

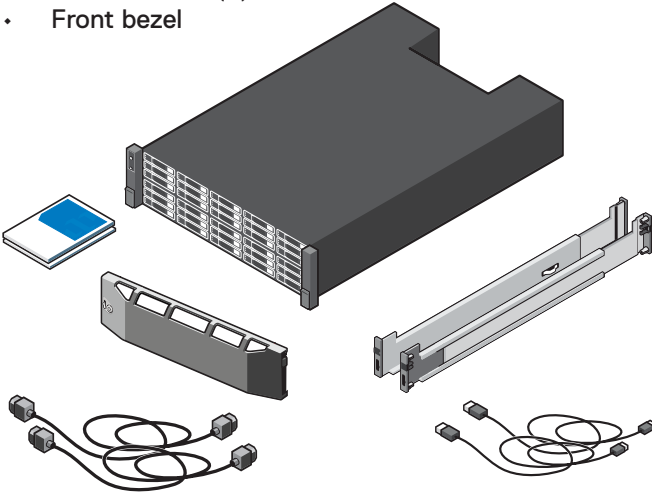
1 Before You Begin

Warning! Before you set up and operate your Dell storage system, review the safety instructions that came with the storage system.

Unpack Storage Center Equipment

An SC5020 and SC5020F storage system includes:

- Documentation
- Storage system with drives
- Rack rails
- USB cables (2)
- Power cables (2)
- Front bezel



Develop a Configuration Plan

Before installing the storage hardware, develop a configuration plan where you can record host server information, switch information, and network information.

Record System Information

- System management IPv4 address for Storage Center
- IPv4 address of the MGMT port on each storage controller
- Domain name
- DNS server address
- Additional IPv4 addresses if the storage system has iSCSI I/O ports

Consider Plans for Multipath/Failover

Redundancy is provided by fault domains, which allow alternate paths if a path fails. Fault domains are determined by the number of independent Fibre Channel fabrics or iSCSI networks. Each switch carries a separate fault domain. If a port fails, any port within the same fault domain takes over for the failed port. Dell recommends using multipathing, so that volumes are mapped to ports in more than one fault domain.

More Information

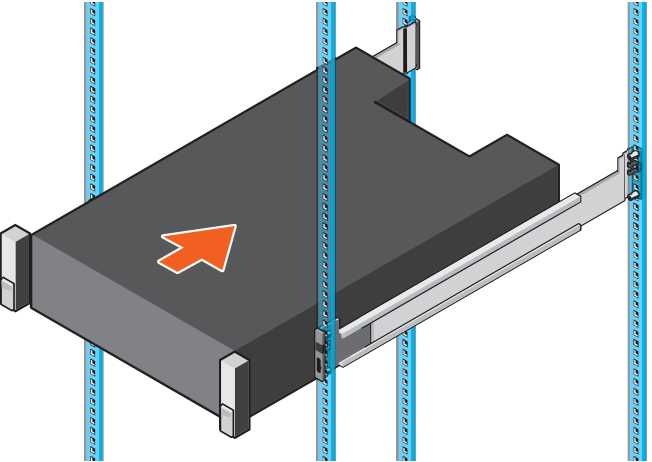
For operating system, host bus adapter (HBA), and switch requirements, refer to a list of supported HBA or NIC drivers and firmware, refer to the *Dell Storage Compatibility Matrix* located in the Knowledge Base at www.dell.com/support.

2 Mount the Chassis and Optional Enclosures

Warning! The chassis is heavy. Do not attempt to lift the chassis without assistance.

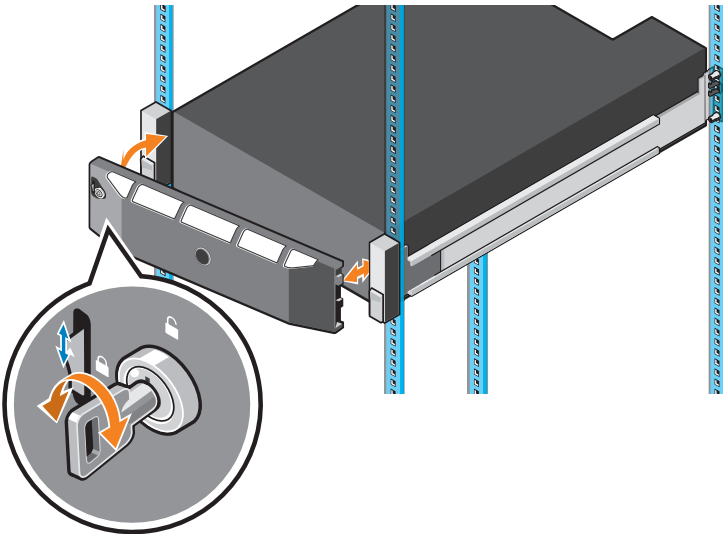
Use the racking instructions included with your package to mount the chassis.

