

## Applications Note

# Configuring the iSR6250 for EMC AX and CX Storage

---

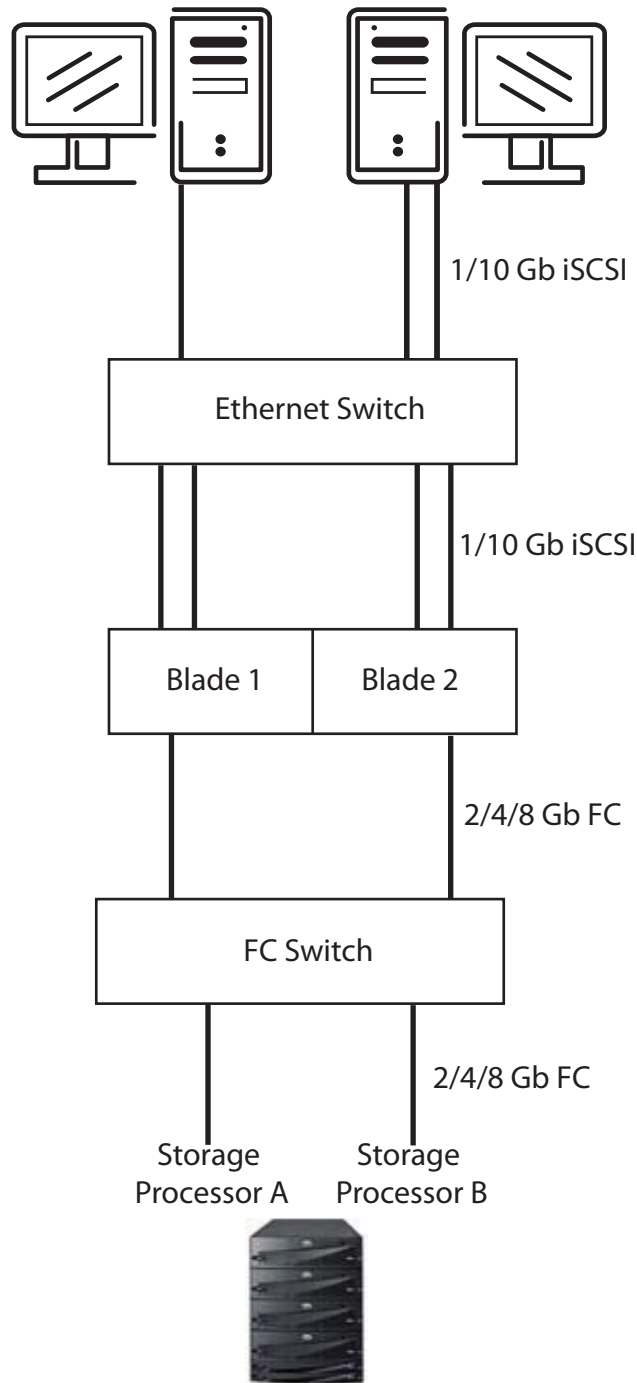
### *Products Affected*

| Product Name | Part Number |
|--------------|-------------|
| iSR6250      | iSR6250-CK  |

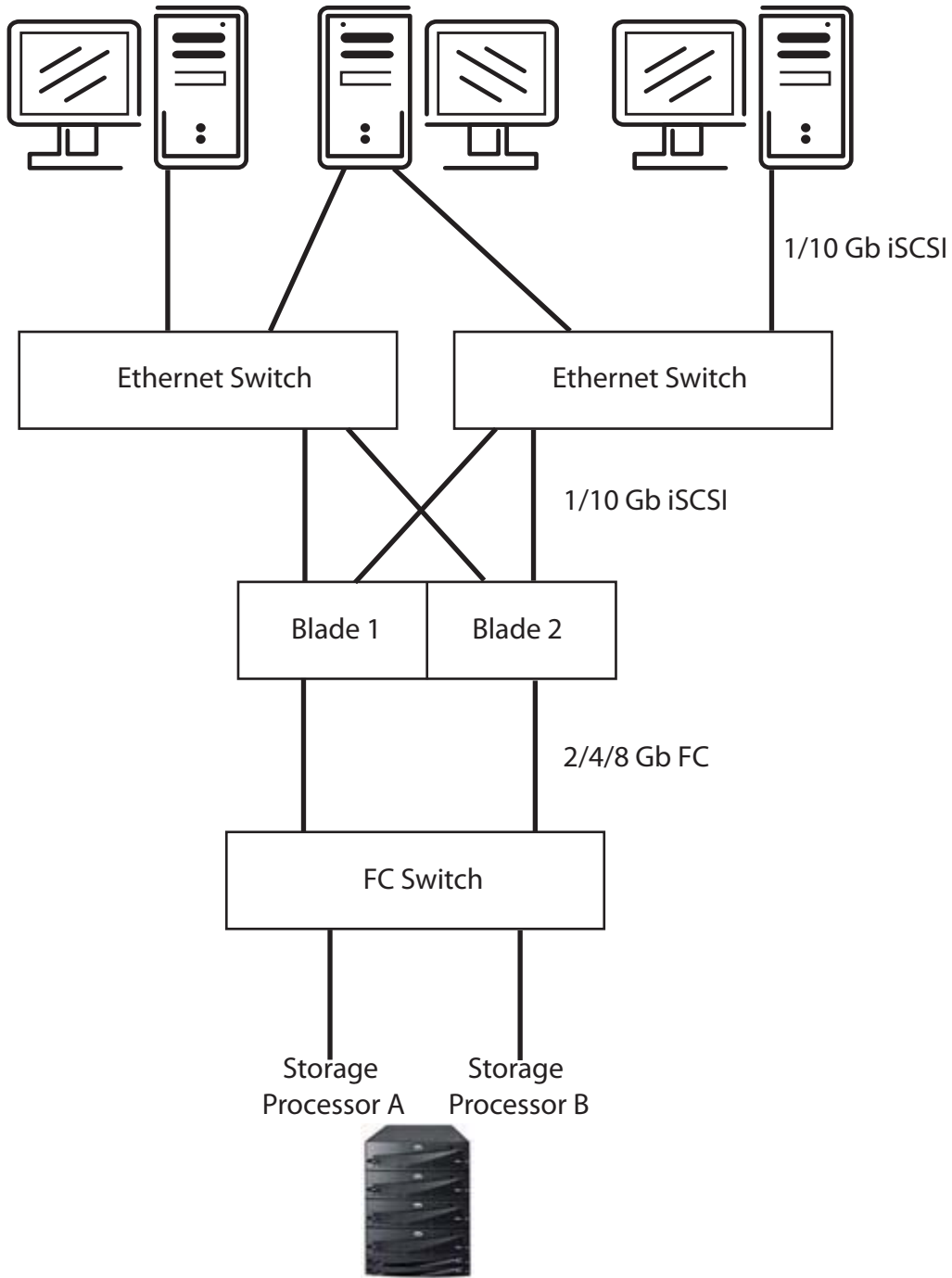
This applications note provides step-by-step instructions for connecting iSCSI initiators and targets to your Fibre Channel (FC) Storage Area Network (SAN). If you have problems, see [“Troubleshooting” on page 26](#) — for Frequently Asked Questions (FAQs).

