SANtricity® Storage Manager 11.30

Installing and Configuring for AIX

Express Guide

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NetApp®

Contents

Deciding whether to use this Express Guide

The express method for installing your storage array and SANtricity Storage Manager is appropriate for setting up a standalone AIX host to E-Series or EF-Series storage systems. It is designed to get the storage system up and running as quickly as possible with minimal decision points.

Note: The configuration that the express method provides might not meet the needs of your production environment. For additional options for installing and configuring the storage system, see the SANtricity Power Guide for your operating system.

The express method includes the following steps:

1. Setting up the Fibre Channel (FC) communication environment.
2. Creating logical volumes on the storage array and assigning a logical unit number (LUN) to each volume.
3. Making the volume LUNs available to the data host.

This guide is based on the following assumptions:

Component	Assumptions
Hardware	• You have used the Installation and Setup Instructions included with the controller shelves to install the hardware. • You have connected cables between any optional drive shelves and the controller shelf. • You have applied power to the storage array. • *Not including* the connection between the host and the storage array, you have installed all other hardware (for example, host bus adapter and switches) and made the necessary connections.
Host	• You have **not** yet made a connection between the storage array and the data host. • You have installed the host operating system. • You are not using AIX as a virtualized guest. • You are not configuring the data (I/O attached) host to boot from SAN.
Storage management station	• You are using a 1 Gb/s or faster management network. • You are using a separate station for management rather than the data (I/O attached) host. • You are using out-of-band management, in which a storage management station sends commands to the storage array through the Ethernet connections to the controller. • You have attached the management station to the same subnet as the storage management ports.

Component	Assumptions
IP addressing	• You have installed and configured a DHCP server. • You have obtained the MAC addresses for management port 1 on both controllers in the storage array.
Storage provisioning	• You will not use shared volumes. • You will create disk pools rather than volume groups.
Protocol: FC	• You have made all host-side FC connections and activated switch zoning. • You are using NetApp-supported FC HBAs and switches. • You are using FC HBA driver versions listed in the *NetApp Interoperability Matrix Tool*.

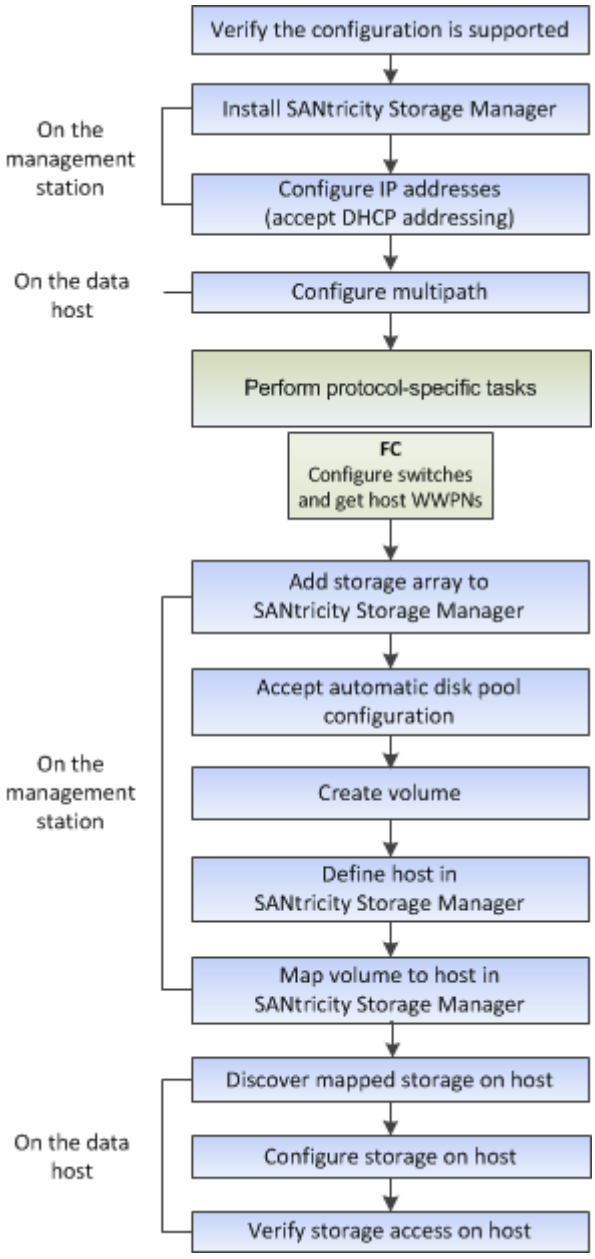
If these assumptions are not correct for your installation, or if you want more conceptual background information, see the SANtricity Power Guide for your operating system.

Related information

NetApp Interoperability Matrix Tool
SANtricity 11.30 Installing and Configuring for AIX Power Guide for Advanced Users

Understanding the workflow

This workflow guides you through the "express method" for configuring your storage array and SANtricity Storage Manager to make storage available to a host.

