Setting Up Your Dell SCv2000 and SCv2020 Storage System
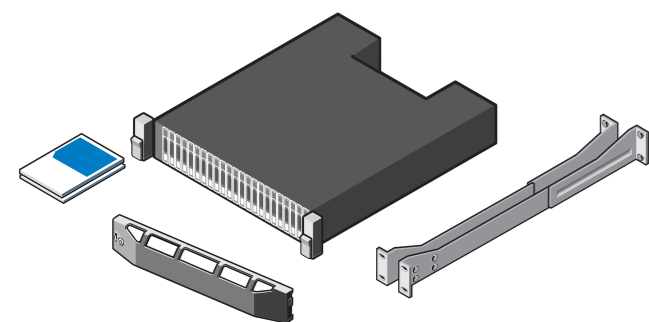
1 | Before You Begin

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

Unpack Storage Center Equipment
A Dell SCv2000 and SCv2020 includes:
- Storage system chassis
- Drives (shipped inside chassis)
- Mounting rails (2)
- Bezel
- Getting Started Guide

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

Record system information on the worksheet in the Getting Started Guide
- System management IPv4 address for Storage Center
- MGMT port IPv4 address for each storage controller
- Domain name
- DNS server address

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 (FC) 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, see the Dell Storage Compatibility Matrix on the Dell Tech Center at http://en.community.dell.com/techcenter/storage. For additional deployment instructions, see the Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide on dell.com/support.

2 | Rack Chassis and Optional Enclosures

⚠ **Warning!** **The storage system chassis is heavy. Do not attempt to lift the chassis without assistance.**
Use the racking instructions included with your package to rack 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.
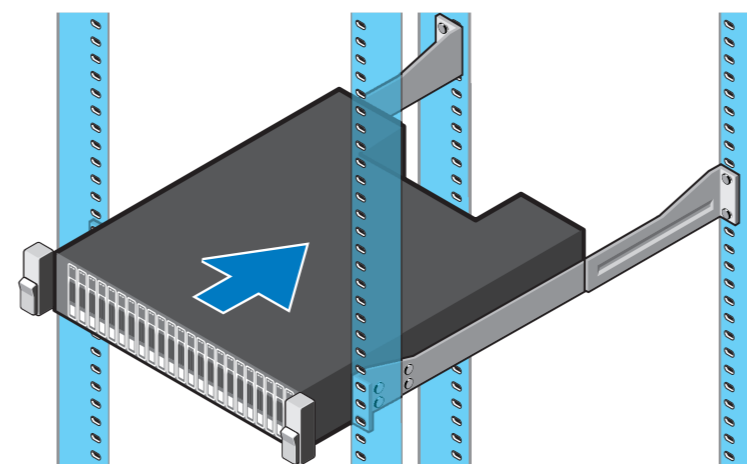
3 | Install the Bezel

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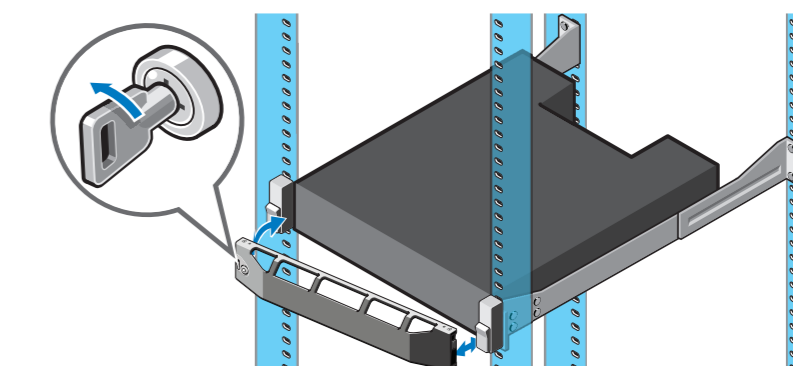
4 | Prepare the Host Servers

Refer to the Dell Storage Compatibility Matrix for a list of supported HBAs or iSCSI network adapters.

Windows and Linux Hosts
Install the HBAs or network adapters, install the drivers, and make sure that the latest supported BIOS is installed.