## **1** Sample Topologies

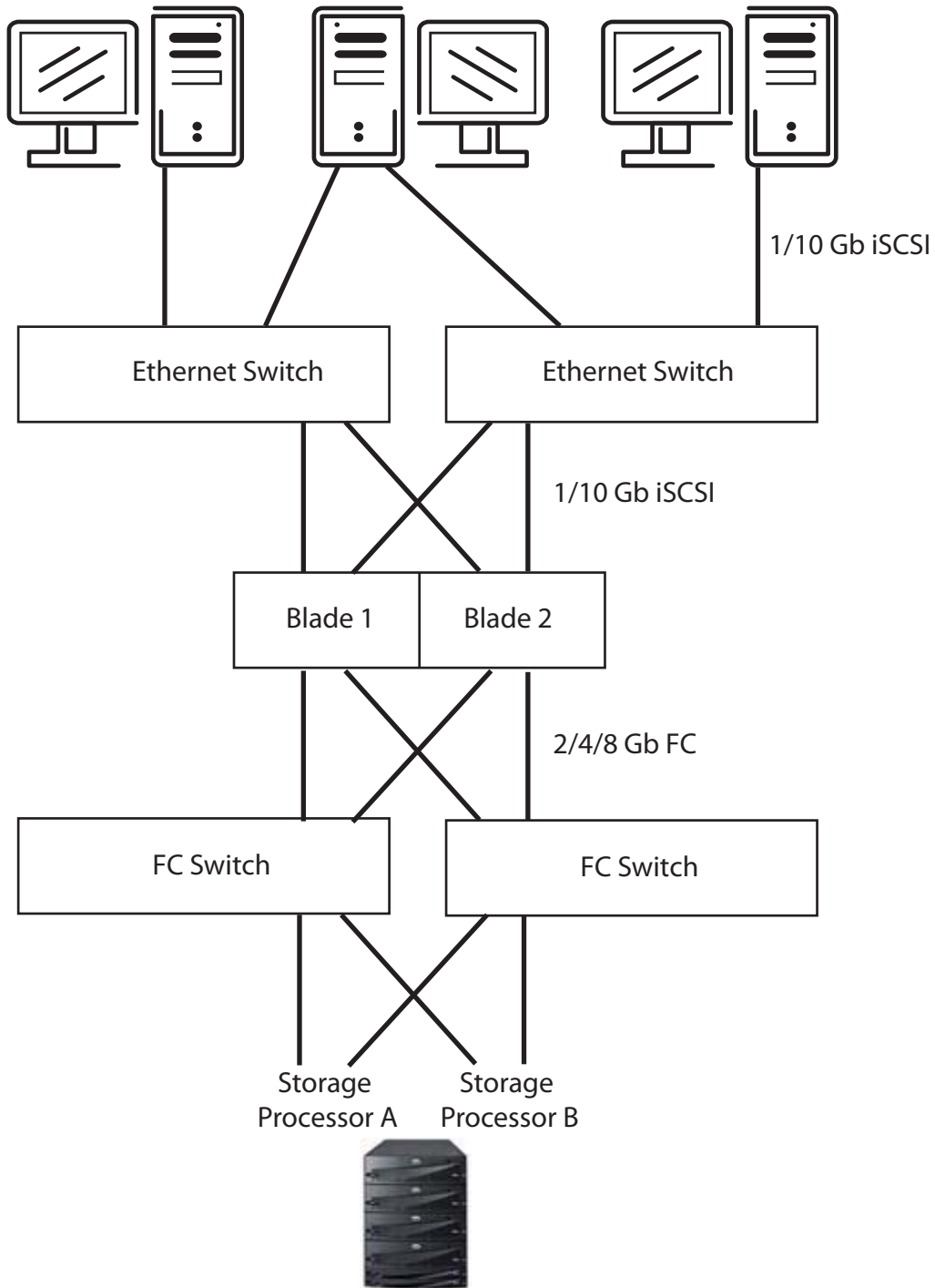
The following diagrams show some valid topologies for the iSR6250 with EMC AX/CX Storage Arrays.



**Figure 1-1. One iSR6250 Connecting One Ethernet Switch and One Fibre Channel Switch to EMC AX/CX Storage Array**



**Figure 1-2. One iSR6250 Connecting Two Ethernet Switches and One Fibre Channel Switch to EMC AX/CX Storage Array**



**Figure 1-3. One iSR6250 Connecting Two Ethernet Switches and Two Fibre Channel Switches to EMC AX/CX Storage Array**

## 2 Configuring the iSR6250 Router

The following sections walk you through the procedures for configuring the iSR6250 router for EMC AX and CX Storage Arrays:

1. [“Collect Information” on page 5](#)
2. [“Configure iSR6250 Management Port IP Address” on page 6](#)
3. [“Install SANsurfer Router Manager” on page 7](#)
4. [“Enable Virtual Port Groups” on page 7](#)
5. [“Zone the Fabrics” on page 9](#)
6. [“Register ISR6250 FC Host Ports on the EMC Storage Array” on page 12](#)
7. [“Create Storage Groups on the EMC Storage Array” on page 13](#)
8. [“Assign iSR6250 VPG WWPNs to Storage Groups” on page 15](#)
9. [“Assign LUN Presentation to Storage Groups” on page 17](#)
10. [“Verify Access to LUNs” on page 18](#)
11. [“Discover iSR6250 iSCSI Ports” on page 18](#)
12. [“Configure Per-LUN Host Access” on page 19](#)
13. [“Log into iSCSI Host” on page 24](#)

### 2.1 Collect Information

Gather the following information required to configure the iSR6250 routers. (Review the topology diagrams in this applications note.)

■ Router Blade Management ports:

- Blade 1 IP Address \_\_\_\_\_
- Blade 1 Subnet Mask \_\_\_\_\_
- Blade 1 Gateway \_\_\_\_\_
- Blade 2 IP Address \_\_\_\_\_
- Blade 2 Subnet Mask \_\_\_\_\_
- Blade 2 Gateway \_\_\_\_\_

■ Router iSCSI ports:

**Blade 1:**

- GE1 IP Address \_\_\_\_\_
- 10GE1 Subnet Mask \_\_\_\_\_
- 10GE1 Gateway \_\_\_\_\_
- 10GE2 IP Address \_\_\_\_\_
- 10GE2 Subnet Mask \_\_\_\_\_
- 10GE2 Gateway \_\_\_\_\_
- GE1 IP Address \_\_\_\_\_

- GE1 Subnet Mask \_\_\_\_\_
- GE1 Gateway \_\_\_\_\_
- GE2 IP Address \_\_\_\_\_
- GE2 Subnet Mask \_\_\_\_\_
- GE2 Gateway \_\_\_\_\_

**Blade 2:**

- GE1 IP Address \_\_\_\_\_
- 10GE1 Subnet Mask \_\_\_\_\_
- 10GE1 Gateway \_\_\_\_\_
- 10GE2 IP Address \_\_\_\_\_
- 10GE2 Subnet Mask \_\_\_\_\_
- 10GE2 Gateway \_\_\_\_\_
- GE1 IP Address \_\_\_\_\_
- GE1 Subnet Mask \_\_\_\_\_
- GE1 Gateway \_\_\_\_\_
- GE2 IP Address \_\_\_\_\_
- GE2 Subnet Mask \_\_\_\_\_
- GE2 Gateway \_\_\_\_\_

## 2.2 Configure iSR6250 Management Port IP Address

To set the IP address of the management port for each blade:

1. Connect the router's Management Port (10/100 Ethernet) to your workstation using a switch or hub. As an alternative, you may connect your workstation directly to the router using an Ethernet crossover cable. For a serial console, use the following settings:

- Bits per second: 115200
- Data bits: 8
- Parity: None
- Flow control: None

The iSR6250 management port's default IP address is 10.0.0.1 subnet 255.0.0.0. Make sure the workstation connected to the iSR6250 router has Ethernet address 10.0.0.x, where x is other than 1 and subnet mask is 255.0.0.0.

2. From the workstation, open a command window and using a telnet session connect to iSR6250 using IP address 10.0.0.1.
3. Login as `guest` and use the password `password`. This will take you to a Command Line Interface (CLI) prompt.
4. Select the blade you want to configure by entering one of the following CLI commands:  
`blade r1` (for blade 1)  
or  
`blade r2` (for blade 2)

5. Enter the following CLI commands (for blade 2) at the prompt iSR6250 (admin)#>:  

```
admin start (default password is config)
set mgmt
```
6. Select the mode. QLogic recommends using a static address. Select `Option 0` and enter the IP address, subnet information, and gateway, if applicable.  

You will lose the connectivity of the telnet session at this time. If you want to continue using the CLI, restart the telnet session with the IP address you just assigned to the management port.

You now have the management port configured with the appropriate IP address.
7. Connect the management port cable to your Ethernet network.
8. Connect GE1, GE2, 10GbE1, 10GbE2, FC1, and FC2 cables.  

If necessary, repeat these procedures to configure the second blade.

## 2.3 Install SANsurfer Router Manager

Install the SANsurfer router management software on your workstation. The default password is `config`.