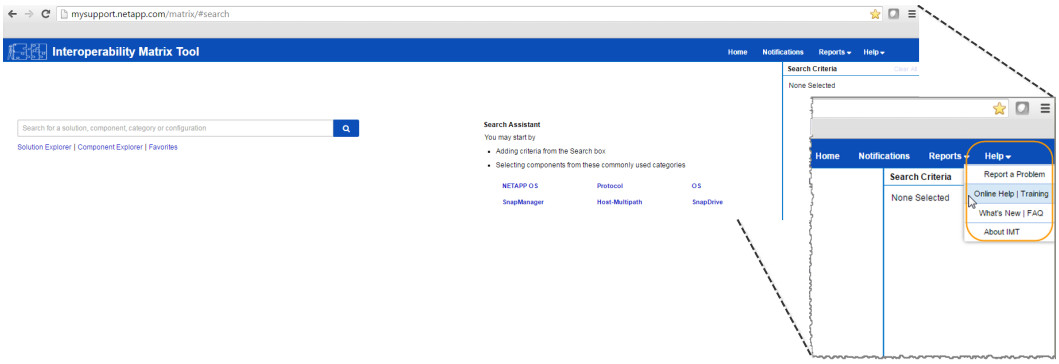


Verifying the configuration is supported

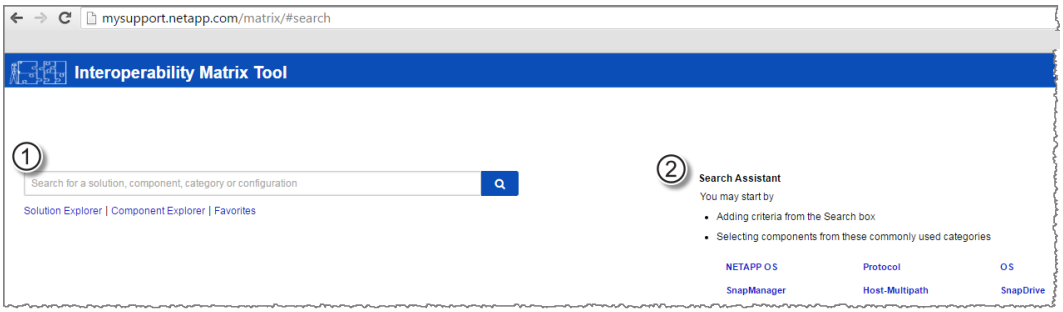
To ensure reliable operation, you create an implementation plan and then use the NetApp Interoperability Matrix Tool (IMT) to verify that the entire configuration is supported.

Steps

1. Go to the *NetApp Interoperability Matrix Tool*.
2. Go to **Help > Online Help | Training** or **Help > What's New | FAQ** for training or refresher tools.

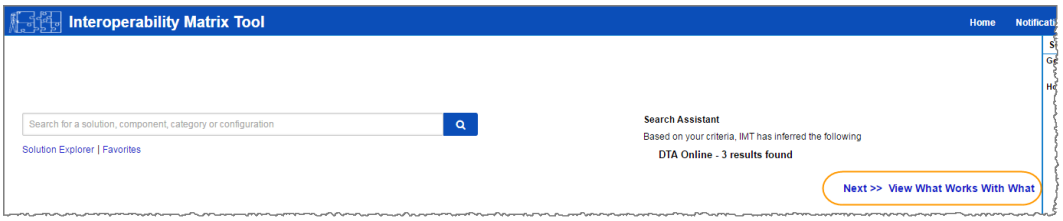


3. Use the search functions to enter the details of your configuration.

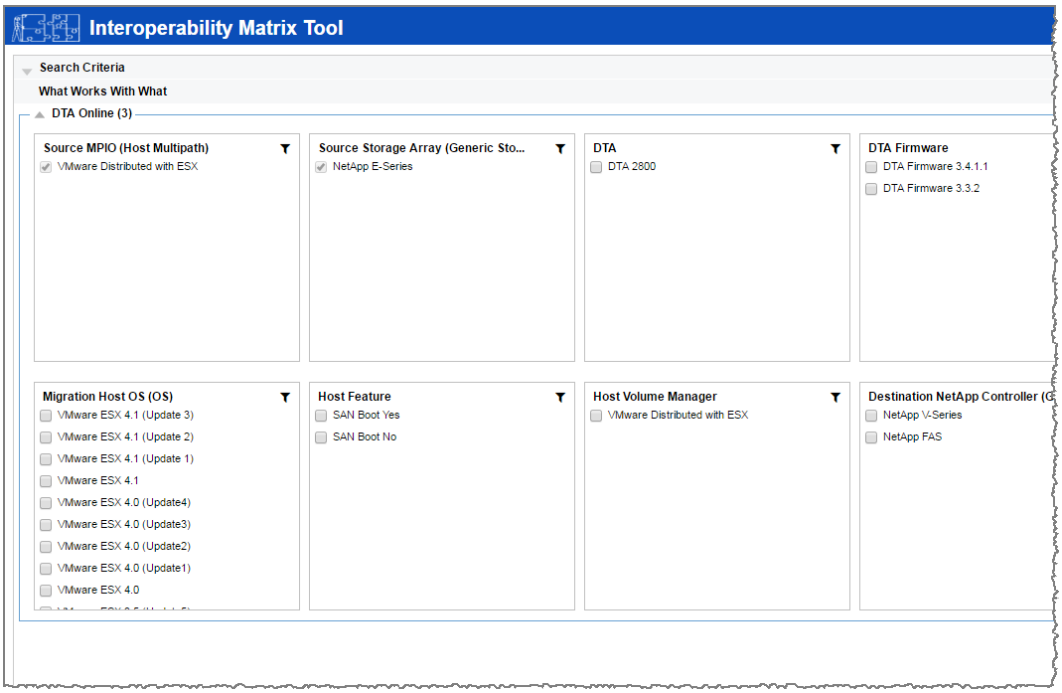


1	**Search box**: Enter a solution, component, category, or configuration for building initial criteria and inferring solutions.
2	**Search Assistant**: Use appropriate hints to infer solutions faster.

4. Click **View What Works With What** to select from a detailed matrix of components.



Example



5. Review the information in the following tabs in the **Configuration Details** window:
   - **Notes**: Lists important information specific to your configuration. Review the alerts to identify the hot fixes that are required for your operating system.
   - **Policies & Guidelines**: Provides general guidelines for all SAN configurations.
6. As necessary, make the updates for your operating system and protocol as listed in the table.

Operating system updates	Protocol	Protocol-related updates
not applicable	FC	Host bus adapter (HBA) driver, firmware, and bootcode

Related information

NetApp Interoperability Matrix Tool

Installing SANtricity Storage Manager

On an AIX-based storage system, you install portions of the software in two locations. You install the **Management Station** package on a Windows-based system so you can configure, manage, and monitor the storage array using the graphical user interface (GUI). In addition, you install the **Host** package on the AIX host so you can use the NetApp multipathing script.