Mount the storage system chassis and expansion enclosures in a manner that allows for expansion in the rack and prevents the rack from becoming top-heavy. Secure the storage system chassis to the rack using the mounting screws that are located behind the latches on each chassis ear. Dell recommends mounting the storage system chassis in the bottom of the rack.



3 Install the Front Bezel

1. Hold the bezel with the logo upright.
2. Hook the right end of the bezel into the right side of the chassis.
3. Swing the left end of the bezel toward the left side of the chassis.
4. Press the bezel into place until the release latch closes.
5. Use the key to lock the front bezel.



4 Cable the Host Servers to the Storage System

The SC5020 storage system supports Fibre Channel, iSCSI, or SAS protocols to connect the Storage Center to host servers. The SC5020F storage system supports Fibre Channel or iSCSI protocols to connect the Storage Center to host servers. Fault domains provide fault tolerance at the storage controller level. If you are using Fibre Channel, incorporate your switch zoning strategy with the fault domains. Use redundant cabling to avoid a single point of failure.

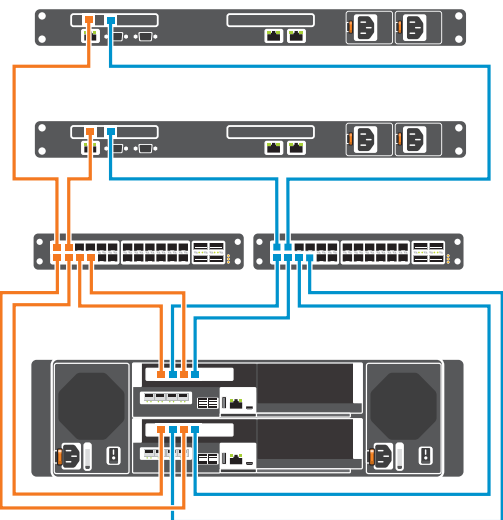
1. Identify the protocol being used to connect the host servers to the storage system.
2. Refer to the diagram below that corresponds to the proper protocol. These cabling guidelines ensure the configuration has redundancy and failover capability. For more information, contact Dell Technical Support.

Fibre Channel and iSCSI HBA Cabling

Install the Fibre Channel or iSCSI HBAs in the host servers and connect the host servers and storage system to the corresponding Fibre Channel or Ethernet switches.

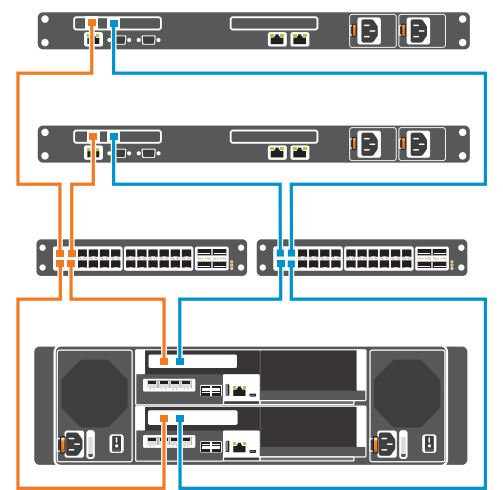
Fibre Channel 4 Port Configuration
iSCSI 4 Port Configuration

1. For Fibre Channel 4 Port configurations, install Fibre Channel HBAs into the host servers.
For iSCSI 4 Port configurations, install iSCSI HBAs or network interface controllers (NICs) dedicated for iSCSI traffic into the host servers.
2. Connect each host server to the two switches.
– Connections shown in orange belong to fault domain 1.
– Connections shown in blue belong to fault domain 2.
3. Connect fault domain 1 (in orange) to switch 1.
– Top storage controller: port 1 to switch 1
– Top storage controller: port 3 to switch 1
– Bottom storage controller: port 1 to switch 1
– Bottom storage controller: port 3 to switch 1
4. Connect fault domain 2 (in blue) to switch 2.
– Top storage controller: port 2 to switch 2
– Top storage controller: port 4 to switch 2
– Bottom storage controller: port 2 to switch 2
– Bottom storage controller: port 4 to switch 2



