, although the device is managed by EMC PowerPath.

Workaround:

This issue is seen only during the first bootup discovery after reboot. To resolve the issue, manually trigger DMP device discovery:

```
# vxdisk scandisks
```

The system may hang with Solaris 11 SRU1

When running Solaris 11 SRU1 the system may hang due to an Oracle bug. Oracle Bug ID is 7105131 deadman panic.

Workaround: SRU1 for Solaris 11 should be updated to SRU2a. The bug is fixed in SRU2a: Oracle Solaris 11 Support Repository Updates (SRU) Index (Doc ID 1372094.1)

Installation known issues

This section describes the known issues during installation and upgrade.

Upgrade or uninstallation of Dynamic Multi-Pathing may encounter module unload failures (2159652)

When you upgrade or uninstall Dynamic Multi-Pathing, some modules may fail to unload with error messages similar to the following messages:

```
fdd failed to stop on node_name  
vxfs failed to stop on node_name
```

The issue may be observed on any one or all the nodes in the sub-cluster.

Workaround: After the upgrade or uninstallation completes, follow the instructions provided by the installer to resolve the issue.

During Live Upgrade, installer displays incorrect message about VRTSaa package removal (1710504)

If you use Live Upgrade to upgrade DMP 5.0MP1 to DMP 6.0.1, the installer may display a message that the VRTSaa package failed to uninstall.

Workaround: Verify whether the `VRTSaa` package was removed correctly from the alternate boot disk.

```
# pkginfo -R alternate_root_path -l VRTSaa
```

For example, run the following command

```
# pkginfo -R /altroot.5.10 -l VRTSaa
```

If the VRTSaa package was removed, you can ignore this error.

If the VRTSaa package was not removed, remove the package manually:

```
# pkgrm -R alternate_root_path -l VRTSaa
```

For example, run the following command

```
# pkgrm -R /altroot.5.10 -l VRTSaa
```

After Live Upgrade to Solaris 10 Update 10, boot from alternate boot environment may fail (2370250)

If your setup involves volumes in a shared disk group that are mounted as CFS in a cluster, then during Live Upgrade using the `vxlustart` command from any supported Solaris version to Solaris 10 Update 10, boot from an alternate boot environment may fail.

Workaround: Run the `vxlufinish` command. Before rebooting the system, manually delete the entries of all the volumes of shared disks that are mounted as CFS in the `/altroot.5.10/etc/vfstab` directory.

Live Upgrade to Solaris 10 Update 10 fails in the presence of zones (2521348)

SFCFSHA Live Upgrade from Solaris 10 Update 7 5.1SP1 to Solaris 10 Update 10 using the `vxlustart` commands fails in the presence of zones with the following error message:

```
ERROR: Installation of the packages from this media of the media failed;
pfinstall returned these diagnostics:
Processing default locales
    - Specifying default locale (en_US.ISO8859-1)
Processing profile
ERROR: This slice can't be upgraded because of missing usr packages for the
following zones:
ERROR:    zone1
ERROR:    zone1
ERROR: This slice cannot be upgraded because of missing usr packages for
one or more zones.
The Solaris upgrade of the boot environment <dest.27152> failed.
```

This is a known issue with the Solaris `luupgrade` command.

Workaround: Check with Oracle for possible workarounds for this issue.

Live Upgrade to 6.0.1 on Solaris 10 with `dmp_native_support` enabled fails (2632422)

During Live Upgrade to 6.0.1 on Solaris 10, the `vxlustart` command fails if `dmp_native_support` is enabled. Veritas Dynamic Multi-Pathing (DMP) support for native devices requires that the naming scheme be set to enclosure-based naming (EBN). DMP 6.0.1 does not allow changing the naming scheme from EBN when support for native devices is enabled.

Due to a bug in DMP 5.1 Service Pack 1 (5.1SP1), the naming scheme could be set to operating-system based naming (OSN). However, this is not a supported configuration. With the naming scheme set to OSN, the `vxlustart` command fails.

Workaround: Disable `dmp_native_support` on all nodes.

On Solaris 10, a flash archive installed through JumpStart may cause a new system to go into maintenance mode on reboot (2379123)

If a Flash archive is created on a golden host with encapsulated root disks, when this Flash archive is installed onto another host through JumpStart, the new system may go to maintenance mode when you initially reboot it.

This problem is caused by the predefined root disk mirror in the Flash archive. When the archive is applied to a clone system, which may have different hard drives, the newly cloned system may get stuck at root disk mirroring during reboot.

Workaround: Create the Flash archive on a golden host with no encapsulated root disks. Run `vxunroot` to clean up the mirrored root disks before you create the Flash archive.

Web installer does not ask for authentication after the first session if the browser is still open (2509330)

If you install or configure DMP and then close the Web installer, if you have other browser windows open, the Web installer does not ask for authentication in the subsequent sessions. Since there is no option to log out of the Web installer, the session remains open as long as the browser is open on the system.

Workaround: Make sure that all browser windows are closed to end the browser session and subsequently log in again.

Stopping the Web installer causes Device Busy error messages (2633924)

If you start the Web installer, and then perform an operation (such as prechecking, configuring, or uninstalling), you may get an error message saying the device is busy.

Workaround: Do one of the following:

- Kill the start.pl process.
- Start the webinstaller again. On the first Web page you see that the session is still active. Either take over this session and finish it or terminate it directly.

Perl module error on completion of DMP installation (2879417)

When you install, configure, or uninstall DMP, the installer prompts you to optionally upload installation logs to the Symantec Web site. If the installer encounters connectivity problems, you may see an error similar to the following:

```
Status read failed: Connection reset by peer at  
<midia_path>/../perl/lib/5.14.2/Net/HTTP/Methods.pm line 269.
```

Workaround:

Ignore this error. It is harmless.

In some cases with large LUN setup, the storage disappears after DMP device scan (2828328)

This issue is typically seen on a large LUN setup. In some cases, the storage disappears after the DMP device scan. The DMP device scan is generated with the `vxdisk scandisks` command or the `vxctl enable` command. Even if the the OS command `ioscan` can discover devices, VxVM/DMP cannot.

Workaround:

Restarting the `vxconfigd` daemon on the affected node may resolve the issue. If that does not work, you must reboot the system.

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 23.

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, set the following DMP tunables:

Table 1-5

Parameter name	Definition	New value	Default value
<code>dmp_restore_interval</code>	DMP restore daemon cycle	60 seconds.	300 seconds.
<code>dmp_path_age</code>	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_interval=60
# vxdmpadm settune dmp_path_age=120
```

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

```
# vxdmpadm gettune dmp_restore_interval
# 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 does not support devices in the same enclosure that are configured in different modes (2643506)

DMP does not support the configuration where two devices in the same enclosure are configured in different modes. For example, if one device is configured as ALUA and another one is configured as Active/Passive (A/P).

Documentation

Product guides are available in the PDF format on the software media in the `/docs/product_name` 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 1-6 lists the documentation for Veritas Dynamic Multi-Pathing.

Table 1-6 Veritas Dynamic Multi-Pathing documentation

Document title	File name
<i>Veritas Dynamic Multi-Pathing Release Notes</i>	dmp_notes_601_sol.pdf
<i>Veritas Dynamic Multi-Pathing Installation Guide</i>	dmp_install_601_sol.pdf
<i>Veritas Dynamic Multi-Pathing Administrator's Guide</i>	dmp_admin_601_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>

Note: The GNOME PDF Viewer is unable to view Symantec documentation. You must use Adobe Acrobat to view the documentation.

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.