Before you begin

- You must have root privileges.
- You must ensure the systems that will contain the SANtricity Storage Manager software have the following minimum requirements:
  - **RAM**: 2 GB for Java Runtime Engine
  - **Disk space**: 5 GB
  - **OS/Architecture**: Refer to *NetApp Support* **Downloads > Software > E-Series/EF-Series SANtricity Storage Manager** for guidance on determining the supported operating system versions and architectures.

About this task

Important: Do not connect the E-Series storage array to the data host before you install SANtricity Storage Manager.

When you install the new software, earlier versions of the software are automatically removed as part of that process.

Steps

1. Download the SANtricity Storage Manager installers—one for Windows, and one for AIX—from *NetApp Support* **Downloads > Software > E-Series/EF-Series SANtricity Storage Manager**.
2. Install the software on the Windows management station:
   a. Double-click the `SMIA*.exe` installation package to start the installation.
   b. Use the installation wizard to install the software on the management station. For **Installation Type**, choose **2**—`Management Station`.
3. Install the software on the AIX host:
   a. If you added the LUNs/hdisks before installing SANtricity Storage Manager, reboot the AIX host.

      To avoid a reboot, you must remove all the LUNs/hdisks before running the `cfgmgr` command in *Discovering storage on the host* on page 25.

   b. Change your current directory to the installation directory by typing `cd <install>` on the command line and pressing **Enter**.

      `<install>` is the name of the directory on your server to which you downloaded the installation file.

   c. Execute the installer by running the `./SMIA-AIX-nn.nn.nnnn.nnnn*.bin` command, where *n* represents the numbers in the file name of the installer.

The following messages appear in the console window:

```
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...
Launching installer...
Graphical installers are not supported by the VM. The console mode
will be used instead...
===============================================================
SANtricity (created with InstallAnywhere)
---------------------------------------------------------------
Preparing CONSOLE Mode Installation...
===============================================================
Introduction
------------
The installation program will allow you to select and install
the storage array host software and tools required to configure,
manage, and monitor a storage array.
Respond to each prompt to proceed to the next step in the
installation.
If you want to change something on a previous step, type 'back'.
You may cancel this installation at any time by typing 'quit'.
PRESS <ENTER> TO CONTINUE:
```

d. Press **Enter** when prompted. Continue pressing **Enter** as you read through the license agreement, and then enter **Y** to accept the license agreement.

   You are prompted to select your installation type.

e. Enter installation type **3**—`Host`. This option is for the host (server) connected to the storage array and includes the storage array server software.

   A pre-installation summary appears.

```
===============================================================
==
Pre-Installation Summary
------------------------
Please Review the Following Before Continuing:
Install Folder:
/opt/StorageManager
Required Disk Space
875 MB
Available Disk Space
5,032 MB
PRESS <ENTER> TO CONTINUE:
```

f. Press **Enter** to continue.

   The installation may take several minutes. After it has completed, the following message appears:

```
===============================================================
==
Installation Complete
---------------------
Congratulations. SANtricity has been successfully installed to:
/opt/StorageManager
PRESS <ENTER> TO EXIT THE INSTALLER:
```

g. Press **Enter** to exit the installer.

Configuring IP addresses using DHCP

In this express method for configuring communications between the management station and the storage array, you use Dynamic Host Configuration Protocol (DHCP) to provide IP addresses. Each storage array has either one controller (simplex) or two controllers (duplex), and each controller has two storage management ports. Each management port will be assigned an IP address.

Before you begin

You have installed and configured a DHCP server on the same subnet as the storage management ports.

About this task

The following instructions refer to a storage array with two controllers (a duplex configuration).

Steps

1. If you have not already done so, connect an Ethernet cable to the management station and to management port 1 on each controller (A and B).

   The DHCP server assigns an IP address to port 1 of each controller.

   Note: Do not use management port 2 on either controller. Port 2 is reserved for use by NetApp technical personnel.

   Important: If you disconnect and reconnect the Ethernet cable, or if the storage array is power-cycled, DHCP assigns IP addresses again. This process occurs until static IP addresses are configured. It is recommended that you avoid disconnecting the cable or power-cycling the array.

   If the storage array cannot get DHCP-assigned IP addresses within 30 seconds, the following default IP addresses are set:

   - Controller A, port 1: 192.168.128.101
   - Controller B, port 1: 192.168.128.102
   - Subnet mask: 255.255.255.0

2. Locate the MAC address label on the back of each controller, and then provide your network administrator with the MAC address for port 1 of each controller.

   Your network administrator needs the MAC addresses to determine the IP address for each controller. You will need the IP addresses when you add the storage array to SANtricity Storage Manager.

Configuring the multipath software for AIX

Multipath software provides a redundant path to the storage array in case one of the physical paths is disrupted. When you installed SANtricity Storage Manager on the data host, the multipath script for AIX, Object Data Manager (ODM), was installed.

Before you begin

You have not connected your E-Series storage array to the host.

About this task

If you did not connect the storage array to the AIX host before you installed SANtricity Storage Manager, the ODM script is automatically activated.

If you connected your E-Series storage array to the host before you installed the SANtricity Storage Manager software, reboot the AIX host to activate the ODM script.

For additional information, see *SANtricity 11.30 Installing and Configuring for AIX Power Guide for Advanced Users* .

Related tasks

Installing SANtricity Storage Manager on page 9

Performing FC-specific tasks

For the Fibre Channel protocol, you configure the switches and determine the host port identifiers.

Determining the host WWPNs—FC

To add the host to SANtricity Storage Manager, you determine the worldwide port name (WWPN) of each host port.

