

Frequently Asked Questions: Sun Solaris Native HBAs and Drivers

Introduction

The purpose of this document is to answer the most common questions regarding the Sun Solaris native HBAs and drivers.

Question: WHAT IS LEADVILLE/SUN SAN 4.X?

Answer: Leadville is the engineering code name for Sun's native Fibre Channel HBAs and drivers. It is the native Fibre Channel stack for Sun Solaris, also referred to as "Sun SAN" in this document.

The physical HBA and the driver support are separate issues, and customers have a choice of three basic deployment models:

- Use the Leadville driver with HBAs purchased from Sun. (These HBAs are OEM products that Sun bought from Emulex and QLogic.)
- Use the Leadville driver with Emulex- or QLogic-branded HBAs.
- Use Emulex or QLogic HBAs with Solaris drivers developed by the HBA vendors.

Question: WHAT IS MPxIO?

Answer: MPxIO is the disk device multipathing component of Sun SAN. It is also called Sun StorEdge Traffic Manager.

Question: WHAT ARE THE ADVANTAGES OF LEADVILLE?

Answer: The primary benefits are:

- Implicit port binding. Binding is done automatically and is persistent until the user removes the target. The need for static binding in the HBA `conf` file is eliminated.
- Easy HBA installation and configuration. After the initial Sun native driver installation, patches can be automatically downloaded using Sun's PatchPro automated patch management tool.
- LUN and target management can be done online (no reboot required), without the need to modify configuration files such as `sd.conf`.

Question: HOW MANY DEVICES DOES LEADVILLE SUPPORT?

Answer: Sun currently supports up to 256 LUNs / HBA port / target. Please refer to the *EMC Support Matrix* for the most recent updates to this support limitation.

Question: WHERE CAN I FIND INFORMATION ABOUT SUN SOLARIS NATIVE HBAs?

Answer: Refer to Sun's SAN website:

<http://www.sun.com/storage/san>

IMPORTANT: Refer to Sun's SAN documentation, also available at this website, for HBA install procedures. EMC does not re-document the install procedures for Sun HBAs.

Question: WHERE CAN I DOWNLOAD THE SUN SAN 4.X SOFTWARE?

Answer: Sun SAN 4.x software for Solaris 8 and Solaris 9 can be downloaded from:

<http://www.sun.com/storage/san/>

Various downloads are available, but only the following is required to support EMC storage:

Install_it script (e.g., SAN_4.4_install_it.tar.Z)

IMPORTANT: Sun SAN Storage Foundation Software is already incorporated into Solaris 10 and therefore does not need to be downloaded.

Question: WHICH HBAS HAVE BEEN QUALIFIED BY EMC?

Answer: EMC has qualified Sun Native as well as third-party HBAs from QLogic and Emulex with the Sun SAN stack. Note that not all Sun HBAs are supported by EMC.

Beginning with SAN 4.4.7a, Sun SAN stack support was extended to some third-party Emulex and QLogic HBAs. Please see the *EMC Support Matrix* for specific HBA drivers and SAN versions supported.

Question: I NEED TO UPGRADE THE FCODE ON MY SUN HBA, BUT CANNOT FIND THE FCODE PATCH AT SUNSOLVE.

Answer: The HBA Fcode patches are not available in the public patch collection. A SunSolve login linked to a Sun Spectrum contract is required to obtain Fcode updates.

Question: DO I NEED TO UPGRADE THE FCODE ON MY QLOGIC OR EMULEX HBAs IN ORDER TO FUNCTION WITH SUN SAN 4.X?

Answer: Yes, EMC recommends customers update their Fcodes to a supported version in order to properly function with Sun SAN 4.x.

Question: I ATTEMPTED TO INSTALL SAN 4.X, BUT THE INSTALL PROCESS FAILS AT THE AUTOMATED PATCH INSTALL SECTION.