Fibre Channel 2 Port Configuration
iSCSI 2 Port Configuration

1. For Fibre Channel 2 Port configurations, install Fibre Channel HBAs into the host servers.
For iSCSI 2 Port configurations, install iSCSI HBAs or NICs dedicated for iSCSI traffic into the host servers.
2. Connect each host server to the two switches.
– Connections shown in orange belong to fault domain 1.
– Connections shown in blue belong to fault domain 2.
3. Connect fault domain 1 (in orange) to switch 1.
– Top storage controller: port 1 to switch 1
– Bottom storage controller: port 1 to switch 1
4. Connect fault domain 2 (in blue) to switch 2.
– Top storage controller: port 2 to switch 2
– Bottom storage controller: port 2 to switch 2

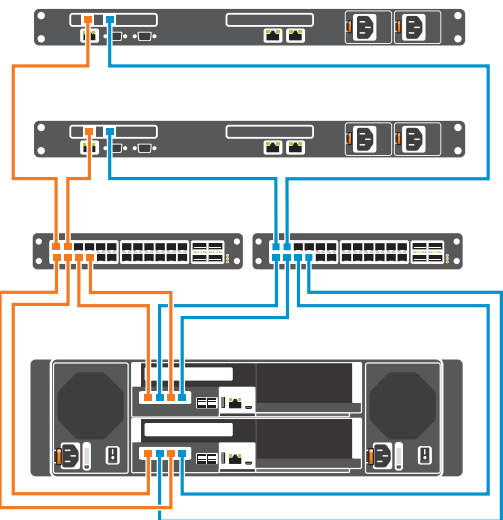


iSCSI Mezzanine Card Cabling

If the storage system includes an iSCSI mezzanine card, connect the host servers and storage system to Ethernet switches.

iSCSI 4 Port Mezzanine Card Configuration

1. Connect each host server to the two Ethernet switches.
– Connections shown in orange belong to fault domain 1.
– Connections shown in blue belong to fault domain 2.
2. Connect fault domain 1 (in orange) to switch 1.
– Top storage controller: port 1 to switch 1
– Top storage controller: port 3 to switch 1
– Bottom storage controller: port 1 to switch 1
– Bottom storage controller: port 3 to switch 1
3. Connect fault domain 2 (in blue) to switch 2.
– Top storage controller: port 2 to switch 2
– Top storage controller: port 4 to switch 2
– Bottom storage controller: port 2 to switch 2
– Bottom storage controller: port 4 to switch 2



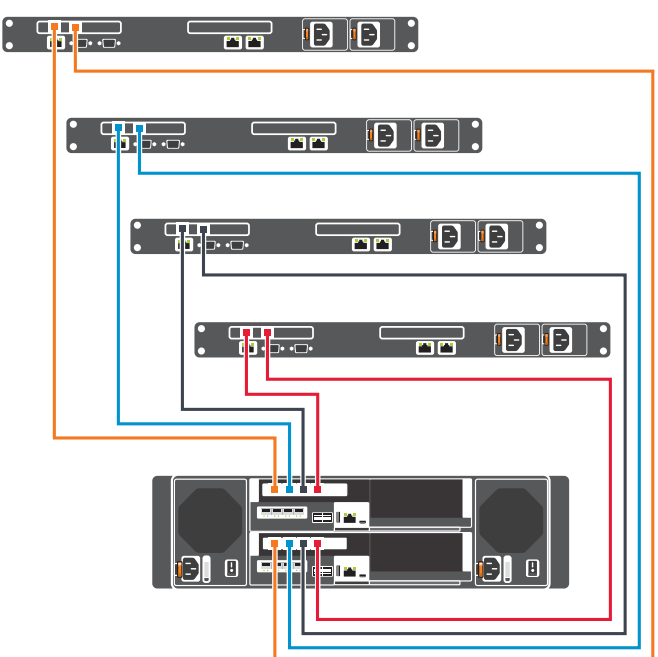
SAS HBA Cabling

Install the SAS HBAs in the host servers and directly connect the host servers to the storage system.

NOTE: The SC5020F storage system does not support front-end SAS connectivity.