Steps

1. If you have not already done so, connect the storage array to the AIX host.
2. Run the following command:

```
# lsdev -Cc adapter
```

3. Record the initiator identifiers on the worksheet. The output will be similar to this example:

```
ent0    Available 03-00 4-Port Gigabit Ethernet PCI-Express Adapter
(e414571614102004)
ent1    Available 03-01 4-Port Gigabit Ethernet PCI-Express Adapter
(e414571614102004)
ent2    Available 03-02 4-Port Gigabit Ethernet PCI-Express Adapter
(e414571614102004)
ent3    Available 03-03 4-Port Gigabit Ethernet PCI-Express Adapter
(e414571614102004)
fcs0    Available 04-00 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
fcs1    Available 04-01 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
fcs2    Available 0B-00 8Gb PCIe2 Low Profile 4-Port FC Adapter
(7710322514101e04)
fcs3    Available 0B-01 8Gb PCIe2 Low Profile 4-Port FC Adapter
(7710322514101e04)
fcs4    Available 0C-00 8Gb PCIe2 Low Profile 4-Port FC Adapter
(7710322514101e04)
fcs5    Available 0C-01 8Gb PCIe2 Low Profile 4-Port FC Adapter
(7710322514101e04)
fcs6    Available 06-00 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
fcs7    Available 06-01 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
fcs8    Available 07-00 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
fcs9    Available 07-01 PCIe2 2-Port 16Gb FC Adapter
(df1000e21410f103)
```

4. To ensure the HBA settings are correct, follow the instructions in the SANtricity Power Guide for your operating system.

Related concepts

FC worksheet on page 27

Related information

NetApp Interoperability Matrix Tool
SANtricity 11.30 Installing and Configuring for AIX Power Guide for Advanced Users

Configuring the switches—FC

Configuring (zoning) the Fibre Channel (FC) switches enables the hosts to connect to the storage array and limits the number of paths. You zone the switches using the management interface for the switches.

Before you begin

- You must have administrator credentials for the switches.
- You must have used your HBA utility to discover the WWPN of each host initiator port and of each controller target port connected to the switch.

  Note: It is helpful to record the WWPNs on the *FC worksheet* on page 27.

About this task

For details about zoning your switches, see the switch vendor's documentation.

You must zone by WWPN, not by physical port. Each initiator port must be in a separate zone with all of its corresponding target ports.

Steps

1. Log in to the FC switch administration program, and then select the zoning configuration option.
2. Create a new zone that includes the first host initiator port and that also includes all of the target ports that connect to the same FC switch as the initiator.
3. Create additional zones for each FC host initiator port in the switch.
4. Save the zones, and then activate the new zoning configuration.

Adding a storage array to SANtricity Storage Manager

After you have configured the network between the management station and the array controllers, you add the controller to SANtricity Storage Manager using the Enterprise Management Window (EMW).

Steps

1. Open the **SANtricity Storage Manager**.

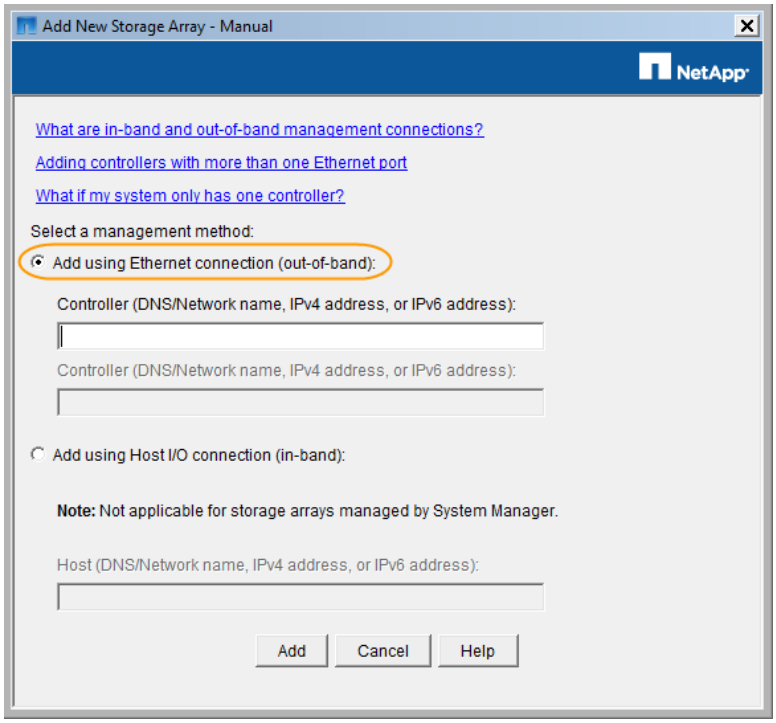
   For an AIX management station, you must install a video card or VNC before you can open the SANtricity Storage Manager. Run the `SMclient` command from any directory. After you run the `SMclient` command, the Enterprise Management Window (EMW) is displayed.

2. On the **Select Addition Method** screen, select the **Manual** radio button, and then select **OK**.

   Note: When you open SANtricity Storage Manager for the first time, the **Select Addition Method** screen prompts you to select the **Automatic** or **Manual** method to add a new storage array.

3. To add one or more new storage arrays, complete the following steps:

   a. On the **Add New Storage Array – Manual** screen, make sure that the default **Add using Ethernet connection (out-of-band)** radio button is selected. Enter the IP address (as determined by DHCP) of port 1 for each controller (controller A and B) in the fields provided.



   b. Select **Add**.

      The Storage Array Added screen is displayed.

   c. To add another storage array, select **Yes** on the **Storage Array Added** screen and repeat the steps above.

      Otherwise, select **No**.

