IBM System Storage N series

AIX Host Utilities 6.0 Quick Start Guide

This guide is for experienced AIX users. It provides the basic information required to get the AIX Host Utilities installed and set up on an AIX host.

The steps listed are for a typical installation and cover multiple AIX environments, including MPIO and PowerVM. While many steps are common to all environments, some steps apply only to a specific environment.

If you are not an experienced AIX user, see the *AIX Host Utilities Installation and Setup Guide*. That document provides detailed steps and examples. It also includes troubleshooting information as well as instructions for optional tasks, such as setting up a SAN boot LUN.

For information about installing and setting up third-party hardware and applications, such as host bus adapters, see the documentation that accompanies those products.

Note: Occasionally there are known problems that can affect your system setup. Read the *AIX Host Utilities Release Notes* before you install the Host Utilities. The *Release Notes* are updated whenever an issue is found and might contain the information that was discovered after this guide was produced.

Task 1: Make sure the prerequisites for installing and setting up the Host Utilities have been met

To install the Host Utilities and set up your system, you must perform tasks on both the host and the storage system. In some cases, the tasks you perform vary depending on your environment; for example, the protocol you are using and whether you are using AIX MPIO for multipathing.

Note: The N series interoperability matrix website contains the most current information about supported environments for the Host Utilities.

1. Verify that your host system is correct, including:
   - Host operating system version, technology levels, and appropriate updates
   - HBAs and drivers, model and version, or software initiator
   - Volume management and multipathing, if you are using multipathing
   - PowerVM, if you are using PowerVM

     The Host Utilities support both PowerVM vSCSI and PowerVM NPIV.
2. Verify that your storage system is set up correctly, which includes having:
   - The correct version of Data ONTAP installed.
   - The appropriate license for the protocol on which your environment runs.
   - Appropriate HBAs or software initiators set up to work with the host as needed by your protocol.
   - ALUA enabled on all platforms that support it.

     Note: Starting with Data ONTAP 8.0, ALUA is the default igroup.
     For FC environments where ALUA is not supported, the AIX Host Utilities provide the **dotpaths** utility.
   - Working volumes and qtrees (if desired) set up.

3. **(FC environments)** If you are using a fabric connection, verify that the switch is set up correctly, which includes having the switch:
   - Cabled according to the instructions in the *SAN Configuration Guide* (called *Fibre Channel and iSCSI Configuration Guide* in Data ONTAP 8.1 and earlier) for your version of Data ONTAP.
   - Zoned appropriately, using the supported zoning technique in single initiator zoning from a host's initiator's standpoint.
   - Powered on in the correct order: switch, disk shelves, storage systems, and then the host.

   Note: For information about supported topologies, see the *SAN Configuration Guide* (called *Fibre Channel and iSCSI Configuration Guide* in Data ONTAP 8.1 and earlier) for your version of Data ONTAP.
4. **(FC direct-attached environment)** If you use a direct-attached, FC configuration, set the media type of the target HBA on the storage system to `loop`.

   Use the **`fcp config`** command to stop the HBA, set it to `loop` (**`fcp config adapter mediatype loop`**), and then restart the adapter.

   You can use the default HBA settings for the initiator HBA in the host, but you must configure the target HBA on the storage system for a media type of `loop` as shown in the example here:

```
4a:   ONLINE <ADAPTER UP>  PTP  Fabric
        host address
        portname 50:0a:09:81:97:c9:7e:5c  nodename 50:0a:09:80:87:c9:7e:5c
        mediatype loop speed auto
```

5. Confirm that the host and the storage system can communicate.

Task 2: Install and set up the Host Utilities

To install and set up the Host Utilities, you must get the software package for your Host Utilities environment and the software package for the SAN Toolkit. After you install these packages, you might need to perform additional configuration steps for your environment.

You must be logged on as root to install or uninstall the Host Utilities.

Note: **(PowerVM vSCSI environments)** If you are using PowerVM with vSCSI, you must switch into the OEM setup shell to install the Host Utilities on the VIO server:

1. Log on to the host as **`padmin`**.
2. Enter the command: `oem_setup_env`

Complete the following steps to get, install, and set up the Host Utilities:

1. Download the compressed file containing the Host Utilities from N series support website at www.ibm.com/storage/support/nseries/.
2. Uncompress the file and get the SAN Toolkit software package (`Ontap.SAN_toolkit`) for all environments and the host settings software package for your environment:

Host Utilities environment	Software package
AIX MPIO, PowerVM	`MPIO/Ontap.MPIO_Host_Utilities_Kit`
SAN Tool Kit	`SAN_Tool_Kit/Ontap.SAN_toolkit`

   You can use the **`zcat`** and **`tar`** commands to uncompress the file and extract the software; for example:
   `zcat ibm_aix_host_utilities_6.0.tar.Z | tar -xvf -`
3. Install or upgrade the existing Host Utilities SAN Toolkit software package and the host settings software package that you extracted.

From the directory containing the extracted software packages, use one of the following methods to install the two software packages:

- SMIT

  Use the **smitty install** command to start this program. Go to the Software Installation and Maintenance screen and choose the Install and Update Software option.

