# DMP Installation

## for storage systems

**using SM version 8.x and 9.x**

**for the Solaris Operating System**

Installation Information

**STORAGETEK**

# DMP Installation

for Solaris Operating Systems using B-Series or D-Series
Disk Subsystems and the new FlexLine storage systems

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**First Edition (April 2003)**
This edition contains 14 pages. See "Summary of Changes" on page iii for the revision history and summary of changes made to this publication.

# Summary of Changes

| Date | Edition | Description |
|------|---------|-------------|
| April 2003 | First | Initial Release |

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# DMP Installation

<div style="float:right">1</div>

Use the following instructions to install DMP onto your Solaris operating system.

## ■ DMP on D-Series and BladeStore

Dynamic Multi Pathing (DMP) can handle multiple paths to the same disk subsystem. Up to four have been tested by Engineering on the D-Series and BladeStore.

### Installation of DMP on D-Series and BladeStore

1. Preconfigure the disk subsystem with required volumes. Refer to the Preconfiguration Instructions, P/N 95966, as needed.

2. Install the DMP enabling scripts onto the disk subsystem. The scripts can be obtained from engineering or from the SMdmp package. They may be located inside in the `/opt/SM8/dmp` directory.

3. Make sure that Veritas Volume Manager 3.2 or higher is installed.

4. Install the SMasl package (8.40.02.00 or the latest package version).

**Note:** This installs the required DMP library needed for the STK OPEN disk systems. The LSI library is no longer needed. STK NVSRAM can be used.

5. Attach the disk and reboot server with `reboot -- -r` .

6. If partitioning is installed, setup the disk system appropriately.

During the boot, you should see a message on the console similar to:

```
vxvm:vxdmp: added disk array 600A0B80000CBC9C000000003CD12D78,
datype = STK_ARRAY
```

Once the system comes up, the output of the format command shows all disks on all controllers. Because DMP is a Veritas function, only Veritas sees the LUNs correctly.

The command `vxdisk list` shows the disk system correctly. The additional LUNs are masked out.

## Example format with 4 paths

```
# format
Searching for disks...done

AVAILABLE DISK SELECTIONS:
0.   c0t10d0 <SUN2.1G cyl 2733 alt 2 hd 19 sec 80>
     /sbus@3,0/SUNW,fas@3,8800000/sd@a,0
1.   c0t11d0 <SUN2.1G cyl 2733 alt 2 hd 19 sec 80>
     /sbus@3,0/SUNW,fas@3,8800000/sd@b,0
2.   c0t12d0 <SUN2.1G cyl 2733 alt 2 hd 19 sec 80>
     /sbus@3,0/SUNW,fas@3,8800000/sd@c,0
3.   c0t13d0 <SUN2.1G cyl 2733 alt 2 hd 19 sec 80>
     /sbus@3,0/SUNW,fas@3,8800000/sd@d,0
4.   c2t1d0 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@1,0
5.   c2t1d1 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@1,1
6.   c2t1d2 <STK-OPENstorageD178-0530 cyl 20980 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@1,2
7.   c2t1d3 <STK-OPENstorageD178-0530 cyl 20633 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@1,3
8. c2t3d0 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@3,0
9. c2t3d1 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@3,1
10. c2t3d2 <STK-OPENstorageD178-0530 cyl 20980 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@3,2
11. c2t3d3 <STK-OPENstorageD178-0530 cyl 20633 alt 2 hd 64 sec 64>
     /pci@4,2000/fibre-channel@2,1/sd@3,3
12. c3t1d0 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@1,0
13. c3t1d1 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@1,1
14. c3t1d2 <STK-OPENstorageD178-0530 cyl 20980 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@1,2
15. c3t1d3 <STK-OPENstorageD178-0530 cyl 20633 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@1,3
16. c3t3d0 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@3,0
17. c3t3d1 <STK-OPENstorageD178-0530 cyl 25598 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@3,1
18. c3t3d2 <STK-OPENstorageD178-0530 cyl 20980 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@3,2
19. c3t3d3 <STK-OPENstorageD178-0530 cyl 20633 alt 2 hd 64 sec 64>
     /pci@5,2000/fibre-channel@2,1/sd@3,3

Specify disk (enter its number):
```

## Example vxdisk list

**Table 1. vxdisk list command - example**

```
# vxdisk list
```

| Device | Type | Disk | Group | Status |
|--------|------|------|-------|--------|
| c0t10d0s2 | sliced | - | - | error |
| c0t11d0s2 | sliced | - | - | error |
| c0t12d0s2 | sliced | - | - | error |
| c0t13d0s2 | sliced | - | - | error |
| c2t3d0s2 | sliced | disk01 | rootdg | online |
| c2t3d1s2 | sliced | disk02 | rootdg | online |
| c2t3d2s2 | sliced | disk03 | rootdg | online |
| c2t3d3s2 | sliced | disk04 | rootdg | online |

**Note:** Even though vxdisk list shows all the LUNs on HBA controller c2, the actual physical LUNs are not necessarily on the c2 HBA controller. DMP handles the real paths.