1. Connect to the iSR6250 router.
2. Configure the iSCSI ports for your blade(s): IP address, subnet mask, and gateway.

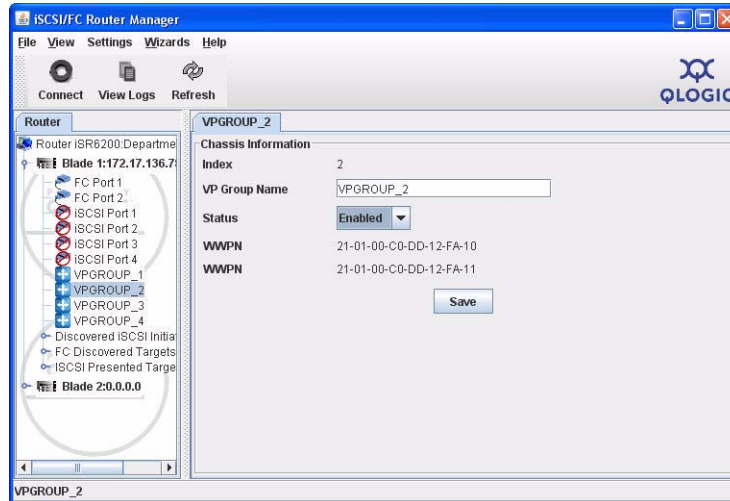
## 2.4 Enable Virtual Port Groups

Each iSR6250 router blade has one Virtual Port Group (VPG) enabled by default, which gives the iSCSI hosts access to 256 LUNs per EMC array. If you want the iSCSI hosts to access more than 256 distinct LUNs from a single EMC Array, you must enable and configure additional VPGs. Each configured VPG gives the iSCSI hosts access to an additional 256 LUNs from each EMC array.

VPG 1 is the primary virtual port group and cannot be disabled. Enabling extra virtual port groups creates additional logical FC HBA initiator ports on the fabric. You can register these additional ports and assign them to their own Storage Groups in your EMC Storage Array.

With all four VPGs enabled, a single iSR6250 blade can access up to 1024 LUNs from a single EMC array, using four Storage Groups. You can easily configure additional VPGs at a later date; therefore, you do not need to initially configure more VPGs than necessary. QLogic recommends that you enable the same virtual port groups on each blade. For more details about Virtual Port Groups, refer to the “Configuration” chapter of the *iSR6250 Installation Guide*.

Using the SANsurfer Router Manager, select one of the VPGroup icons in the router tree to display its VPGroup information in the right panel, as shown in [Figure 2-1](#).

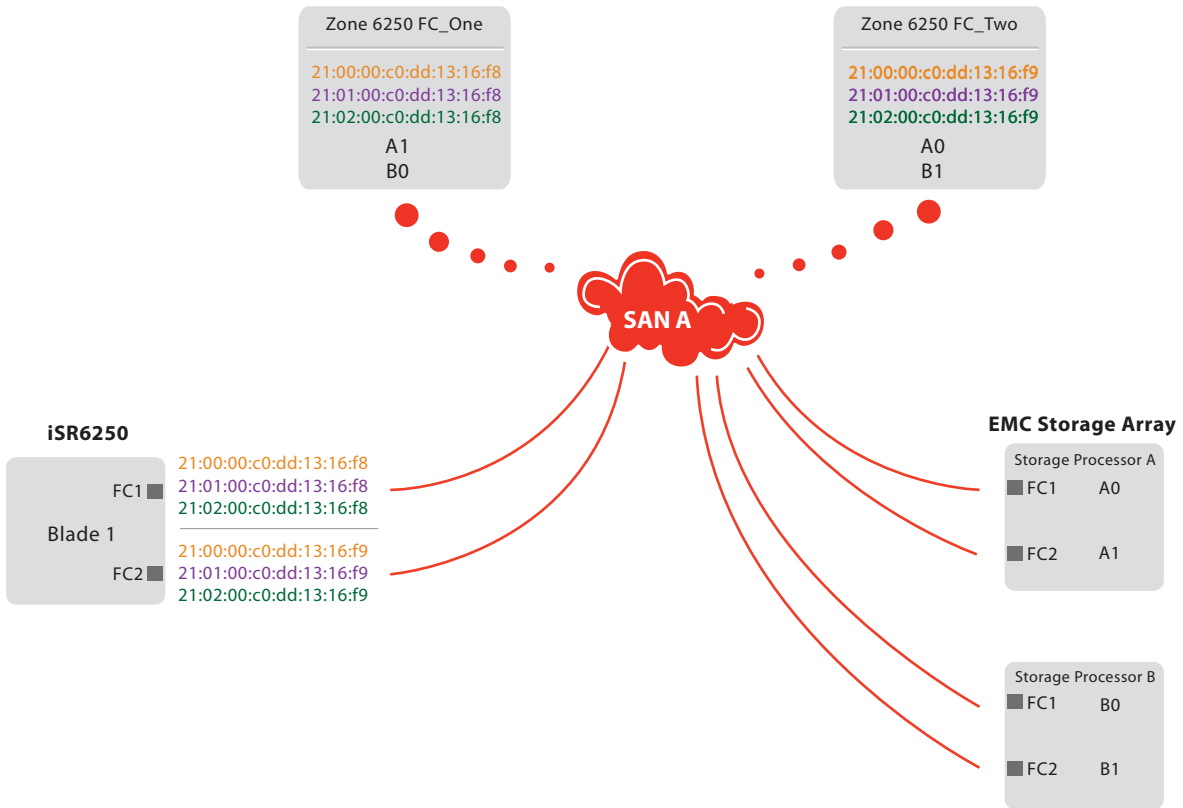


**Figure 2-1. Enabling VPGroups with SANsurfer Router Manager**

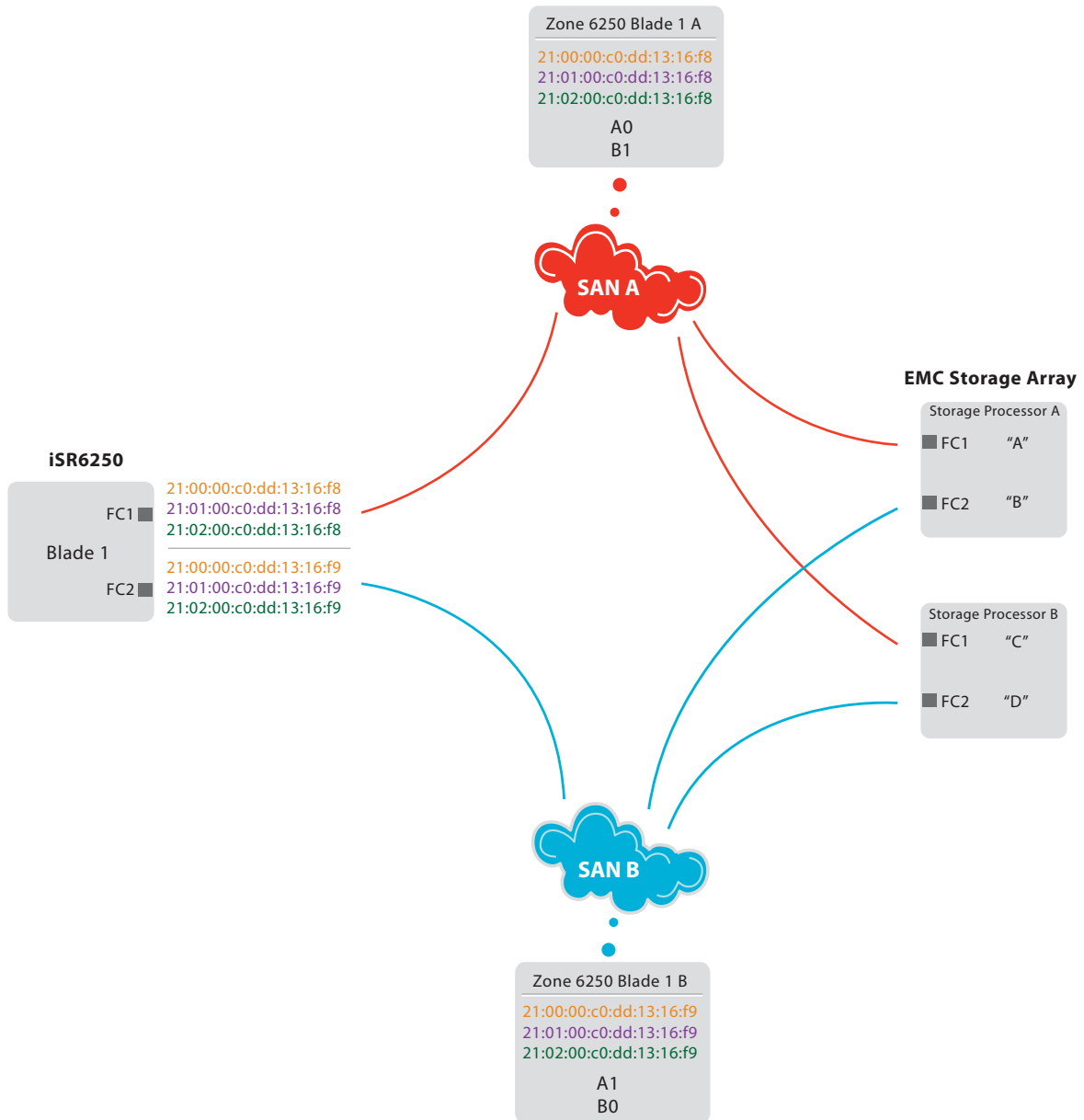
To enable additional virtual port groups on the iSR6250 blade, change the status to **Enabled** and click **Save**. The default password is `config`.