- The command **installp -aXYd** *FileSet_Path_Name*

Regardless of which method you use, you must execute it twice to install both the SAN Toolkit software package and the host settings software package. **(PowerVM NPIV environments)** If you have a PowerVM NPIV environment running FC, you must install the SAN Toolkit on each VIO client. Doing this lets you run the **sanlun** utility on each VIO client.

Note: If you have a PowerVM vSCSI environment, the Host Utilities is only installed on the VIO server and not the VIO client.

4. **(FC environments)** Enable AIX Fast I/O Failure by setting the `fc_err_recov` parameter to `fast_fail`.
   a. For each host HBA (fcsci*X* where *X* is the HBA number), enable the AIX Fast I/O Failure feature by entering the following command: `chdev -l` *`fscsiX`* `-a fc_err_recov=fast_fail -P`
   b. After you have set these values on each host HBA, reboot the system to enable the change to take place.
   c. Use the command **lsattr -El** *fscsiX* to verify that the AIX Fast I/O Failure feature and Dynamic Tracking are enabled.

Task 3: Set up access between the host and the LUNs on the storage system

To complete the Host Utilities setup, you must ensure your host discovers and can work with the LUNs on the storage system. The steps you perform differ depending on your environment.

You must be logged in as root administrator to execute the Host Utilities commands.

(PowerVM environments only) When you are setting access between the host and LUNs, the commands you enter in a PowerVM environment vary depending on whether you are running PowerVM vSCSI or PowerVM NPIV.

If you are using PowerVM vSCSI and VIO servers, you must use the **padmin** login and the commands appropriate for that login to configure and discover LUNs. When you use the Host Utilities commands, you must become root by entering the **oem_setup_env** command.

If you are using PowerVM NPIV, you run all the commands on the VIO client. This is the same as running AIX MPIO.

1. Create and map igroups and LUNs.

   You must create at least one igroup and one LUN, and then map the LUN to the igroup. The **lun setup** command helps you through this process. For details about creating an igroup and LUNs, see the *SAN Administration Guide (called Data ONTAP Block Access Management Guide for iSCSI and FC in Data ONTAP 8.1 and earlier)* for your version of Data ONTAP.

2. **(FC)** If your environment is running the FC protocol and supports ALUA, make sure ALUA is enabled. With Data ONTAP 8.0 and later, ALUA is automatically enabled when you create an igroup in an environment using FC.

   To determine whether ALUA is enabled, enter the command: `igroup show -v` *`igroup_name`*

   If ALUA is not enabled, enable it by entering the following command: `igroup set` *`igroup_name`* `alua yes`

3. Discover the new LUNs by entering the appropriate command for your environment.

AIX MPIO and PowerVM NPIV environments	**cfgmgr**
PowerVM vSCSI environments	**cfgdev**

4. Verify that the host has discovered the LUNs by displaying all the AIX disks.

   (AIX MPIO and all PowerVM environments) Write down the hdisk instance numbers so you can supply them when you perform the path configurations.

AIX MPIO and PowerVM NPIV environments	**lsdev -Cc disk**
PowerVM vSCSI environments	**lsdev -type disk**

5. **(AIX MPIO and all PowerVM environments)** Display information about your environment.

AIX MPIO and PowerVM NPIV environments	**lsattr -El** *hdisk_name*
PowerVM vSCSI environments only	**lsdev -dev** *hdisk_name* **-attr**

6. **(PowerVM vSCSI environments)** Become root by entering the following command: `oem_setup_env`
7. **(AIX MPIO and all PowerVM FC environments)** In FC environments, set the path priorities.

   ALUA handles this automatically. If ALUA is not supported and you are using an MPIO environment, you can use the **dotpaths** utility that comes with the Host Utilities to set the path priorities. If you enter **dotpaths** without any options, it sets the priority for all Data ONTAP LUNs.
8. **(PowerVM vSCSI environments)** If you have LUNs presented to a VIO server from multiple third-party storage vendors, make sure that all the LUNs use the same maximum transfer size.

   Enter the following command: `lsattr -El` *hdisk_name* `-a max_transfer`
9. Display information about the LUNs and the HBAs by using the command **sanlun**. For example, to verify that the host has discovered the LUNs, enter the command:`sanlun lun show`

   If you are using multipathing, you can display information about the primary and secondary paths available to the LUNs by entering the following command: `sanlun lun show -p`

   Note: The **sanlun** command displays path information for each LUN; however, it only displays the native multipathing policy. To see the multipathing policy for other vendors, you must use vendor-specific commands.

Websites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. The following web pages provide N series information:

- A listing of currently available N series products and features can be found at the following web page:

  www.ibm.com/storage/nas/
- The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, refer to the following publicly accessible web page:

  www.ibm.com/storage/support/nseries/

  This web page also provides links to AutoSupport information as well as other important N series product resources.
- IBM System Storage N series products attach to a variety of servers and operating systems. To determine the latest supported attachments, go to the IBM N series interoperability matrix at the following web page:

  www.ibm.com/systems/storage/network/interophome.html

- For the latest N series hardware product documentation, including planning, installation and setup, and hardware monitoring, service and diagnostics, see the IBM N series Information Center at the following web page:

  publib.boulder.ibm.com/infocenter/nasinfo/nseries/index.jsp

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