



Installation Guide for Direct Attach Kit for SAN Attach Storage

Sun Solaris™

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Executive Summary

The Direct Attach Kit is a Network Appliance product that allows the direct attachment of Network Appliance storage to either a SAN network or point to point to a UNIX®-type server, without using NFS. This capability enhances the Network Appliance broad spectrum of support and completes all three protocols: iSCSI, NFS, and FCP. This paper provides the installation details to get a system administrator up and running quickly.

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1. Sun Solaris

1.1 Sun Solaris Host Configuration for FCP

a) Install NetApp SAN (FCP) Host Attach Kit

NetApp provides the "SAN (FCP) Host Attach Kit" for FCP on Solaris. This product simplifies the configuration and management of the SAN environment. In order to install this product you need to complete the following basic steps on the host server.

1. Enter your user name and password on the NOW™ Web site (<http://now.netapp.com/>) and select "Download Software" from the Select Start Page list box.
2. On the Download Software page, go to the **SAN (FCP) Host Attach Kit** product row of the table and select Solaris from the Select Platform drop-down list and click the GO button.
3. Follow the prompts to reach the Software Download page and download the NetApp software file to a local directory.
4. Copy the downloaded attach kit file to a directory (/tmp/netapp) on the host server. Uncompress the file using the following command:

```
cd /tmp/netapp
uncompress ntap_solaris_fcp_2_0.tar.Z
```

5. Extract the file by executing the following command at the host server:

```
tar -xvf ntap_solaris_fcp_2_0.tar
```

6. Change to the ntap_solaris_fcp_2_0 directory where you extracted the software (for example, cd /tmp/netapp/ntap_solaris_fcp_2_0) and execute the following command:

```
./install
```

7. Answer the prompt and complete the installation.

For detailed installation steps, please refer to "*FCP Solaris® Attach Kit 2.0 Installation and Setup Guide*" on the NOW Web site.

b) Install the HBA and Driver

Log in to the NOW Web site and check the Compatibility and Configuration Guide for NetApp FCP and iSCSI Products for your host server product compatibility. NetApp supports Emulex FC HBA for Sun Solaris. Install the FC card and driver on the host server. For installation steps please refer to "*Host Bus Adapter Installation and Setup Guide 1.1 for Fibre Channel Protocol on Solaris*" on the NOW Web site.

c) Obtain WWPN for the Initiator

1. Each HBA attached to your host server is uniquely identified by WWPN or WWNN. In order to create an igroup for FCP on the storage system you will need WWPN for the HBA. Complete the following steps on the host server to obtain the WWPN.
2. After installation of the FC adapter and driver get WWPN for the HBA by executing the following command at the host server:

```
[root@sun880-sv11]> sanlun fcp show adapter -c
igroup create -f -t solaris sun880-sv11 1000000c942df65
```

3. The WWPN for adapter in the above example is 1000000c942df65. The sanlun utility can generate the "igroup create" command if "-c" option is specified. The generated command can be used to create igroups on the NetApp storage system
4. Now that the initiator group is established and the LUNs have been created and mapped, the host server must be configured to make use of the new resources. First, the "/kernel/drv/sd.conf" file should be augmented with additional entries to support the new LUN mappings. In our example, we added the following lines to the file to allow access for LUNs:

```
name="sd" parent="lpfc" target=0 lun=0;
name="sd" parent="lpfc" target=0 lun=1;
```

5. After any modifications are made to the sd.conf file, the system must be rebooted before they will take effect. A reconfiguration reboot will scan for and create the new device entries. Execute the following command at the host server:

```
reboot -- -r
```

6. After adding the LUN devices you can execute the following command to refresh the driver:

```
#devfsadm
```

d) Making LUNs Accessible on the Host Server

1. After LUNs are discovered by the host server, execute the "format" command to create a label on the new disk.

```
#format
```

2. Upon execution of the format command a numbered list of available disks is displayed.
3. Type the number for the disk from the list that you want to label.

```
Specify disk (enter its number): disk-number
disk-number – is the number for the disk from the list
```