## 2.5 Zone the Fabrics

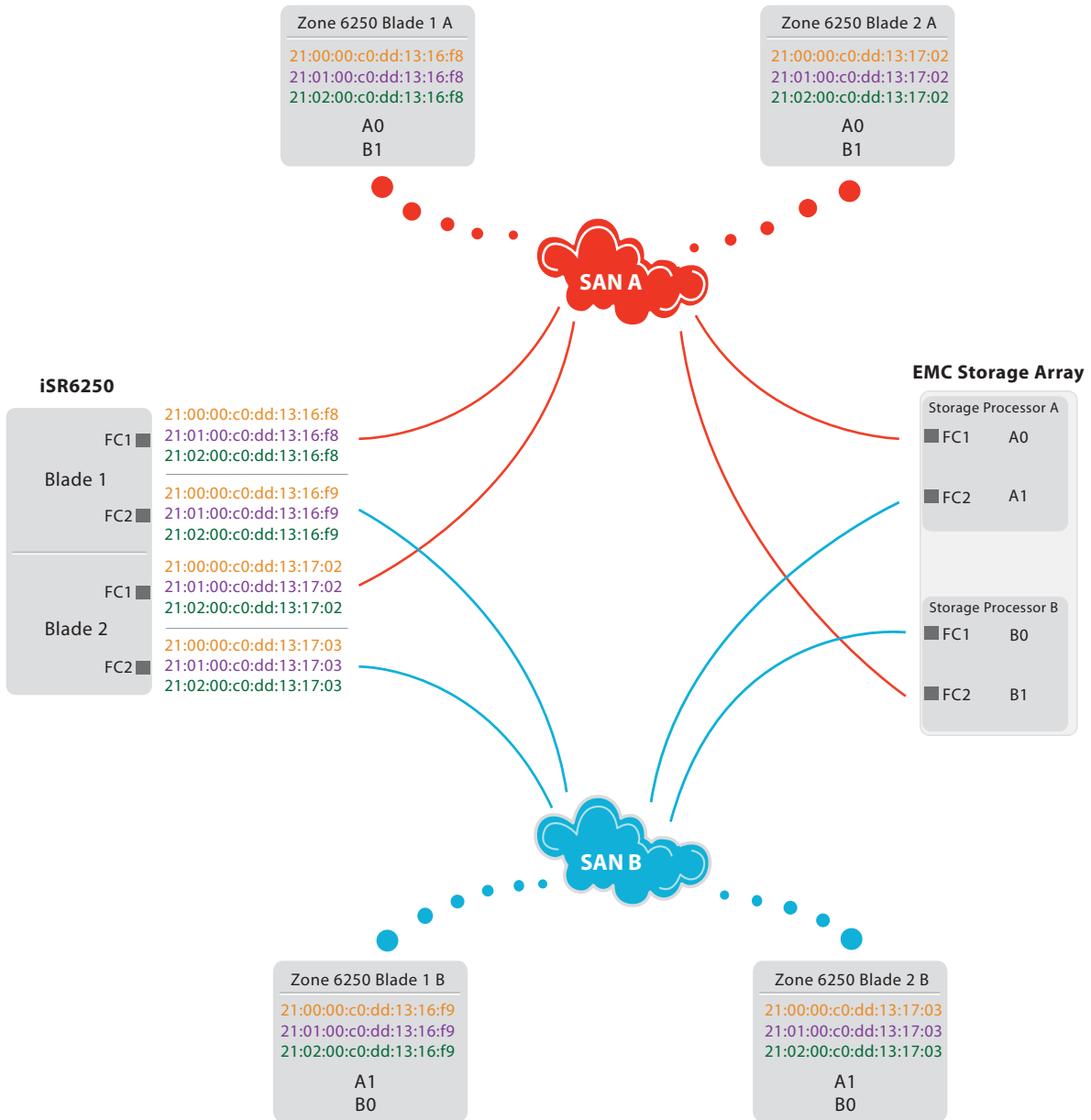
Zone the iSR6250 FC WWPNs to each of your EMC Storage Arrays according to the following diagrams.



**Figure 2-2. Single Blade, Single FC Switch**



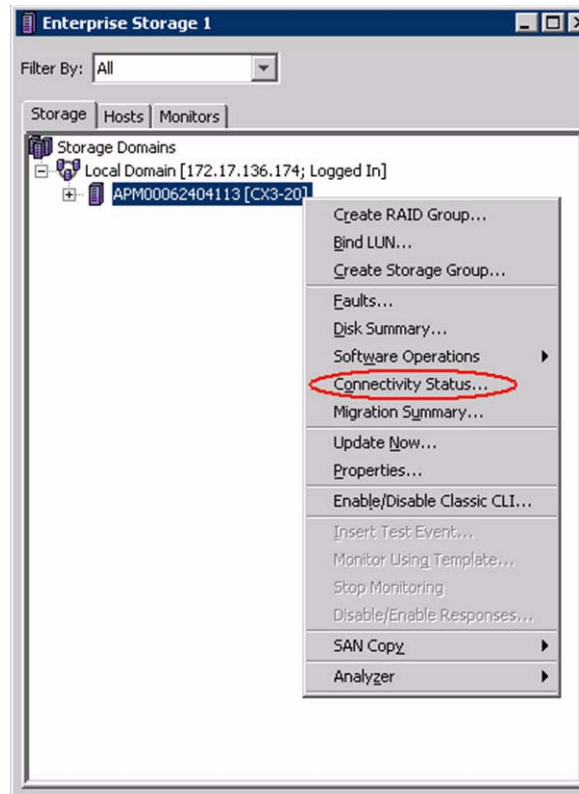
**Figure 2-3. Single Blade, Dual FC Switch**



**Figure 2-4. High-Availability, Dual Blades, Dual Switches**

## 2.6 Register ISR6250 FC Host Ports on the EMC Storage Array

1. Start Navisphere array and connect to your storage array(s).
2. Right-click on the Storage Array Icon and select **Connectivity Status**.



**Figure 2-5. Select Connectivity Status**

3. Register each VPG FC WWPN on the storage array.
4. Select a WWPN from the iSR6250 and click **Register**.
5. Repeat this process for each FC WWPN.

Figure 2-6 shows four WWPNs from a single blade with two enabled VPGs ready to be registered on the storage array.