4. Name the storage array so you can find it more easily in the EMW after you change the IP addresses:
   a. In the **Setup** tab, select **Name/Rename Storage Arrays**.
   b. In the **Select storage array:** list, confirm that the storage array you added is selected.
   c. In the **Storage array name** field, type a name for the storage array.
   d. Select **OK**.
   e. On the **Name/Rename Storage Arrays** warning dialog, select **Yes** to dismiss the warning and continue.
5. Configure the network configuration information of the controllers, using information you obtain from your network administrator.
   a. Click the **Devices** tab, and then double-click on the name of the storage array.

      The Array Management Window (AMW) opens.
   b. Select the **Hardware** tab in the Array Management Window (AMW).
   c. Select the visual representation of one of the controllers in the **Hardware** tab.
   d. Right-click, and then select **Configure > Management Ports**.
   e. On the **Change Network Configuration** dialog box, select **Controller A, Port 1** in the **Ethernet port** drop-down list.
   f. From the **Speed and duplex mode** drop-down list, select **Auto-negotiate**.
   g. Depending on the format of your network configuration information, select the **Enable IPv4** check box, the **Enable IPv6** check box, or both check boxes.
   h. Depending on the format you have selected, enter the network configuration information in the **IPv4 Settings** tab or the **IPv6 Settings** tab.

      Note: You must obtain the network configuration information from your network administrator.

   i. Select **Controller B, Port 1** in the **Ethernet Port** drop-down list, and repeat the steps you followed for controller A.
   j. Select **OK**.
6. Find the identifiers of the controller's host ports by opening the AMW for the storage array and then following the appropriate steps for your protocol.
   a. From the **Monitor** menu, select **Reports > Storage Array Profile**.
   b. Select the **Hardware** tab, then select the **Controllers** tab.
   c. Scroll through the information to find the WWPNs.
   d. Record the WWPNs in the worksheet.

Accepting automatic disk pool configuration

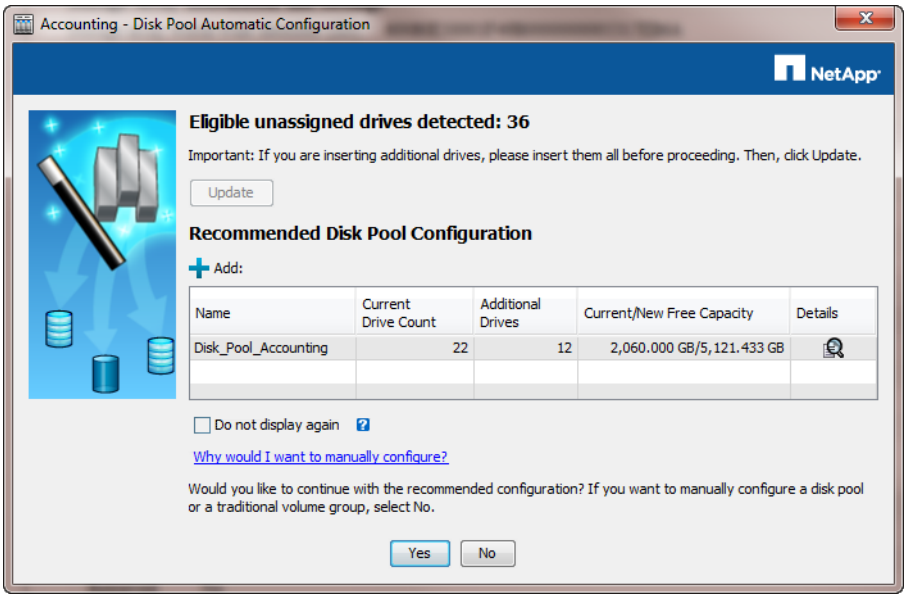
When there are unassigned drives available to create new disk pools, the Disk Pool Automatic Configuration wizard is displayed when you open the Array Management Window (AMW) for your storage array. You are prompted to select the recommended disk pool configuration.

Steps

1. In the **Enterprise Management Window (EMW)**, click **Devices**, and then double-click the storage array to open the Array Management Window (AMW).

   Note: When you open the AMW for a storage array for the first time, the Disk Pool Automatic Configuration wizard is displayed.

2. Accept the recommended disk pool configuration by clicking **Yes** in the **Disk Pool Automatic Configuration** dialog box.



Creating a volume

Using SANtricity Storage Manager, you create a volume—a single accessible storage area—on a storage array for the attached host to access. You create a volume from the free capacity of a disk pool.