SAS 4 Port Configuration

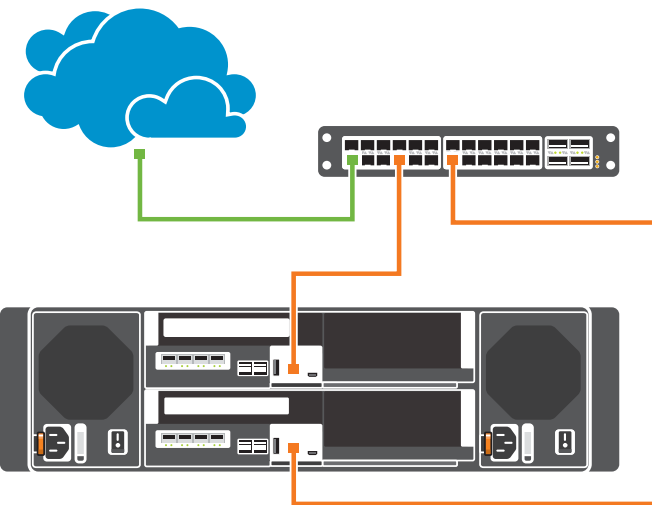
1. Install SAS HBAs in the host servers.
2. Connect fault domain 1 (in orange) to server 1.
– Top storage controller: port 1 to port on server 1
– Bottom storage controller: port 1 to port on server 1
3. Connect fault domain 2 (in blue) to server 2.
– Top storage controller: port 2 to port on server 2
– Bottom storage controller: port 2 to port on server 2
4. Connect fault domain 3 (in gray) to server 3.
– Top storage controller: port 3 to port on server 3
– Bottom storage controller: port 3 to port on server 3
5. Connect fault domain 4 (in red) to server 4.
– Top storage controller: port 4 to port on server 4
– Bottom storage controller: port 4 to port on server 4



5 Connect to Management Network

The Ethernet management interface of each storage controller must be connected to a management network. The Ethernet management port provides access to the Storage Center and is used to send emails, alerts, SNMP traps, and support data.

1. Connect the Ethernet management port on the top storage controller to the Ethernet switch.
2. Connect the Ethernet management port on bottom storage controller to the Ethernet switch.



6 Cable the Expansion Enclosures

To add capacity to an SC5020 storage system, you can connect SC400, SC420, or SC460 expansion enclosures. To add capacity to an SC5020F storage system, you can connect SC420F expansion enclosures.

NOTE: If the storage system is installed without expansion enclosures, do not interconnect the back-end SAS ports on the storage controllers.

Cable SC400, SC420, or SC420F Expansion Enclosures

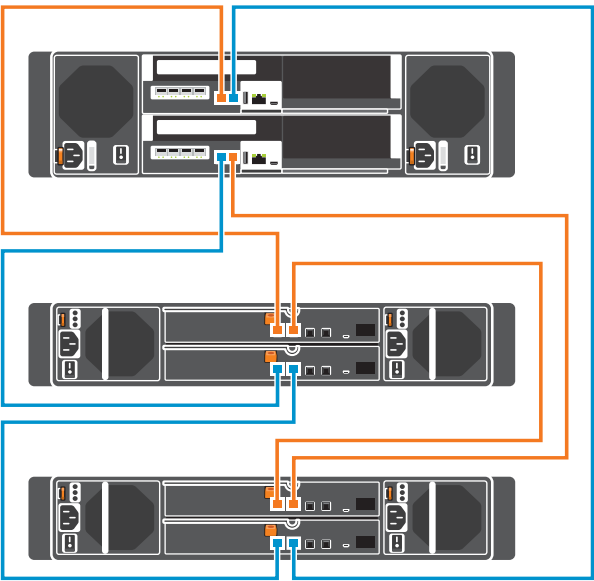
To connect SC400, SC420, or SC420F expansion enclosures to the storage system:

Chain 1: A Side (Orange)

- 1. Connect port 1 on the top storage controller to port 1 on the top EMM of the first expansion enclosure.
- 2. Connect the remaining expansion enclosures in series from port 2 to port 1 using the top EMMs.
- 3. Connect port 2 on the top EMM of the last expansion enclosure to port 2 on the bottom storage controller.

Chain 1: B Side (Blue)

- 1. Connect port 1 on bottom storage controller to port 1 on the bottom EMM of the first expansion enclosure.
- 2. Connect the remaining expansion enclosures in series from port 2 to port 1 using the bottom EMM.
- 3. Connect port 2 on the bottom EMM of the last expansion enclosure to port 2 on the top storage controller.