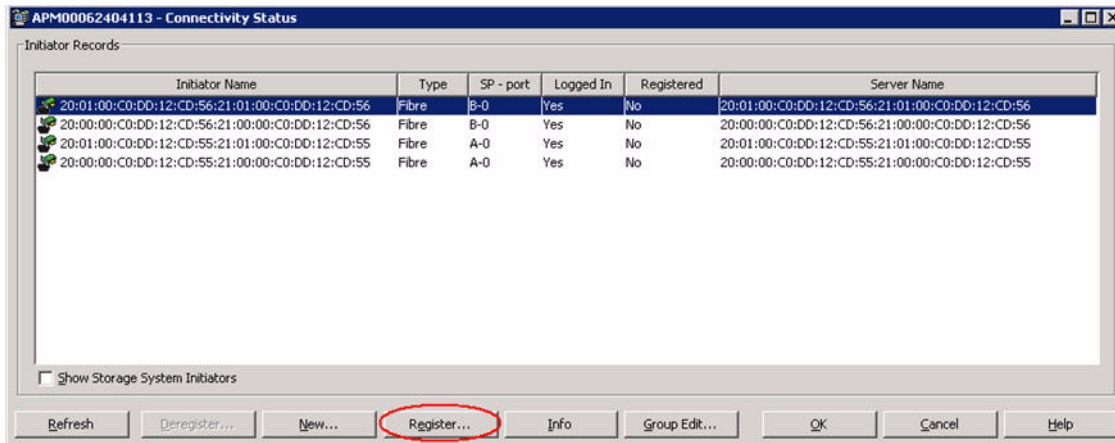


Figure 2-6. Select Register

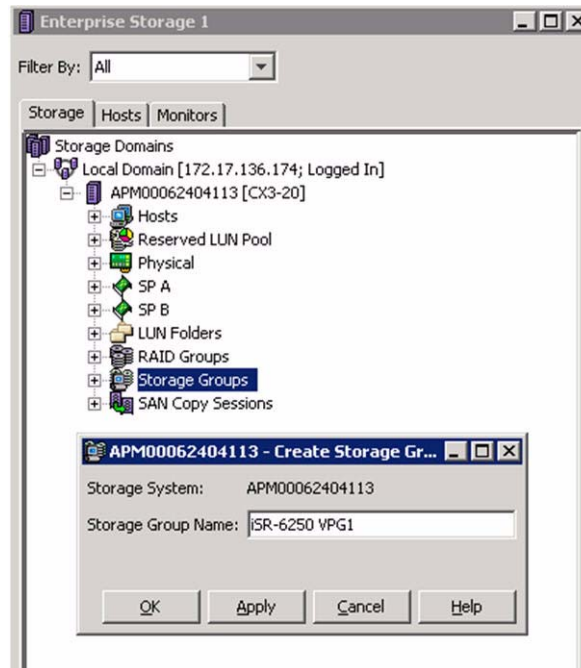
## 2.7 Create Storage Groups on the EMC Storage Array

1. Right-click on **Storage Groups** in the array tree.
2. Select **Create Storage Group**, as shown in Figure 2-7.



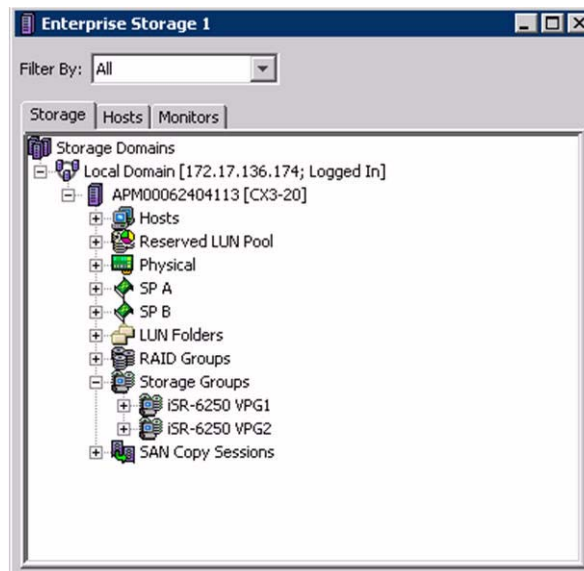
Figure 2-7. Select Create Storage Group

3. Enter a name for the Storage Group, as shown in [Figure 2-8](#).



**Figure 2-8. Enter Storage Group Name**

4. Repeat this process to create a new Storage Group for each enabled Virtual Port Group on the iSR6250. [Figure 2-9](#) shows two Storage Groups created for an iSR6250 blade with two VPGs enabled.



**Figure 2-9. Two iSR6250 VPGs Configured on Storage Array**

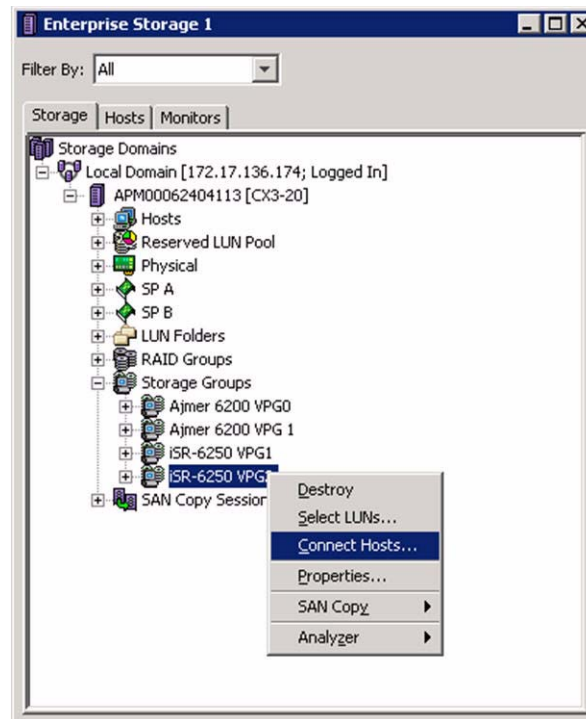
## 2.8 Assign iSR6250 VPG WWPNs to Storage Groups

Assign iSR6250 VPG WWPNs to Storage Groups. Be sure all WWPNs from a given VPG are assigned to the same Storage Group.

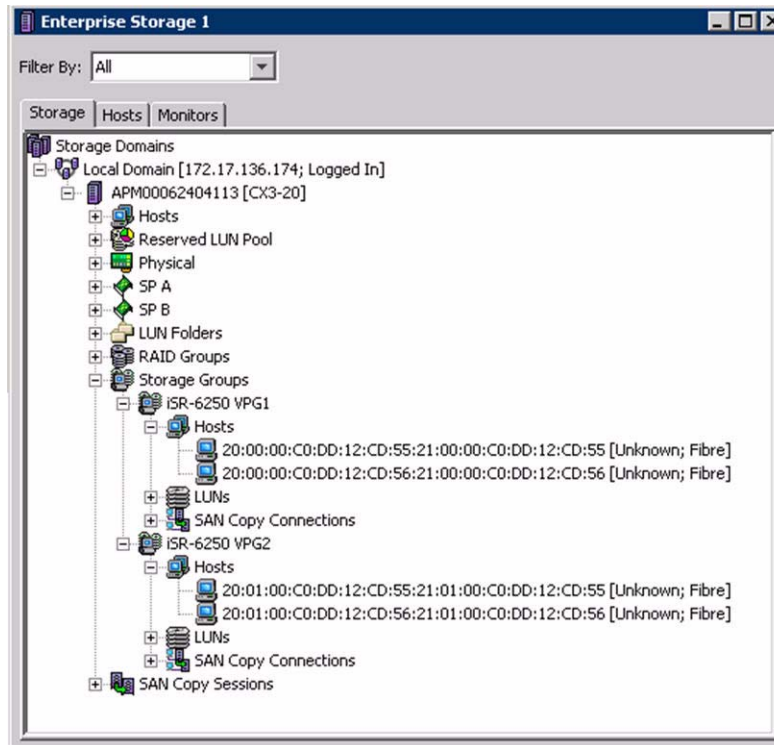
**NOTE:**

DO NOT assign WWPNs from different VPGs to the same storage group!

For more details, refer to the “Configuration” chapter of the *iSR6250 Installation Guide*.