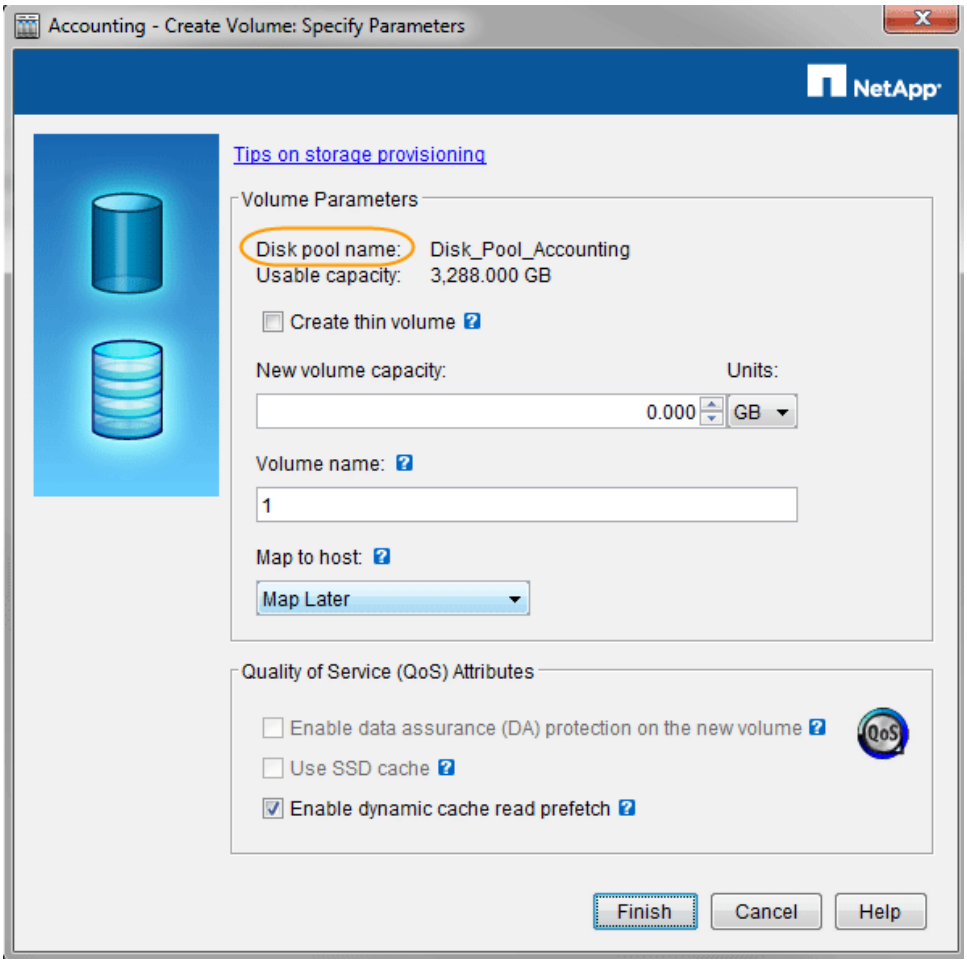
Before you begin

You must have determined the expected capacity, usage, data protection, and performance requirements for the volume.

Steps

1. From the **Array Management Window (AMW) Storage & Copy Services** tab, expand the disk pool on the array where you want to create the new volume.
2. Right-click **Free Capacity > Create Volume**.

   The following dialog box appears.



3. Configure the volume parameters.

   Onscreen flyovers provide more information about particular options.

   a. If you want to create a thin volume, select the **Create thin volume** check box.

b. From the **Units** drop-down list, select the appropriate unit for the new volume capacity.

c. Specify the volume capacity to be taken from the free capacity that is listed.

d. Enter the volume name.

e. From the **Map to host** drop-down list, select the **Map later** option.

4. Specify the Quality of Service attributes. Use the onscreen flyovers and the SANtricity Online Help to get more information about particular attributes.

Note: The **Use SSD cache** check box is not available in the Quality of Service section because you have chosen to map the volume to a host later. See the Array Management Window Online Help topic "Learn about SSD Cache" to decide if it is appropriate to enable SSD cache later. To enable it, from the **AMW Storage & Copy Services** tab, right-click the volume, and then select **SSD Cache > Enable**.

a. To enable DA protection, select the **Enable data assurance (DA) protection on the new volume** check box.

This check box appears only if the drives, the controller, and the host bus adapter are all DA-capable.

b. Finish selecting the Quality of Service Attributes and create the volume.

5. If you want to enable dynamic cache read prefetch, select the **Enable dynamic cache read prefetch** check box to enable it.

Note: Dynamic cache read prefetch is not available for thin volumes.

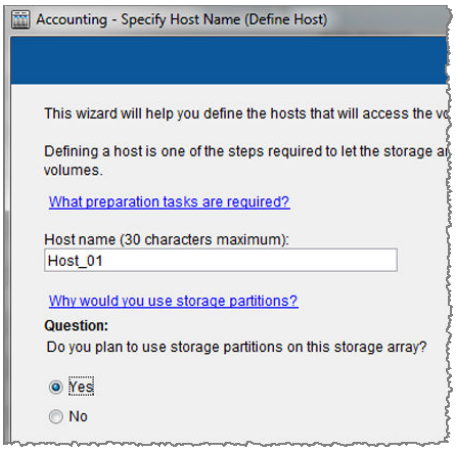
6. Select **Finish**.

Defining a host in SANtricity Storage Manager

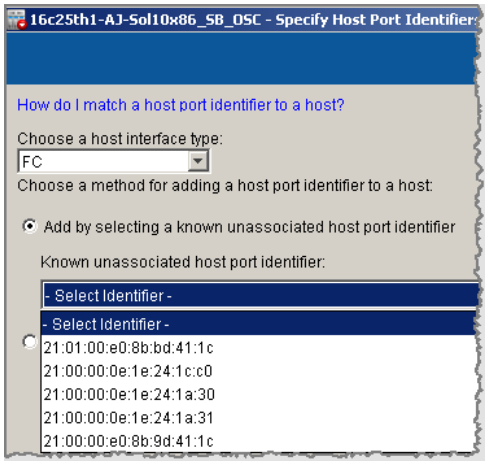
You define a new logical host on the storage array so that volumes can be shared with the host.

Steps

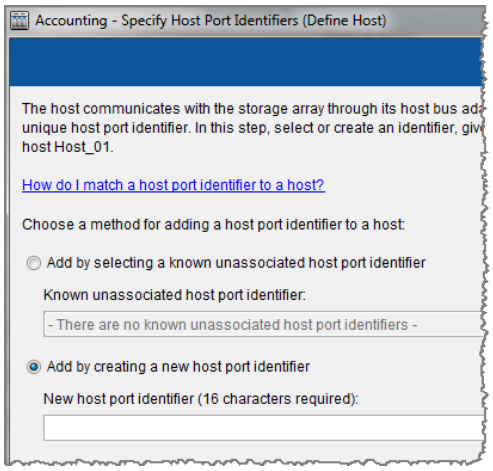
1. From the **Array Management Window (AMW)**, select the **Host Mappings** tab.
2. In the left pane, expand the storage array tree.
3. Right-click **Default Group** and select **Define > Host** to start the **Define Host** wizard.
   a. Enter a descriptive name for the host to make it easier for administrators to manage the environment over time.
   b. In the **Question** area of the dialog box, keep the **Yes** selected.