4. If this is the first time the LUN is used as a device, you will be prompted to create a label for the disk. Enter 'yes' at the prompt.

```
Disk not labeled. Label it now? yes
Format> quit
```

e) Obtain the VERITAS® Foundation Suite CD-ROM and VERITAS Documentation

1. Insert and mount the VERITAS Foundation Suite CD-ROM on the host. Change to the pkgs directory on the CD-ROM.

```
#cd /cdrom/cdrom0/pkgs
```

2. Verify that you have your VERITAS license key.

```
#vxlicrep -p
```

3. Install the VERITAS Volume Manager (VxVM) packages. The packages installed depend on the version of the VxVM Software.

```
#pkgadd -d 'pwd' VRTSlic VRTSvxvm VRTSvmsa VRTSvmdoc
VRTSvcs VRTSvmman VRTSvmdev
```

4. Install the VERITAS patches required by your operating system. For information about VERITAS patches required for Solaris 8 and Solaris 9, see the VERITAS Volume Manager Installation Guide.
5. Add the root disk controller number to the VERITAS exclude list. With a text editor, open:

```
/etc/vx/cntrls.exclude file and add the root disk to the file
save the file
```

6. Enter the following command to install VERITAS software:

```
#vxinstall
```

7. Reboot the host server by entering the following command:

```
#reboot -- -r
```

8. Enter the following command to verify that the storage LUNs you selected are under VERITAS Volume Manager control:

```
#vxdisk list
DEVICE    TYPE    DISK    GROUP    STATUS
c0t0d0s2  sliced  -      -        error
c0t1d0s2  sliced  c0t1d0s2  none    online
c0t1d1s2  sliced  c0t1d1s2  none    online
c0t1d2s2  sliced  c0t1d2s2  none    online
```

f) ASL, Installing and Managing VERITAS Array Support Library 2.0 for NetApp Storage

1. Insert ASL 2.0 software from the CD-ROM.

```
#cd /cdrom/cdrom0/pkg
```

2. Extract the ASL 2.0 software by entering the following command:

```
#tar -xvf NTAPasl.tar
```

3. Install the NTAPasl package by entering the following command:

```
#pkgadd -d NTAPasl.pkg
```

4. Restart the vxconfigd daemon by entering the following command:

```
#vxdctl enable
```

5. Verify the installation by entering the following command and then locating the NetApp Enclosure Type in the output of the vxddmpadm listenclosure all command.

```
[root@sun880-sv11]> /sbin/vxddmpadm listenclosure all
ENCLR_NAME  ENCLR_TYPE  ENCLR_SNO  STATUS
=====
OTHER_DISKS OTHER_DISKS OTHER_DISKS  CONNECTED
```

Disk	DISK	DISKS	DISCONNECTED
FAS30500_0	FAS30500	1032303	CONNECTED
FAS30500_1	FAS30500	1032303	CONNECTED

2. Important links

Qlogic HBA driver download page:

http://www.qlogic.com/products/iscsi_products_hba.asp

Qlogic HBA documentation:

http://www.qlogic.com/support/product_resources.asp?id=341

Emulex support Web site for driver/firmware download:

<http://www.emulex.com/ts/index.html>

NetApp ASL Web site for software package

download:<http://now.netapp.com/NOW/download/tools/vasl40/index.shtml>

NetApp ASL Web site documentation page:

<http://now.netapp.com/NOW/download/tools/vasl/install.pdf>

NetApp documentation:

Software download page on NOW:

<http://now.netapp.com/NOW/cgi-bin/software>

FCP Solaris® Attach Kit 2.0 Installation and Setup Guide:

<http://now.netapp.com/NOW/knowledge/docs/hba/sun/relhbas20/pdfs/setup.pdf>

Block Access Management Guide for FCP:

<http://now.netapp.com/NOW/knowledge/docs/ontap/rel70rc/pdfs/ontap/bsagfcp.pdf>