Fibre Channel
1. Install Fibre Channel HBAs in the host servers.
2. Install supported HBA drivers and make sure that HBAs have the latest supported firmware.
3. Use the Fibre Channel cabling diagrams to cable host servers to switches. Connecting host servers directly to the storage system without using Fibre Channel switches is not supported.

iSCSI
1. Install iSCSI HBAs or network adapters dedicated for iSCSI traffic in the host servers.
2. Install supported HBA drivers and make sure that HBAs have the latest supported firmware.
3. Use the iSCSI cabling diagrams to cable the host servers to switches. Connecting host servers directly to the storage system without using Ethernet switches is not supported.
4. Assign IP addresses to each iSCSI port to match the subnets for each fault domain.
⚠ **CAUTION:** Make sure to assign the correct IP addresses to the HBAs or network adapters. Assigning IPs to the wrong ports can cause connectivity issues.
☑ **NOTE:** If using jumbo frames, enable and configure jumbo frames on all devices in the data path: adapter ports, switches, and storage system.

SAS
1. Install SAS HBAs in the host servers.
2. Install supported HBA drivers and make sure that HBAs have the latest supported firmware.
3. Use the SAS cabling diagram to cable the host servers directly to the storage controllers.

VMware ESXi Hosts
Install the HBAs or network adapters and make sure that the latest supported BIOS is installed.

Fibre Channel
1. Install Fibre Channel HBAs in the ESXi hosts.
2. Use the Fibre Channel cabling diagrams to cable ESXi hosts to switches. Connecting ESXi hosts directly to the storage system without using Fibre Channel switches is not supported.

iSCSI
1. Install iSCSI HBAs or network adapters dedicated for iSCSI traffic in the ESXi hosts.
2. If using network adapters, create a VMkernel port for each adapter. (One VMkernel per vSwitch)
3. Assign IP addresses for each adapter port to match the subnets for each fault domain.
⚠ **CAUTION:** Make sure to assign the correct IP addresses to the HBAs or network adapters. Assigning IPs to the wrong ports can cause connectivity issues.
☑ **NOTE:** If using jumbo frames, enable and configure jumbo frames on all devices in the data path: adapter ports, switches, and storage system.
4. If using network adapters, add the VMkernel ports to the iSCSI software initiator.
5. Use the iSCSI cabling diagrams to cable the ESXi hosts to switches. Connecting ESXi hosts directly to the storage system without using Ethernet switches is not supported.

SAS
1. Install SAS HBAs in the ESXi hosts. For more information about configuring VMware ESXi hosts with SAS HBAs, see the Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide.
2. Use the SAS cabling diagram to cable the ESXi hosts directly to the storage controllers.
☑ **NOTE:** Configure only one ESXi host at a time.