4. Select **Next**.
5. If the controller supports multiple host interface types, select one type from the **Choose a host interface type** drop-down list.
6. Choose a method for adding a host port identifier to the host.
   - You can add known unassociated host port identifiers by selecting the option **Add by selecting a known unassociated host port identifier**. From the drop-down list, select the identifier for the first port on the host.
     In this example, a Fibre Channel host interface type is shown.



- If no identifiers are displayed, there is an issue with the path to the host, and the storage cannot be discovered. Resolve the host issue, then change the host port identifier that was not discovered by selecting the option **Add by creating a new host port identifier**. Enter the new host port identifier.



Note: The host port identifier is called a different name depending on the protocol:

- Fibre Channel and SAS: World Wide Identifier (WWID)
- InfiniBand and iSCSI: iSCSI Qualified Name (IQN)

When the identifier is displayed in the selection list, the storage array can automatically detect the path to the host.

7. Enter a descriptive alias name for the host port identifier.
8. Select **Add** to add the host port identifier to the host.
9. Repeat Step *6* on page 20 through Step *8* on page 21 for each link between the host and the storage array. You can connect and provision two to four paths between any one host and the E-Series storage array.

   Note: For InfiniBand and iSCSI, additional links between host and storage will not show up as different identifiers; they will all exist behind the same IQN.

10. Select **Next**.

11. From the **Host type (operating system)** drop-down list, select host type **AIX MPIO**.
12. Select **Next**.
13. Select **No – this host will NOT share access to the same volumes with other hosts**, and then select **Next**.

    Note: These instructions assume a non-clustered configuration.

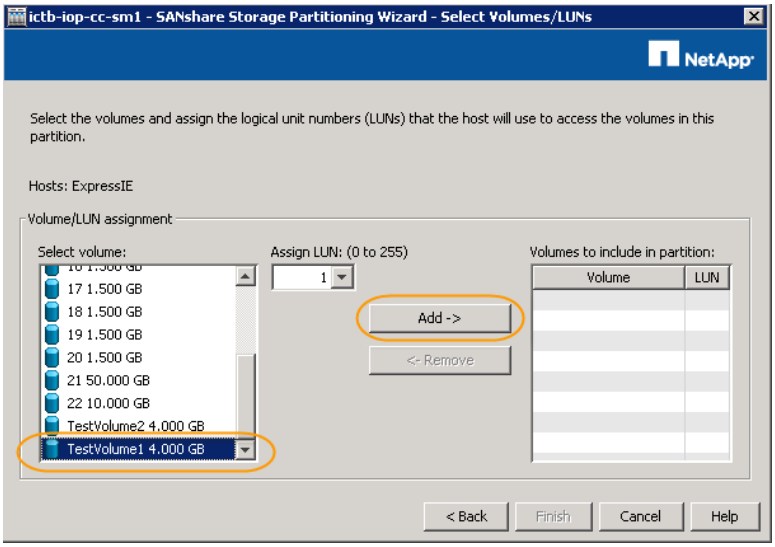
14. Review the host definition information and confirm that the host name, the host type, and the host port identifiers are correct.
15. Select **Finish** to create the host.
16. Repeat Step *3* on page 20 through Step *15* on page 22 to create additional hosts as required.
17. From the **Host Mappings** tab, review the storage array tree to verify that the hosts were created.

Mapping a volume to a host

Using SANtricity Storage Manager to create storage partitions, you assign a logical unit number (LUN) to a volume and map the LUN to the host.

Steps

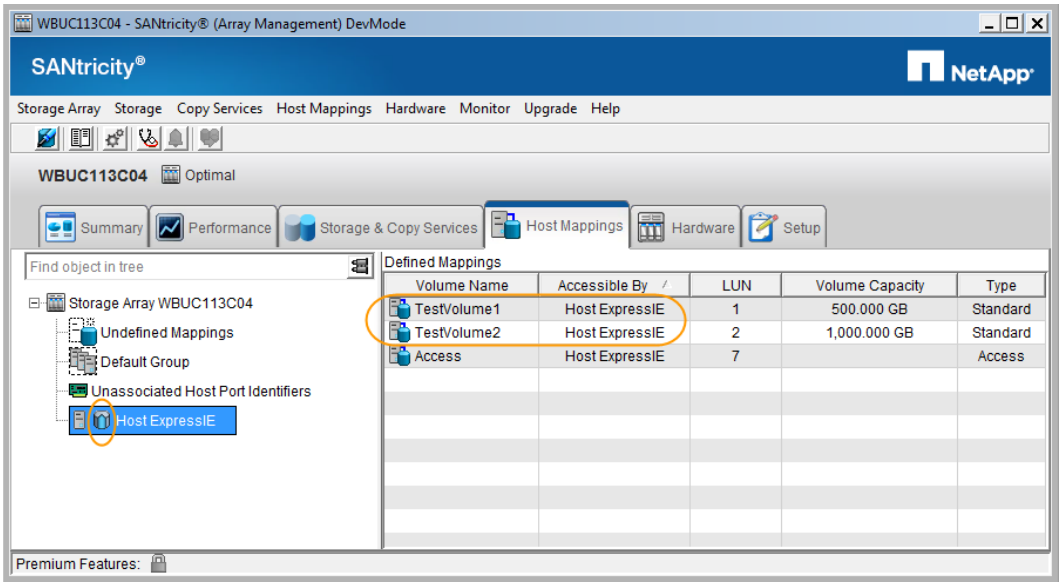
1. From the **Array Management Window (AMW)**, select the **Host Mappings** tab.
2. Select the storage array tree, right-click the desired host, and then select **Define Storage Partition** to start the **SANshare Storage Partitioning** wizard.
3. On the **Welcome** page of the wizard, select **Next**.
4. Select **Host** to create a dedicated mapping, and then select the host name to be added to the partition.
5. Select **Next**.
6. Select an individual volume, assign a LUN to the volume, and then select **Add** to associate the volume (LUN) with the partition.