## Example vxdisk list specific

```
# vxdisk list c2t3d0s2
Device:    c2t3d0s2
devicetag: c2t3d0
type:      sliced
hostid:    osva4000b
disk:      name=disk01 id=1025646563.1032.osva4000b
group:     name=rootdg id=1025646554.1025.osva4000b
flags:     online ready private autoconfig autoimport imported
pubpaths:  block=/dev/vx/dmp/c2t3d0s4 char=/dev/vx/rdmp/ c2t3d0s4
privpaths: block=/dev/vx/dmp/c2t3d0s3 char=/dev/vx/rdmp/ c2t3d0s3
version:   2.2
iosize:    min=512 (bytes) max=2048 (blocks)
public:    slice=4 offset=0 len=104841216
private:   slice=3 offset=1 len=4095
update:    time=1026659289 seqno=0.38
headers:   0 248
configs:   count=1 len=3004
logs:      count=1 len=455
Defined regions:
 config   priv 000017-000247[000231]: copy=01 offset=000000 enabled
 config   priv 000249-003021[002773]: copy=01 offset=000231 enabled
 log      priv 003022-003476[000455]: copy=01 offset=000000 enabled
Multipathing information:
numpaths:   4
c2t3d0s2        state=enabled   type=primary
c3t1d0s2        state=enabled   type=secondary
c2t1d0s2        state=enabled   type=secondary
c3t3d0s2        state=enabled   type=primary
```

## Additional DMP Commands

```
vxdmpadm listctlr all

vxdmpadm getsubpaths ctlr=cX         where X is HBA controller number.

vxdmpadm stop restore                stops auto path restore

vxdmpadm start restore interval=15   where 15 is in seconds

vxdmpadm start restore interval=300  default time for auto path restore

vxdmpadm help                        shows all vxdmpadm commands
```

**Note:** If a path failure occurs, DMP handles the paths accordingly. Once the problem is corrected, DMP automatically restores the failed path back to normal and balance the data if needed. The default restore interval time is 5 minutes. They can also be restored manually by the system administrator.

## Example auto restore

```
Mar 14 09:14:09 osva4000b      SCSI transport failed: reason 'tran_err': giving up

Mar 14 09:14:09 osva4000b scsi: [ID 107833 kern.warning] WARNING: /pci@5,2000/
fibre-channel@2,1/sd@1,1 (sd135):

Mar 14 09:14:09 osva4000b       offline

Mar 14 09:14:09 osva4000b vxdmp: [ID 619769 kern.notice] NOTICE: vxdmp: Path
failure on 32/0x43c

Mar 14 09:14:09 osva4000b vxdmp: [ID 997040 kern.notice] NOTICE: vxvm:vxdmp:
disabled path 32/0x438 belonging to the dmpnode 235/0x28

Mar 14 09:19:05 osva4000b scsi: [ID 365881 kern.info]   <STK-OPENstorageD178-0530
cyl 25598 alt 2 hd 64 sec 64>

Mar 14 09:19:05 osva4000b vxdmp: [ID 912507 kern.notice] NOTICE: vxvm:vxdmp:
enabled path 32/0x438 belonging to the dmpnode 235/0x28
```

## Firmware load issues

To install disk system firmware on the fly, you must first change the auto-restore timeout. During the firmware upgrade the controllers reset, causing a path failover. If the timeout is not adjusted, the first controller that gets reset eventually fails when the second controller is reset. Engineering Lab testing set HBA failover timeout at 20 seconds. DMP restores the timeout setting to 15 seconds. Set the restore timeout with the following commands.

```
vxdmpadm stop restore
vxdmpadm start restore interval=15
```

After the firmware (or NVSRAM) is updated, the timeout can be set back to default by:

```
vxdmpadm stop restore
vxdmpadm start restore interval=300
```

**Caution:** If NVSRAM is to be updated, do not forget to rerun the DMP enable scripts again.

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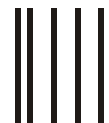### *Publication Information*

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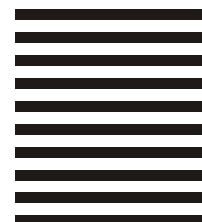Thank you for your cooperation. No postage stamp is required if mailed in the U.S.A.

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