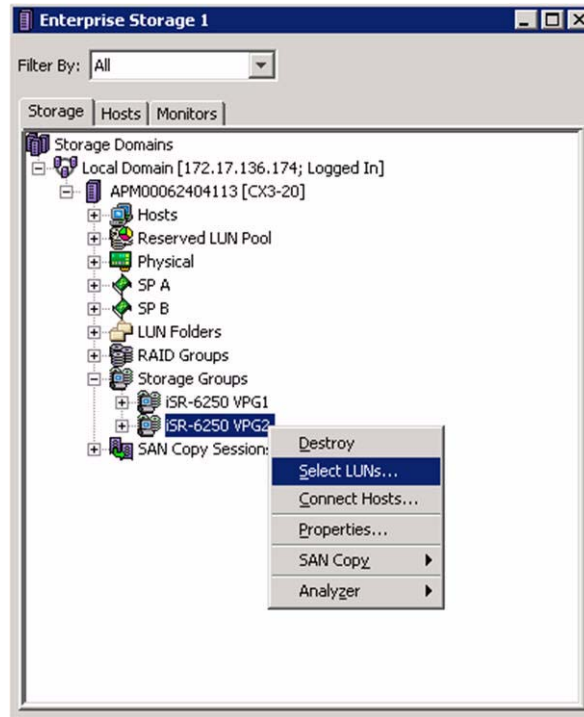
**Figure 2-10. Select Connect Hosts**



**Figure 2-11. Hosts Connected to VPG**

## 2.9 Assign LUN Presentation to Storage Groups

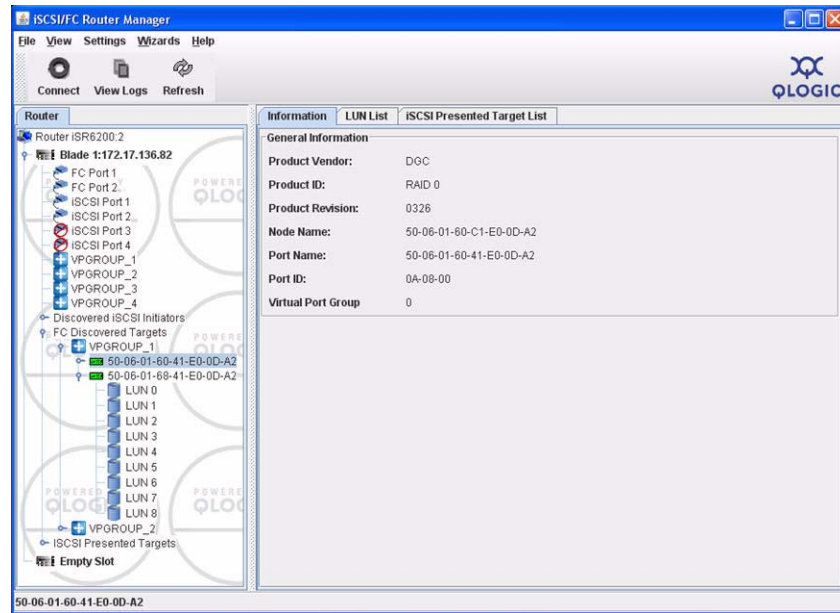
Do not assign any given LUN to more than one Storage Group from the iSR-6250. For more details, refer to section 4 of the *iSR6250 Installation Guide*.



**Figure 2-12. Select LUNs**

## 2.10 Verify Access to LUNs

Verify that the iSR6250 has access to LUNs on the storage array(s) by expanding any Virtual Port Group and FC Target WWPN under the FC Discovered Targets tree of the appropriate iSR6250 blade.



**Figure 2-13. Select FC Target Device**

**NOTE:**

After modifying LUN Presentation / Storage Group on your EMC Storage Array, you might need to disable, then re-enable the blade FC ports for the router to discover the access changes.

To view the LUNs, select the device (as shown in [Figure 2-12](#) or enter the `show luns` command in the CLI.

## 2.11 Discover iSR6250 iSCSI Ports

Use the iSCSI software on host machine(s) to discover one of the iSR6250 iSCSI ports on each of the iSR6250 blades. This creates initiator entries in the iSR6250. The iSCSI hosts should show a logged out status.

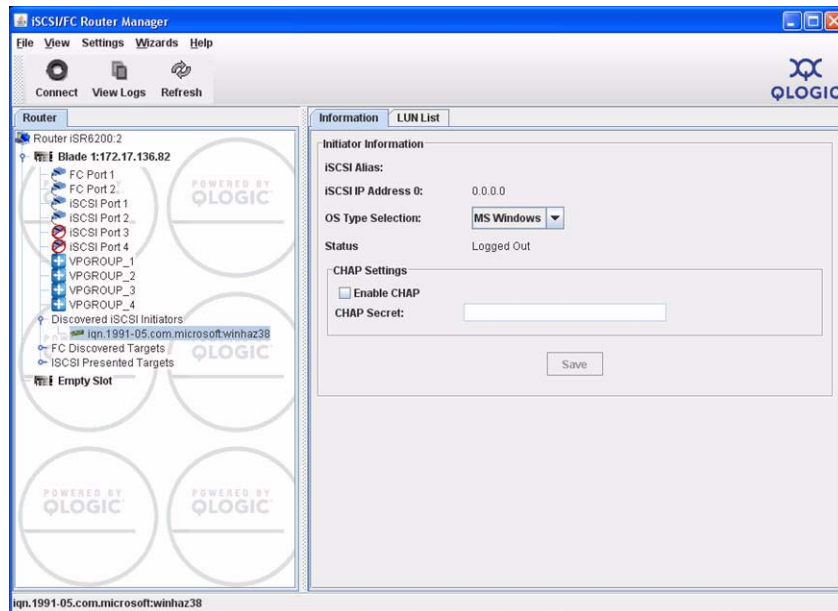
To verify a successful discovery, you can use either the iSR6250 CLI commands or the SANsurfer Router Manager.

The following example shows how to verify discovery using the `show initiators` CLI command.

```
iSR6200 <1> #> show initiators
```

```
Initiator Information
-----
Initiator Name   iqn.1991-05.com.microsoft:winhaz38
Alias
IP Address      0.0.0.0
Status          Logged Out
OS Type         Windows
```

To view these changes in the SANsurfer Router Manager, expand the **Discover iSCSI Initiators** node in the router tree, as shown in [Figure 2-14](#).



**Figure 2-14. Selecting a Discovered Initiator in the GUI**

## 2.12 Configure Per-LUN Host Access

The iSR6250 allows multiple iSCSI initiators to connect to a single FC target through a given VPG. Controlling individual LUN access for each iSCSI host requires LUN mapping devices connected through the iSR6250.

To allow the iSCSI host access to each LUN, you must configure the iSR6250 using either the SANsurfer Router Manager or the CLI. If you do not want to control per-LUN Host access, but want to view all LUNs on all iSCSI hosts, you can disable the LUN masking feature of the iSR6250. For details, see section 4 of the *iSR6150 Installation Guide*.

Figure 2-15 shows that even after logging into the VPG 1 iSCSI target, the host cannot access data LUNs on the EMC storage array.

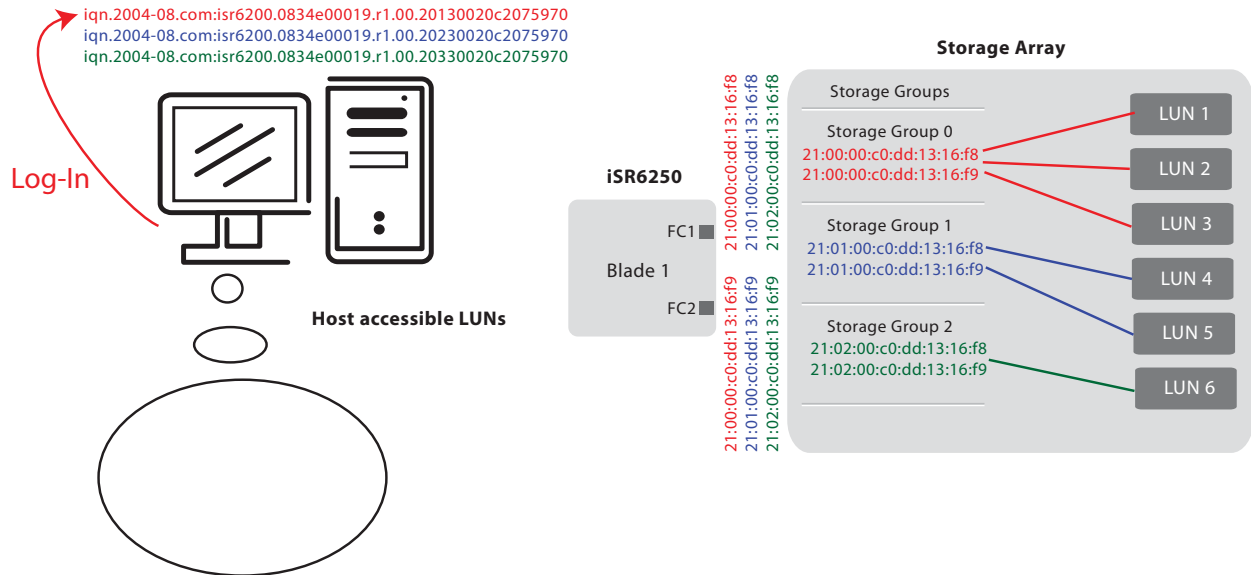


Figure 2-15. Host LUN Access prior to LUN Masking

The following example shows how to map the LUNs with initiators using CLI commands.

```
iSR6200 <1> (admin) #> lunmask add
Index Mapped (WWNN,WWPN/iSCSI Name)
-----
0 Yes iqn.1991-05.com.microsoft:winhaz38
Please select an Initiator from the list above ('q' to quit): 0
Index (VpGroup Name)
-----
1 VPGROUP_1
2 VPGROUP_2
3 VPGROUP_3

Multiple VpGroups are currently 'ENABLED'.
Please select a VpGroup from the list above ('q' to quit): 1

Index (WWNN,WWPN/iSCSI Name)
-----
0 50:06:01:60:c1:e0:0d:a2,50:06:01:60:41:e0:0d:a2
150:06:01:60:c1:e0:0d:a2,50:06:01:68:41:e0:0d:a2
```

```

Please select a Target from the list above ('q' to quit): 0
Index (LUN/VpGroup) Vendor
-----
1      1/VPGROUP_1 DGC
2      2/VPGROUP_1 DGC
3      3/VPGROUP_1 DGC
  
```

```

Please select a LUN to present to the initiator ('q' to quit): 1
  
```

Running these commands saves all changed attribute values.