7. Repeat Step *6* until all desired volumes are added to the partition.
8. Select **Finish** to create the partition.
9. Review the storage array tree on the **Host Mappings** tab to confirm that the partition was successfully created.

Example

Note: In this example, the volumes `TestVolume1` and `TestVolume2` are mapped to the host `ExpressIE`. Only this host has access to `TestVolume1` and `TestVolume2`. In the left pane of the screen, the storage partition on the host is indicated by the blue slice on the storage cylinder icon.


WBUC113C04 - SANtricity® (Array Management) DevMode
SANtricity®
NetApp
Storage Array Storage Copy Services Host Mappings Hardware Monitor Upgrade Help
WBUC113C04 Optimal
Summary Performance Storage & Copy Services Host Mappings Hardware Setup
Find object in tree
Storage Array WBUC113C04
Undefined Mappings
Default Group
Unassociated Host Port Identifiers
Host ExpressIE
Defined Mappings
Volume Name Accessible By LUN Volume Capacity Type
TestVolume1 Host ExpressIE 1 500.000 GB Standard
TestVolume2 Host ExpressIE 2 1,000.000 GB Standard
Access Host ExpressIE 7 Access
Premium Features:

Discovering storage on the host

LUNs on your storage system appear as hdisks to the AIX host. When you add new LUNs, you must manually rescan the associated disks to discover them. The host does not automatically discover new LUNs.

Steps

1. Scan the LUNs by running the `# cfgmgr` command from a terminal window on the host.
2. Verify disk discovery by running the `# lsdev -Cc disk` command.

Example

```
#lsdev -Cc disk
hdisk0 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk1 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk2 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk3 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk4 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk5 Available 0c-00-02 MPIO NetApp E-Series Disk
hdisk6 Available 0c-00-02 MPIO NetApp E-Series Disk
```

Verifying storage access on the host

Before using the LUN, you verify that the host can write data to the LUN and read it back.

Before you begin

You must have initialized the LUN and formatted it with a file system.

Steps

1. On the host, copy one or more files to the mount point of the disk.
2. Copy the files back to a different folder on the original disk.
3. Run the `diff` command to compare the copied files to the originals.
4. Run the `multipath -ll` command to view the paths to the LUN, and verify that you have four paths.
5. Force a controller failover, preferably by pulling all cables from one controller, and then verify that you can still access the files on the LUN. When you are finished, reset the storage to an optimal state.

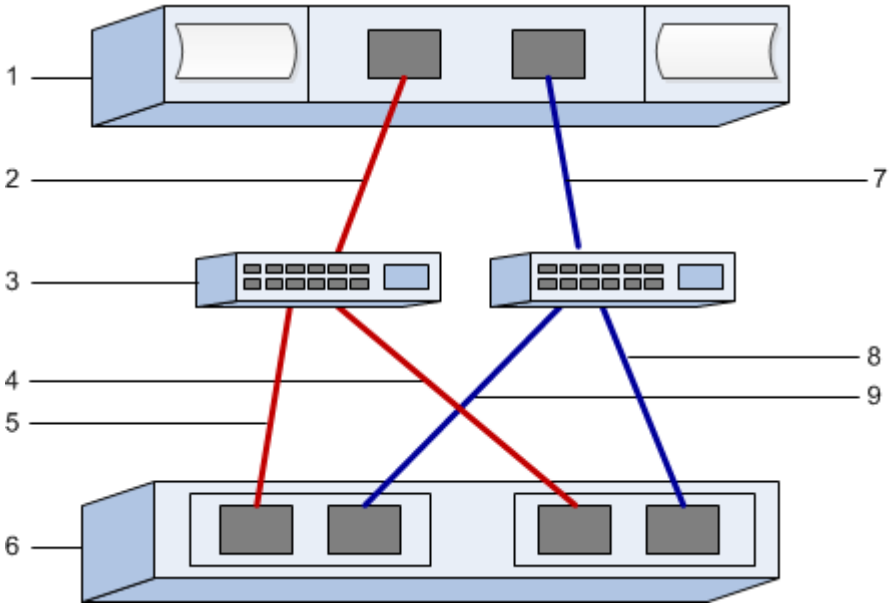
After you finish

Remove the file and folder that you copied.

FC worksheet

You can use this worksheet to record FC storage configuration information. You need this information to perform provisioning tasks.

The illustration shows a host connected to an E-Series storage array in two zones. One zone is indicated by the blue line; the other zone is indicated by the red line.



Host identifiers

Callout No.	Host (initiator) port connections	WWPN
1	Host	*not applicable*
2	Host port 0 to FC switch zone 0	
7	Host port 1 to FC switch zone 1	

Target identifiers

Callout No.	Array controller (target) port connections	WWPN
3	Switch	*not applicable*
6	Array controller (target)	*not applicable*
5	Controller A, port 1 to FC switch 1	
9	Controller A, port 2 to FC switch 2	
4	Controller B, port 1 to FC switch 1	
8	Controller B, port 2 to FC switch 2	

Mapping host

Mapping host name	

Host OS type	

Where to find additional information

Use the resources listed here if you need additional information. You can also use the online help systems for the Enterprise Management Window (EMW) and the Array Management Window (AMW) of SANtricity Storage Manager.

- *SANtricity 11.30 Installing and Configuring for AIX Power Guide for Advanced Users* describes:
  - Software installation options
  - Configuration options
  - Multipath options
  - Installation on a boot device
- Online help describes how to use SANtricity Storage Manager to complete configuration and storage management tasks. It is available within the product and as a PDF download.
- *NetApp Knowledgebase* (a database of articles) provides troubleshooting information, FAQs, and instructions for a wide range of NetApp products and technologies.
- For additional documentation and instructions for E-Series products, including SANtricity software, go to the *NetApp E-Series and EF-Series Systems Documentation Center*.

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