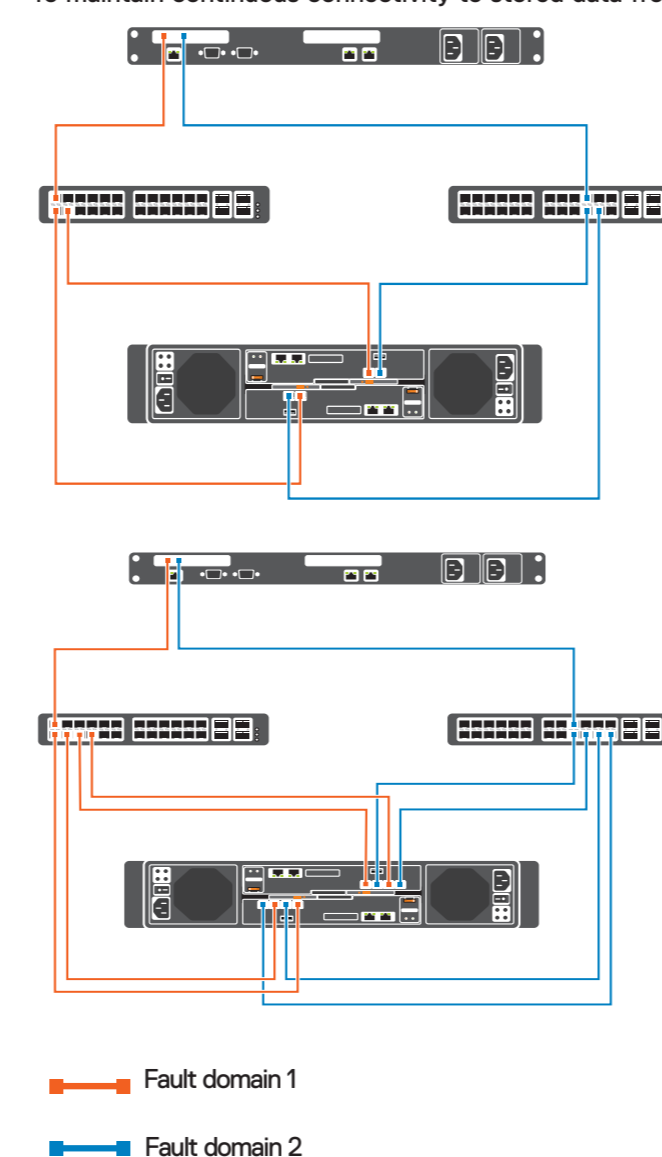## 5 | Cable the Host Servers

SCv2000 and SCv2020 storage systems support Fibre Channel, iSCSI, and SAS protocols to connect the Storage Center to host servers. Fault domains provide fault tolerance at the controller level. If you are using Fibre Channel, incorporate your switch zoning strategy with the fault domains. Dell recommends using redundant cabling to avoid a single point of failure.

To connect the storage system:
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 about cabling, see the Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide.

Fibre Channel and iSCSI Cabling
To maintain continuous connectivity to stored data from the host server, implement a strategy for redundant I/O paths.

Fibre Channel 2 Port 16 Gb Configuration
iSCSI 2 Port 10 GbE Configuration

1. Connect each host server to both 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
   – Bottom storage controller: port 1 to switch 1
3. 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

Fibre Channel 4 Port 8 Gb Configuration
iSCSI 4 Port 1 GbE Configuration

1. Connect each host server to both 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

Fault domain 1
Fault domain 2

SAS Cabling

Directly connect host servers to a storage system.

SAS 4 Port 12 Gb Configuration

1. 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
2. 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
3. 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
4. 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
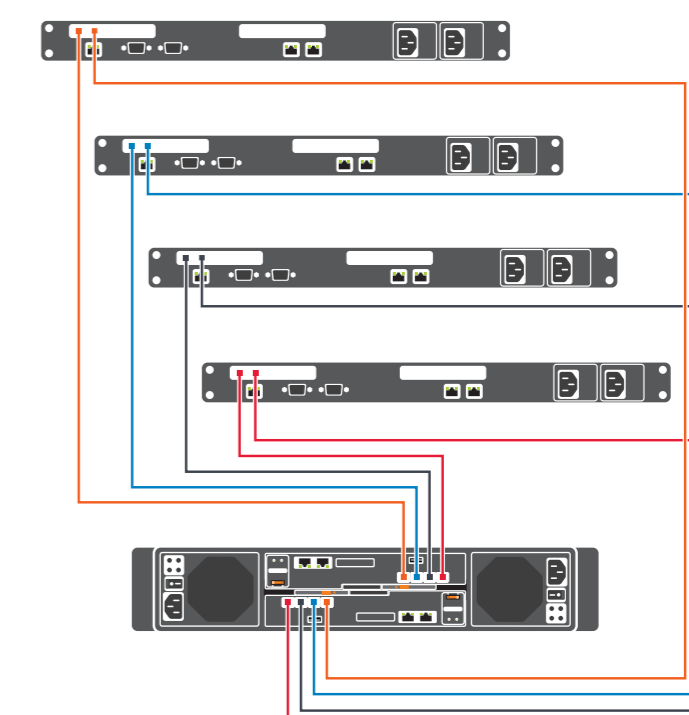
6 | Connect to Management Network

The Ethernet management interface of each storage controller must be connected to a management network. The Ethernet management port (eth0) 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.
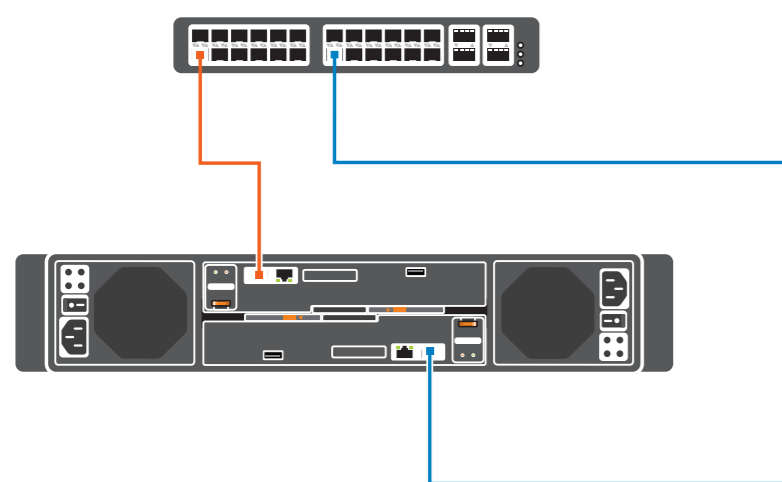
7 | Cable the Backend

Interconnect the Storage Controllers
If you are installing an SCv2000 or SCv2020 storage system without expansion enclosures, connect SAS cables between the initiator and target ports of each storage controller.