Figure 2-16 shows Host LUN access after completing the `lunmask add` command.

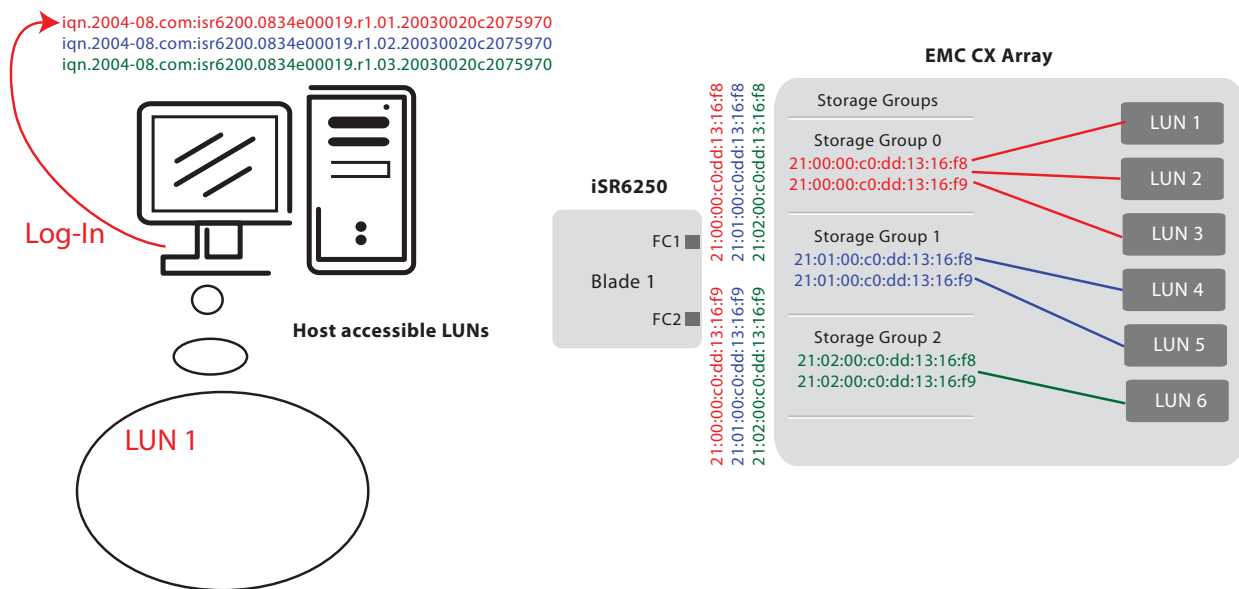
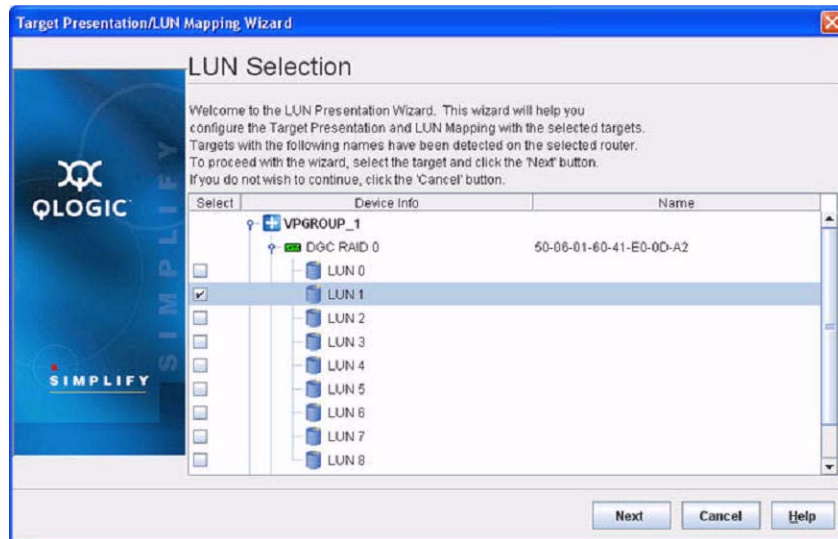


Figure 2-16. Logging into Target After Mapping LUN 1

To map LUN 1 to an initiator using the Router Manager:

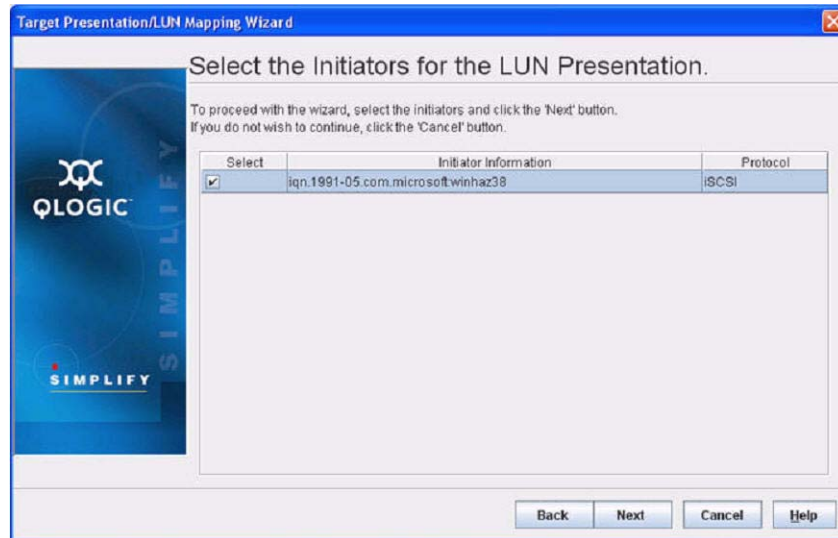
1. Select **Presentation Wizard** from the **Wizards** menu.
2. Expand the router blade node (identified by its IP address), the virtual port group node, and the device node.

3. Select LUN 1 as shown in [Figure 2-17](#), then click **Next**.



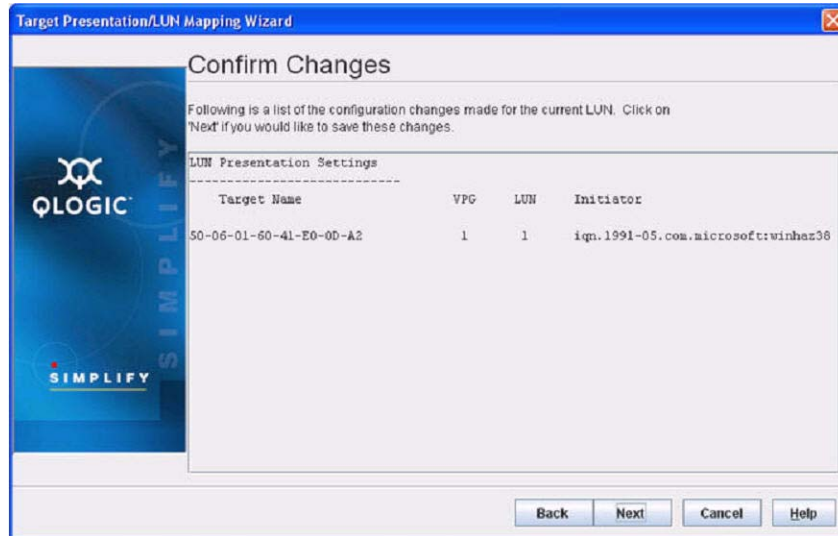
**Figure 2-17. Target Presentation/LUN Mapping Wizard - LUN Selection**

4. Select the check box next to the description of the initiators you want the LUNs mapped to, as shown in [Figure 2-18](#).