Cable SC460 Expansion Enclosures

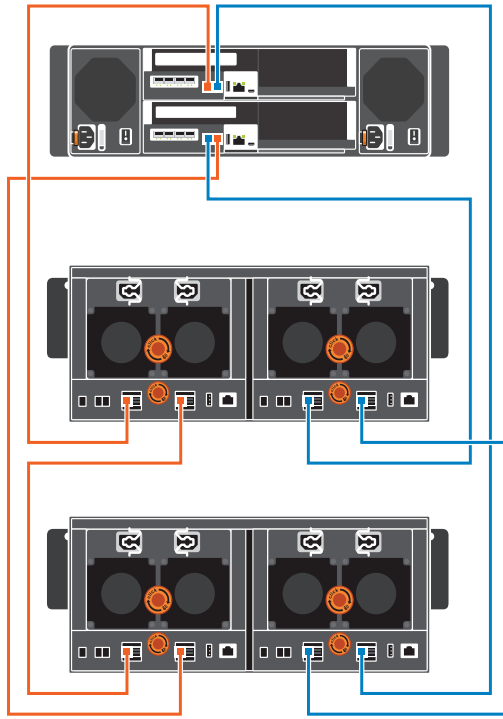
To connect SC460 expansion enclosures to the storage system:

Chain 1: A Side (Orange)

- 1. Connect port 1 on the top storage controller to port 1 on the left EMM of the first expansion enclosure.
- 2. Connect the remaining expansion enclosures in series from port 3 to port 1 using the left EMMs.
- 3. Connect port 3 on the left EMM of the last expansion enclosure to port 2 on the bottom storage controller.

Chain 1: B Side (Blue)

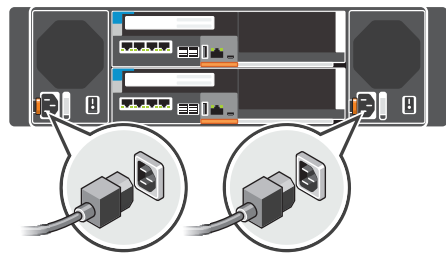
- 1. Connect port 1 on bottom storage controller to port 1 on the right EMM of the first expansion enclosure.
- 2. Connect the remaining expansion enclosures in series from port 3 to port 1 using the right EMM.
- 3. Connect port 3 on the right EMM of the last expansion enclosure to port 2 on the top storage controller.



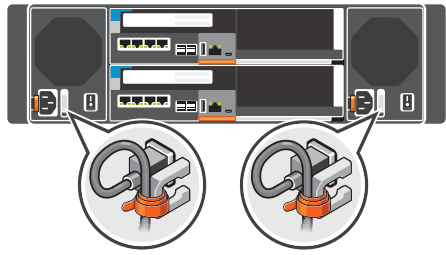
7 Connect Power Cables to the Storage System

CAUTION: Make sure that the power switches are in the OFF position before connecting the power cables.

- 1. Connect the power cables to both power supply/cooling fan modules in the storage system chassis.



- 2. Use the straps to secure the power cables to the storage system chassis.



- 3. Plug the other end of the power cables into a grounded electrical outlet or a separate power source such as an uninterruptible power supply (UPS) or a power distribution unit (PDU).

8 Power on Storage Center

Power on the components of the Storage Center in the following order:

- 1. Plug in and power on the network switches, routers, or other standalone components.
- 2. Plug in and power on the expansion enclosures that are connected to the storage system.
NOTE: When powering on expansion enclosures with spinning hard drives (SC400, SC420, and SC460), wait approximately three minutes for the drives to spin up before powering on the storage system.
- 3. Power on the storage system by pressing the power switches on both power supply/cooling fan modules to the ON position.



CAUTION: Do not power off the storage system until it can be discovered with the Dell Storage Manager Client. During the initial power up, the storage system might take up to twenty minutes to boot completely.

9 Discover and Configure the Storage Center

The Unisphere web interface provides access to the initial setup wizards. The wizards help you remotely discover and configure storage systems.

To access the Initialize Storage Center wizard from the Data Collector

- 1. Open a web browser.
- 2. Type the address of the Data Collector in the browser using the following format: `https://Data Collector host name or IP address:3033/`
- 3. Type the user name and password of a Data Collector user in the User Name and Password fields.
- 4. Click **Log In**.
The web browser connects to the Data Collector and displays the Unisphere Central Home page.
- 5. From the Unisphere Central Home page, click **+▼ (New)**, and select **Initialize Storage Center**. The Initialize Storage Center wizard opens and the Introduction page is displayed.
- 6. Follow the prompts in the Initialize Storage Center wizard to proceed.

To access the Initialize Storage Center wizard by connecting directly to a Storage Center

NOTE: The Storage Center must be installed on a DHCP-enabled network.