To interconnect the storage controllers:
1. Connect a SAS cable between port A on the top storage controller and port B on the bottom storage controller.

2. Connect a SAS cable between port B on the top storage controller and port A on the bottom storage controller.

A   B

B   A
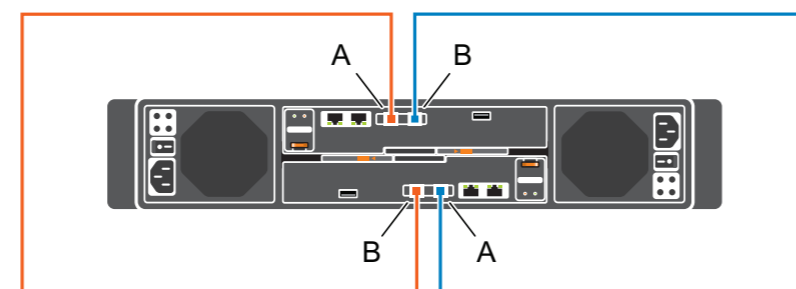
or

Cable an SC100 or SC120 Expansion Enclosure
To add capacity to your storage system, you can connect up to twelve SC100 or six SC120 expansion enclosures to an SCv2000/SCv2020 storage system. A maximum of 168 physical drives are supported in an SCv2000/SCv2020 storage system. Each expansion enclosure includes two Enclosure Management Modules (EMM) in two interface slots.

To connect more than one additional expansion enclosure, cable the expansion enclosures in series from port B to port A using the top EMMs and from port A to port B using the bottom EMMs.

Chain 1: A Side (Orange)
1. Top storage controller: port A to expansion enclosure 1: top EMM, port A

2. Expansion enclosure 1: top EMM, port B to expansion enclosure 2: top EMM, port A

3. Expansion enclosure 2: top EMM, port B to bottom storage controller: port B

Chain 1: B Side (Blue)
1. Top storage controller: port A to expansion enclosure 1: bottom EMM, port A

2. Expansion enclosure 1: bottom EMM, port B to expansion enclosure 2: bottom EMM, port A

3. Expansion enclosure 2: top EMM, port B to bottom storage controller: port B
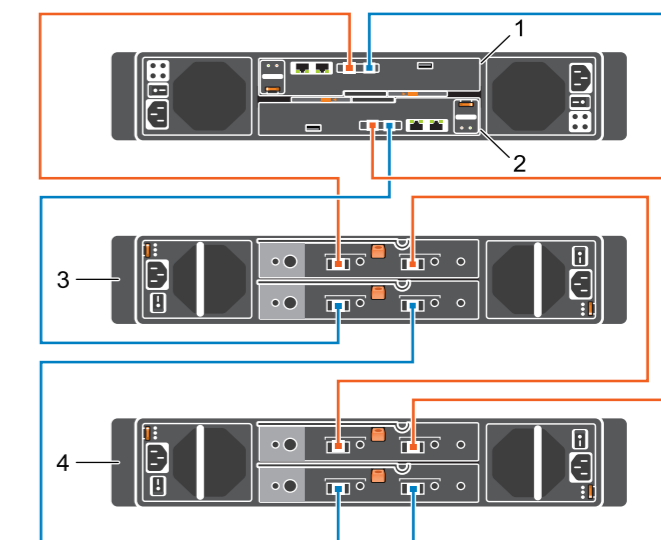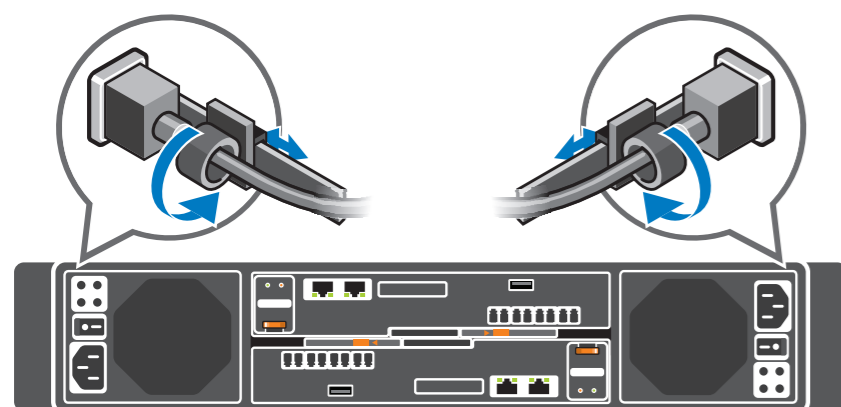
1. Top storage controller