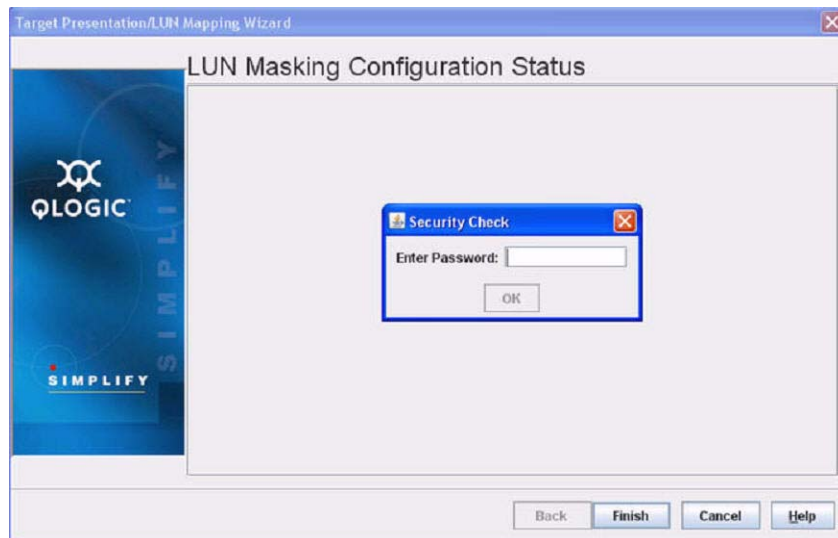
**Figure 2-18. Target Presentation/LUN Mapping Wizard - Select the Initiators**

- Click **Next**. The Confirm Changes dialog box appears, displaying the configuration changes made to the selected LUN, as shown in [Figure 2-19](#).



**Figure 2-19. Target Presentation/LUN Mapping Wizard - Confirm Changes**

- Review the configuration changes, then click **Next**. The LUN Masking Configuration Status dialog box appears, along with the Security Check dialog box, as shown in [Figure 2-20](#).



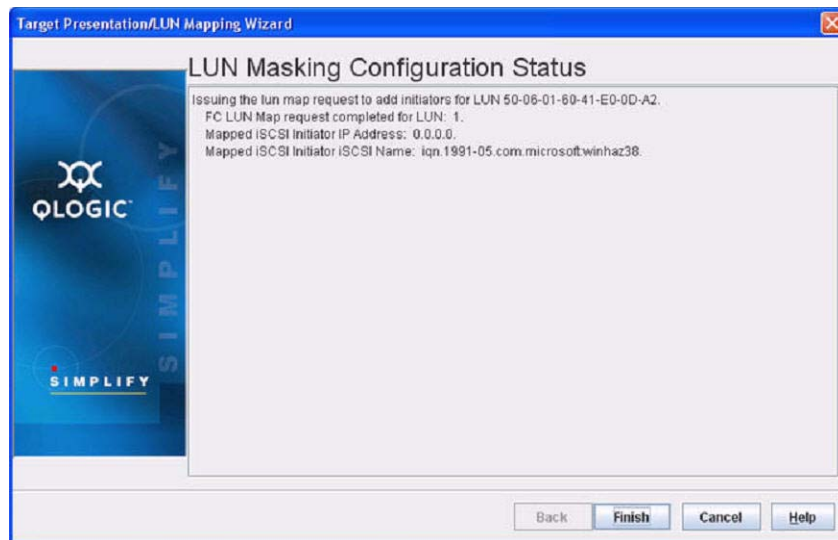
**Figure 2-20. Security Check Dialog Box**

- In the Security Check dialog box, enter the system password, then click **OK**.

**NOTE:**

The default password is `config`.

The LUN Masking Configuration screen displays the mapping requests, as shown in [Figure 2-21](#).



**Figure 2-21. Target Presentation/LUN Mapping Wizard - LUN Masking**

- Verify the completion status displayed on the LUN Masking Configuration Status screen, then click **Finish**. The wizard screen closes.

You can map additional LUNs using either the SANsurfer Router Manager or CLI commands. The iSCSI host cannot access mapped LUNs until it logs into the presented target for the corresponding iSR6250 virtual port group and Fibre Channel target WWPN.

## 2.13 Log into iSCSI Host

Upon logging into a Fibre Channel target WWPN, an iSR6250 blade will present an iSCSI target for iSCSI initiators to connect to. This target is defined by its iSCSI Qualified Name (IQN) string. To connect iSCSI initiators to Fibre Channel targets through the iSR6250 correctly, it is important to understand the composition of the iSCSI target IQN string.

The following example shows the anatomy of a sample IQN string from an iSR6250 router blade:

```
iqn.2004-08.com.qLogic:isr6250.0834e00019.b1.01.20030020c2075970
```

1. Vendor name and registration date  
2. Product Name  
3. iSR6250 Chassis Serial Number  
4. Blade (b1 or b2)  
5. VPGroup (01 through 04)  
6. FC target WWPN

Notice that the IQN string does not contain any information about which iSR6250 physical iSCSI port you are connecting to. The iSCSI host and the iSR6250 handles iSCSI load balancing and failover. If you are using PowerPath® or other multi-pathing software, make sure the iSCSI hosts log into the iSCSI target for both Storage Processors on the Storage Array.

To display the complete list of IQN strings the iSR6250 presents, use the `show presented_targets` CLI command. In the following example, the iSR6250 blade 1 is connected to two Fibre Channel port WWPNS with three Virtual Port Groups enabled.

```
iSR6200 <1> (admin) #> show presented_targets
Presented Target Information
iSR6200 <1> #> show presented_targets

Presented Target Information
-----

iSCSI Presented Targets
-----
Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.01.5006016041e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:60:41:e0:0d:a2

Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.01.5006016841e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:68:41:e0:0d:a2

Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.02.5006016041e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:60:41:e0:0d:a2

Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.02.5006016841e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:68:41:e0:0d:a2

Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.03.5006016041e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:60:41:e0:0d:a2

Name      iqn.2004-08.com.qlogic:isr6200.0823e00010.b1.03.5006016841e00da2
Alias
<MAPS TO>
WWNN      50:06:01:60:c1:e0:0d:a2
WWPN      50:06:01:68:41:e0:0d:a2
```

### 3 Troubleshooting

Table 3-1 lists common questions and answers about configuring the iSR6250 router.

**Table 3-1. Frequently Asked Questions (FAQs)**

| Question  | Answer  |
|---|---|
| I'm using a serial port to connect to the iSR6250, but either the console will not come up, or the console displays unusual characters. | Make sure you are using a regular RJ45 patch cable with the correct RJ45-to-serial port adapter (not a null modem cable). Verify that your serial port is set to 115200 baud, 8 bit data, no parity, and no flow control.   |
| I've connected the FC ports of the iSR6250 to the target. The target is online, but no LUNs are displayed.                              | Make sure you have configured your storage to present LUNs to the iSR6250 Fibre Channel ports that are connected to the array.  |
| The iSCSI initiator does not discover any targets when the iSR6250 iSCSI port is discovered.  | Verify that the iSR6250 has an online Fibre Channel target. You can do this using the SANsurfer Router Manager or by entering the <code>show targets</code> CLI command. The router will present online Fibre Channel targets only to iSCSI initiators.   |
| When trying to login to an iSCSI target, a login failure or session status related error message displays.                              | Make sure you are connecting through the right adapter on your initiator. In the Microsoft® iSCSI initiator, click <b>Advanced</b> after you select a target and click <b>Login</b> . Be sure to specify both the adapter and the source IP. If the login still fails, verify that the iSR6250 has connectivity to the initiator port using the <code>ping</code> utility on the iSR6250. |



| <b>Document Revision History</b> |  |
|----------------------------------|--|
| Revision A, March 2009           |  |
| <b>Changes</b>                   |  |
| New document                     |  |



**Corporate Headquarters** QLogic Corporation 26650 Aliso Viejo Parkway Aliso Viejo, CA 92656 949.389.6000 [www.qlogic.com](http://www.qlogic.com)  
**Europe Headquarters** QLogic (UK) LTD. Quatro House Lyon Way, Frimley Camberley Surrey, GU16 7ER UK +44 (0) 1276 804 670

© 2009 QLogic Corporation. Specifications are subject to change without notice. All rights reserved worldwide. QLogic and the QLogic logo are registered trademarks of QLogic Corporation. All other brand and product names are trademarks or registered trademarks of their respective owners. Information supplied by QLogic Corporation is believed to be accurate and reliable. QLogic Corporation assumes no responsibility for any errors in this brochure. QLogic Corporation reserves the right, without notice, to make changes in product design or specifications.