- 1. Open a web browser.
 - 2. Type the service tag or IP address of the Storage Center in the browser using the following format: `https://Storage Center service tag or IP address/`
 - 3. Type **Admin** in the User Name field.
 - 4. Type **mmm** in the Password field.
 - 5. Click **Log In**.
The web browser connects to the Storage Center and the Change Password dialog box is displayed in the Unisphere interface.
 - 6. Type **mmm** in the Current Password field.
 - 7. Type a new password for the Admin user in the New Password and Confirm New Password fields.
 - 8. Click **OK**.
The Initialize Storage Center wizard opens and the Welcome page is displayed.
 - 9. Follow the prompts in the Initialize Storage Center wizard to proceed.
- If you do not have access to a Data Collector and you are unable to connect directly to a Storage Center, use the Array Discovery Utility to discover and initialize a Storage Center.

Configure Fibre Channel Zoning

For Fibre Channel switches, configure zoning to make the Storage Center visible to the host servers. Using the switch software, create a zone for each HBA connected to the switch. In the zone, include only one HBA WWN and all of the virtual WWNs of the storage controller I/O ports connected to that switch. This is referred to as single initiator/multiple target zoning. For hosts, you can obtain the WWNs from the operating system or using the switch software.

10 Configure the Host to Access the Storage Center

For a list of supported HBA or NIC drivers and firmware, refer to the *Dell Storage Compatibility Matrix* located in the Knowledge Base at www.dell.com/support.

Windows and Linux Host Server

Fibre Channel

Install the supported Fibre Channel HBA drivers on the host server and make sure that HBAs have the latest supported firmware installed.

iSCSI

- 1. Install the supported iSCSI HBA or NIC drivers on the host servers and make sure that the HBAs or NICs have the latest supported firmware installed.
- 2. Assign IP addresses for each iSCSI port to match the subnets for each fault domain.
CAUTION: Make sure to assign the correct IP addresses to the HBAs or NICs. Assigning IPs to the wrong iSCSI ports can cause connectivity issues.
NOTE: If you are using jumbo frames, enable and configure jumbo frames on all devices in the data path.

SAS

Install the supported SAS HBA drivers on the host servers and make sure that the HBAs have the latest supported firmware installed.

VMware ESXi Hosts

Fibre Channel

Make sure that the supported Fibre Channel HBA drivers are installed on the ESXi host and the HBAs have the latest supported firmware installed.

iSCSI

- 1. Make sure that the supported iSCSI HBA or NIC drivers are installed on the ESXi host and the HBAs or NICs have the latest supported firmware installed.
- 2. Create a VMkernel port for each iSCSI HBA or NIC to be used for iSCSI.
- 3. Assign IP addresses for each iSCSI port to match the subnets for each fault domain.
CAUTION: Make sure to assign the correct IP addresses to the HBAs or NICs. Assigning IPs to the wrong iSCSI ports can cause connectivity issues.
NOTE: If using jumbo frames, enable and configure jumbo frames on all devices in the data path.
- 4. If you are using the software iSCSI initiator, add the iSCSI target IPs of the Storage Center to Dynamic Discovery.
If you are using the software iSCSI initiator and iSCSI offload is enabled on the ESXi host, the hardware iSCSI initiator must be disabled.
- 5. If you are using iSCSI HBAs, configure Network Port Binding to add the VMkernel ports to the iSCSI Storage Adapter.
NOTE: Do not bind NICs to the software iSCSI initiator.

SAS

- 1. For ESXi hosts, make sure that the correct or updated 12 Gb SAS HBA driver is installed. Refer to the following Dell Support page for instructions on installing the 12 Gb SAS HBA driver on an ESXi host: <http://www.dell.com/support/article/how11081>
- 2. Use the **Create Server** option in Dell Storage Manager to manually create the server object.
NOTE: Configure access to Storage Center one ESXi host at a time.

Configure Host Access to a Storage Center

Configure a Windows or Linux host server or ESXi host to access the Storage Center.

- 1. For a Windows or Linux server, click the **Configure this host to access a Storage Center** link and log in to the Storage Center. For a VMware ESXi server, click **Configure VMware vSphere to access a Storage Center**.
- 2. Follow the steps in the wizard to configure the host to access the Storage Center and configure best practices for performing I/O.



Notes, Cautions, and Warnings

- NOTE** indicates important information that helps you make better use of your product.
- CAUTION** indicates potential damage to hardware or loss of data and tells you how to avoid the problem.
- WARNING** indicates a potential for property damage, personal injury, or death.