2. Bottom storage controller

3. Expansion enclosure 1

4. Expansion enclosure 2

8 | Connect the Power Cables

△ **CAUTION: Make sure the power switch is set to off (O) before connecting the power.**

To connect the power cables:
1. Connect power cables from each power supply module to a power source.

2. Use the strain relief fasteners to secure the power cables to the power supply modules so they cannot be pulled out accidentally.

9 | Power on Storage System Components

1. Power on any network switches, routers, or other standalone components.

2. Power on any expansion enclosures that might be a part of the system.

3. Power on the storage controllers by turning on the two power supply units on the rear of the system.

☑ **NOTE:** Before attempting to discover or manage the storage system, wait for the green indicator lights on the back of the storage controllers to match the pattern shown in the following illustration. It may take up to five minutes to completely power on the storage controllers.
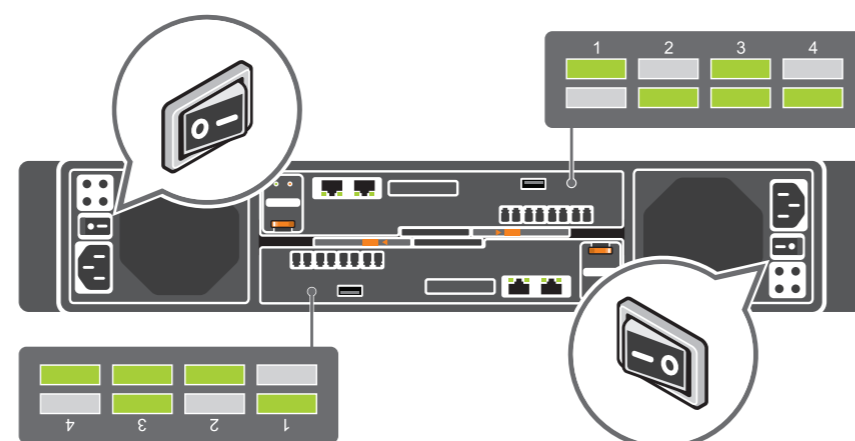
10 | Download, Install, and Run the Dell Storage Manager Client

The Dell Storage Manager Client provides access to the initial setup wizards. The wizards help you remotely discover and configure storage systems and configure connected host servers.

☑ **NOTE:** The initial setup wizards are only supported on 64-bit operating systems.

To use the Dell Storage Manager Client:
1. Go to dell.com/support, navigate to **Servers, Storage, & Networking → Dell Storage → Dell Storage SCv2000** or **Dell Storage SCv2020**, click the **Drivers & downloads** link, and download the Windows or Linux version of the Dell Storage Manager Client.

2. Install the Dell Storage Manager Client on the host server. To discover and configure a Storage Center, install the software on a host sever that is located on the same subnet as the storage system. For host setup, the host server does not have to be located on the same subnet as the storage system.

3. To start the software on a Windows computer, right-click on the Dell Storage Manager Client shortcut and select **Run as administrator**. To start the software on a Linux computer, execute the command `./Client` from the `var/lib/dell/bin` directory. The Dell Storage Manager Client welcome screen is displayed.

Discover and Configure Storage Center Wizard
1. Click the **Discover and Configure Uninitialized Storage Centers** link. The **Discover and Configure Storage Center** wizard opens.

2. Follow the steps in the wizard to discover uninitialized SCv2000 and SCv2020 systems and configure them.

3. For a Storage Center with Fibre Channel HBAs, the deployment wizard provides the storage controller WWNs for zoning requirements. When prompted, create the required zones for each fault domain.

Configure a Host to Access Storage Center
1. For Windows and Linux servers, click the **Configure this host to access a Storage Center** link and log in to the Storage Center. The **Setup localhost for Storage Center** wizard opens. For VMware ESXi hosts, click **Configure VMware vSphere to access a Storage Center**. The **Set up VMware Host on Storage Center** wizard opens.