Answer: The install may fail if certain patch dependencies are not met. To solve these problems, look up the patch dependencies at SunSolve and install the prerequisite patches. Also, review the install log at:

```
/var/tmp/install_it_Sun_StorEdge_SAN.log
```

When the patch dependencies have been satisfied, rerun the install script.

Question: HOW DO I VERIFY WHICH FCODE REVISIONS ARE LOADED ON THE HBAs?

Answer: **For Emulex HBA:**

```
Run luxadm fcode_download -p
or
```

Use FCA utility to verify the Fcode:

```
# /opt/EMLXemlxu/bin/emlxadm
```

Select the HBA:

```
emlxadm> get_fcode_rev
```

Emulex FCA utility: <http://www.emulex.com/emc/support/index.jsp>

For QLogic HBA:

Use Qlogic SAN CLI utility to verify Fcode:

Run SCLI.

Select option **3**, Display HBA information.

Select option **1**, HBA information.

Select HBA port.

Qlogic SAN CLI: http://support.qlogic.com/support/oem_emc.asp

Question: HOW DO I DETERMINE THE WWNs OF THE HBAs?

Answer: **For Solaris 8 and 9:**

Run the following script to determine the WWNs of the HBAs that are currently being utilized:

```
#!/bin/sh
for i in `cfgadm |grep fc-fabric|awk '{print $1}'`;do
dev=`cfgadm -lv $i|grep devices |awk '{print $NF}'`
wwn=`luxadm -e dump_map $dev |grep 'Host Bus'|awk '{print $4}'`
echo "$i: $wwn"
done
```

Sample output of the above script:

```
c8: 210000e08b105e35
c9: 210100e08b305e35
```

where c8 and c9 are the HBA controller numbers and 210000e08b105e35 and 210100e08b305e35 are the worldwide port names of the HBAs.

For Solaris 10:

Run the following command:

```
"fcinfo hba-port"
```

Question: IS MPxIO MULTIPATHING QUALIFIED WITH EMC STORAGE?

Answer: Yes, MPxIO is qualified with EMC storage with the following considerations and exceptions:

- May require manual changes to the `scsi_vhci.conf` (for Solaris 8, 9, and 10), `fp.conf` (for Solaris 10), and optionally `qlc.conf` configuration files. (See details under HOW MUST MPxIO BE CONFIGURED IN A POWERPATH ENVIRONMENT? on page 4.)
- Supported with Sun Cluster 3.X only in configurations as per the *EMC Support Matrix*.

Question: IS MPxIO MULTIPATHING QUALIFIED WITH SUN CLUSTER AND EMC STORAGE?

Answer: Yes, but only in configurations specified in the cluster section of the *EMC Support Matrix*.

Question: HOW MUST MPxIO BE CONFIGURED IN A POWERPATH ENVIRONMENT?

Answer: **For PowerPath 4.5 and below:**

If PowerPath is installed, then MPxIO must not be enabled for any EMC devices. MPxIO may still be used to manage third-party devices. MPxIO is globally disabled by default in `/kernel/drv/scsi_vhci.conf` (on Solaris 8 and 9) and `/kernel/drv/fp.conf`, (on Solaris 10) so usually no action is required. If MPxIO is enabled in `scsi_vhci.conf` (on Solaris 8 and 9), or `fp.conf` (on Solaris 10), then MPxIO support must not be enabled for any paths managed by PowerPath, in `/kernel/drv/fp.conf`. Refer to the *Sun StorEdge Traffic Manager Installation and Configuration Guide*, available on the SunSolve website at <http://sunsolve.sun.com>, for configuration details.

For PowerPath 5.0x and above:

MPxIO must not be enabled for any devices controlled by EMC PowerPath. MPxIO may still be used to manage devices not under PowerPath control. MPxIO is globally disabled by default in `/kernel/drv/scsi_vhci.conf` (on Solaris 8 and 9) and `/kernel/drv/fp.conf`, (on Solaris 10) so usually no action is required. If MPxIO is enabled in `scsi_vhci.conf` (on Solaris 8 and 9), or `fp.conf` (on Solaris 10), then MPxIO support must not be enabled for any paths managed by PowerPath, in `/kernel/drv/fp.conf`. Refer to the *Sun StorEdge Traffic Manager Installation and Configuration Guide*, available on the SunSolve website at <http://sunsolve.sun.com>, for configuration details.