☑ **NOTE:** To configure access to a Storage Center with SAS HBAs, you must log in to a Dell Storage Manager Data Collector.
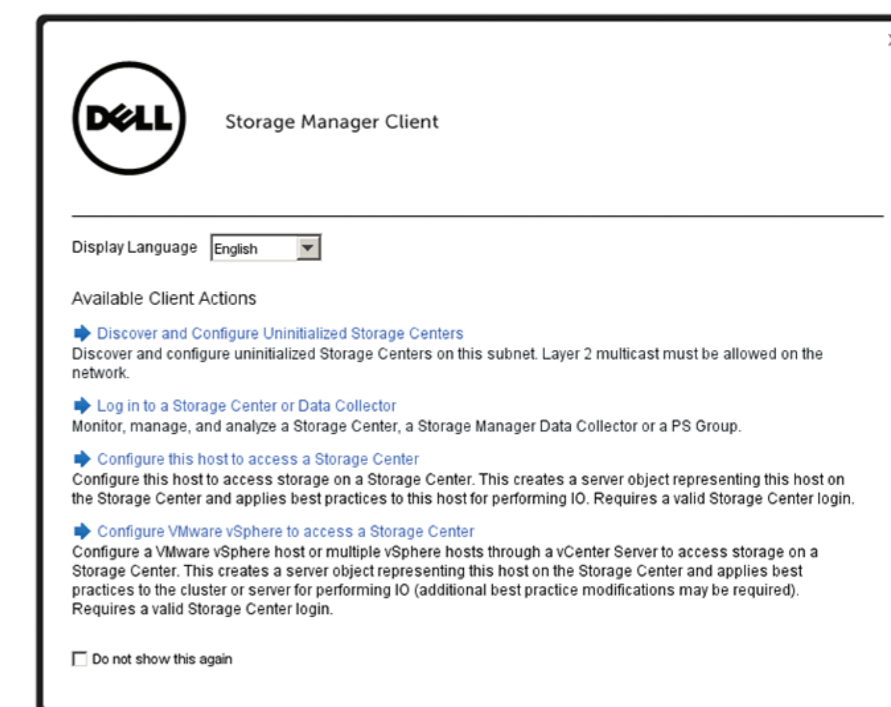
2. For a Storage Center with Fibre Channel HBAs, configure zoning to make sure that storage is visible to the host servers. Using switch software, create a zone for each HBA connected to the switch. In the zone, include only one HBA WWN and all of the virtual WWNs of the storage controller I/O ports 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 use the switch software.

3. Follow the steps in the wizard to configure host servers to access the Storage Center and configure best practices for performing I/O.

When the host configuration is complete, use the Dell Storage Manager Client to create and map volumes.

Related Publications
The following documentation is available for the Dell Storage Center SCv2000 and SCv2020 storage system:

- Dell Storage Center SCv2000 and SCv2020 Storage System Getting Started Guide
- Dell Storage Center SCv2000 and SCv2020 Storage System Owner's Manual
- Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide
- Dell Storage Manager Release Notes
- Storage Center OS Release Notes

Storage Manager Client

Display Language English

Available Client Actions

➤ Discover and Configure Uninitialized Storage Centers
Discover and configure uninitialized Storage Centers on this subnet. Layer 2 multicast must be allowed on the network.

➤ Log in to a Storage Center or Data Collector
Monitor, manage, and analyze a Storage Center, a Storage Manager Data Collector or a PS Group.

➤ Configure this host to access a Storage Center
Configure this host to access storage on a Storage Center. This creates a server object representing this host on the Storage Center and applies best practices to this host for performing IO. Requires a valid Storage Center login.

➤ Configure VMware vSphere to access a Storage Center
Configure a VMware vSphere host or multiple vSphere hosts through a vCenter Server to access storage on a Storage Center. This creates a server object representing this host on the Storage Center and applies best practices to the cluster or server for performing IO (additional best practice modifications may be required). Requires a valid Storage Center login.

☐ Do not show this again

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Quick Resource Locator
Dell.com/QRL/Storage/SCv2000series

Notes, Cautions, and Warnings
☑ A **NOTE** indicates important information that helps you make better use of your system.
△ A **CAUTION** indicates potential damage to hardware or loss of data if instructions are not followed.
⚠ A **WARNING** indicates a potential for property damage, personal injury, or death.