Question: HOW SHOULD MPxIO BE ENABLED FOR EMC DEVICES?

Answer: Starting with SAN 4.4, MPxIO supports EMC® Symmetrix® devices. For configuration details, please refer to the *Host Connectivity Guide for Sun Solaris*.

Starting with SAN 4.4.7a, MPxIO supports EMC CLARiiON® devices. For configuration details, please refer to the *Installation Roadmap for CX-Series, AX-Series, and FC-Series Storage Systems*.

Question: DOES VERITAS VOLUME MANAGER (VXVM) USE NATIVE DEVICE NAMES (E.G., C2T0D1S2) FOR SUN SAN DEVICES?

Answer: **For VERITAS Volume Manager 4.0 and below:**

No. VxVM will automatically use an array-based naming scheme, also known as an enclosure-based naming scheme, for VxVM devices. For example, `vxdisk list` will show device names as "EMCO_1" instead of "c2t0d1". It is not possible to switch to normal device naming when using Sun SAN HBAs.

For example:

Here is a sample `vxdisk list` prior to converting to Sun SAN:

```
c2t0d17s2 sliced emcdisk3 EMCUOL15 online
```

And here are the same devices after changing to Sun SAN:

```
EMCO_1 sliced - - online
```

For VERITAS Volume Manager 4.1 and later:

- If EMC PowerPath is installed on the host, VxVM will automatically use the pseudo-based naming scheme for VxVM devices. However, it is possible to switch to the native naming scheme by running the following command: **`vxdmpadm setattr enclosure <ENCLOSURE-NAME> tpdmode = native`**. The following command can be used to revert to a pseudo-based naming scheme: **`vxdmpadm setattr enclosure <ENCLOSURE-NAME> tpdmode = pseudo`**.
- If EMC PowerPath is not installed on the host, VxVM will automatically use the array-based naming scheme for VxVM devices. It is not possible to switch to native naming scheme using Sun SAN devices.
- If MPxIO is enabled on the host, VxVM will automatically use the array-based naming scheme for VxVM devices. It is not possible to switch to native naming scheme using Sun SAN devices.

Question: CAN MPxIO COEXIST WITH VERITAS VOLUME MANAGER (VXVM)?

Answer: Yes. With both DMP and MPxIO installed on the same host, MPxIO will manage the failover and multipathing functionalities.

Question: IS THE COEXISTENCE OF BOTH THE SUN SAN STACK AND THIRD-PARTY DRIVERS IN THE SAME HOST SUPPORTED?

Answer: No. The third-party drivers are **not** supported in the same host with the Sun SAN stack.

Question: IF I AM USING QLOGIC OR EMULEX HBAs AND DRIVERS, CAN I MIGRATE THEM TO THE SUN SAN STACK?

Answer: Yes. If EMC PowerPath or VERITAS DMP is used to perform failover and multipathing tasks, and all the file systems are mounted on either the PowerPath devices or DMP devices, then uninstalling the current HBA driver followed by a reboot, and installing the Sun SAN stack followed by a reboot, would complete the migration process. All mounted file systems will be available after the migration process. Development is underway, for customers using OS native devices, to mount their file systems. Currently, migration is not supported in the following two scenarios:

- If any file systems reside on the OS native devices, then the migration will not be supported, as the file systems will not be available after the migration process.
- Migration on boot from SAN is also not supported at this time.

Question: WHICH HBAs CURRENTLY SUPPORT THE SUN SAN STACK?

Answer: HBAs from Sun, QLogic, and Emulex are supported with the Sun San stack. Please refer to the *EMC Support Matrix* for the latest list of HBAs supported with the Leadville stack.

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