Sun StorEdge™ 5310 Cluster Setup Instructions — Read This First

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Contents

Installing the Sun StorEdge 5310 Cluster System

This document contains Sun StorEdge 5310 Cluster quick setup instructions. For more detail, refer to the *Sun StorEdge 5310 NAS Appliance Hardware Installation, Configuration, and User Guide*.

Note – Use these instructions instead of the *Setting Up the Sun StorEdge 5310 NAS* poster which is intended for single-head system setup only.

Caution – Surges of static electricity can cause damage to electrical components. For this reason, it is important that proper packaging and grounding techniques be observed.

Placement of Enclosures

Caution – Uneven loading of the rack can cause dangerous instability.

Note – To install the units in a rack, follow the instructions included with the rack and the rackmount kits.

Mount the enclosures in the following order starting from the bottom:

1. **Sun StorEdge 5300 EU expansion enclosure**
2. **RAID EU controller enclosure**
3. **Sun StorEdge 5310 Cluster server H2 (serial number ending "-H2")**

   The serial number is printed on the software license serial number label on the left side of the chassis.
4. **Sun StorEdge 5310 Cluster server H1 (serial number ending "-H1")**

Note – If you are using two RAID EU controller enclosures, first mount the expansion enclosures for the second controller, then mount the second controller enclosure, and then follow steps 1-4 above.

Connecting Power Cables

1. **Turn off both power switches on each unit in the cabinets.**
2. **Connect each power supply in each unit to a separate power source in the cabinet.**
3. **Connect the primary power cables from the cabinets to the external power sources.**

Caution – The cabinets must have two power sources connected to two separate power circuits.

Note – Do not power on the units until instructed in this document.

Setting Tray IDs

Set each tray ID to a unique number from 00 to 76 using the Tray ID switch at the back of the expansion enclosures and controller enclosures.

Connecting the Sun StorEdge 5310 Cluster to Controller Enclosures

This section includes instructions for connecting the Sun StorEdge 5310 Cluster to one or two controller enclosures.

Note – The Sun StorEdge 5310 Cluster server serial number is printed on the software license serial number label on the left side of the chassis.

The Sun StorEdge 5310 Cluster and the controller enclosures each connect with a pair of optical fiber cables. Optical SFP transceivers have been installed in the controller enclosures' Host ports to interface with the optical fiber cable's LC connectors. Refer to FIGURE 1 for port locations.

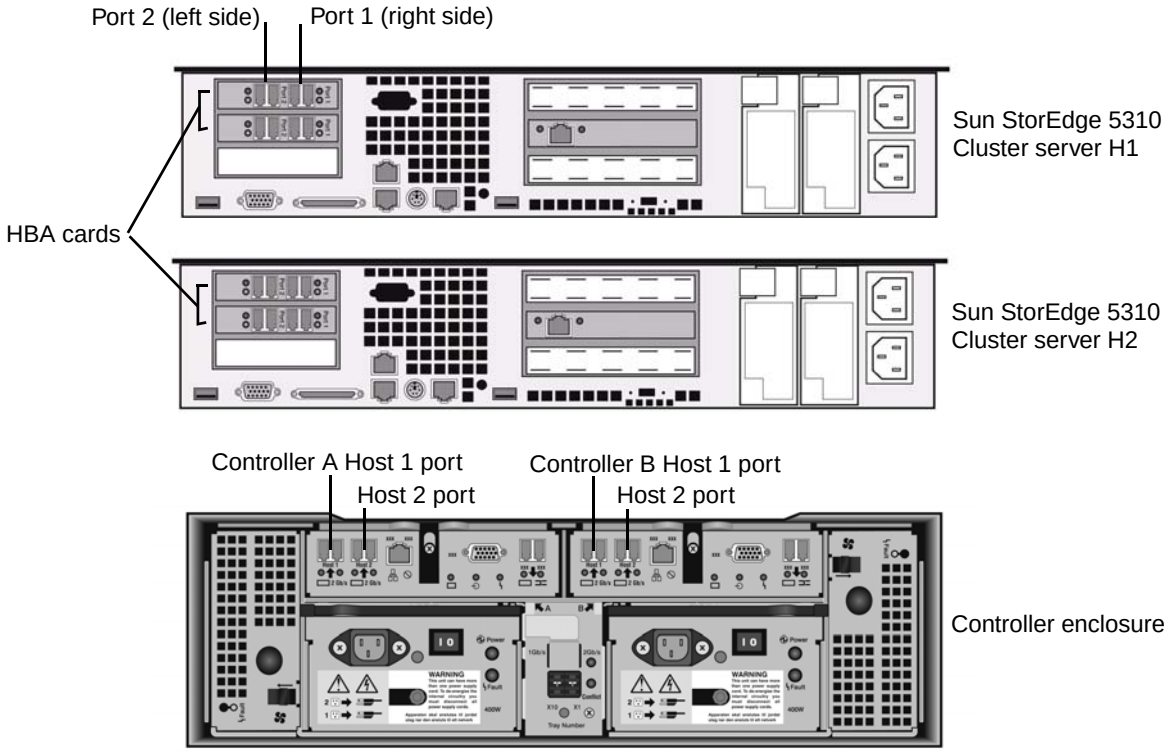

FIGURE 1 Sun StorEdge 5310 Cluster HBA Cards and Controller Enclosure Ports

Connecting One Controller Enclosure

Use the instructions in this section and refer to FIGURE 2 if you are connecting one controller enclosure to the Sun StorEdge 5310 Cluster with two dual-port HBA cards in each server:

1. **Connect the HBA port 2 of the first HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller A host 1 port.**
2. **Connect the HBA port 2 of the second HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller B host 1 port.**
3. **Connect the HBA port 1 of the first HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller A host 2 port.**
4. **Connect the HBA port 1 of the second HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller B host 2 port.**

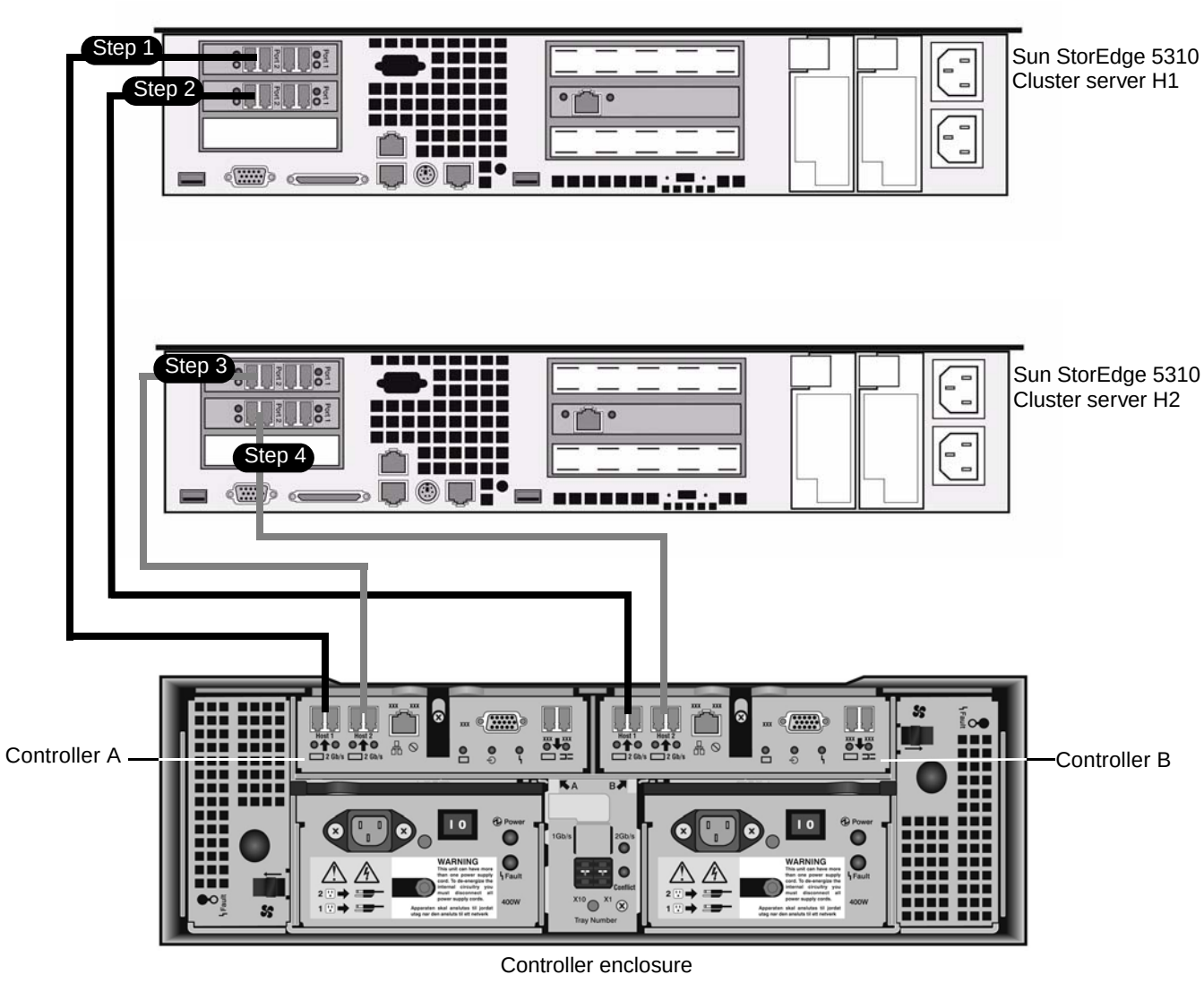

FIGURE 2 Connecting Pairs of HBA Cards to One Controller Enclosure

Connecting Two Controller Enclosures

Use the instructions in this section and refer to FIGURE 3 and FIGURE 4 if you are connecting two controller enclosures to the Sun StorEdge 5310 Cluster.

Caution – One array can contain fibre channel disk drives (in the controller enclosure and expansion enclosures) and the other array can contain SATA disk drives (in the expansion enclosures only). However, you cannot mix EU F (fibre channel) and EU S (SATA) expansion enclosures attached to a controller enclosure.

1. **Connect the HBA port 2 of the first HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller A host 1 port on the first controller enclosure.**
2. **Connect the HBA port 1 of the first HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller B host 1 port on the second controller enclosure.**
3. **Connect the HBA port 2 of the second HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller B host 1 port on the first controller enclosure.**
4. **Connect the HBA port 1 of the second HBA card on the Sun StorEdge 5310 Cluster server H1 to the Controller A host 1 port on the second controller enclosure.**

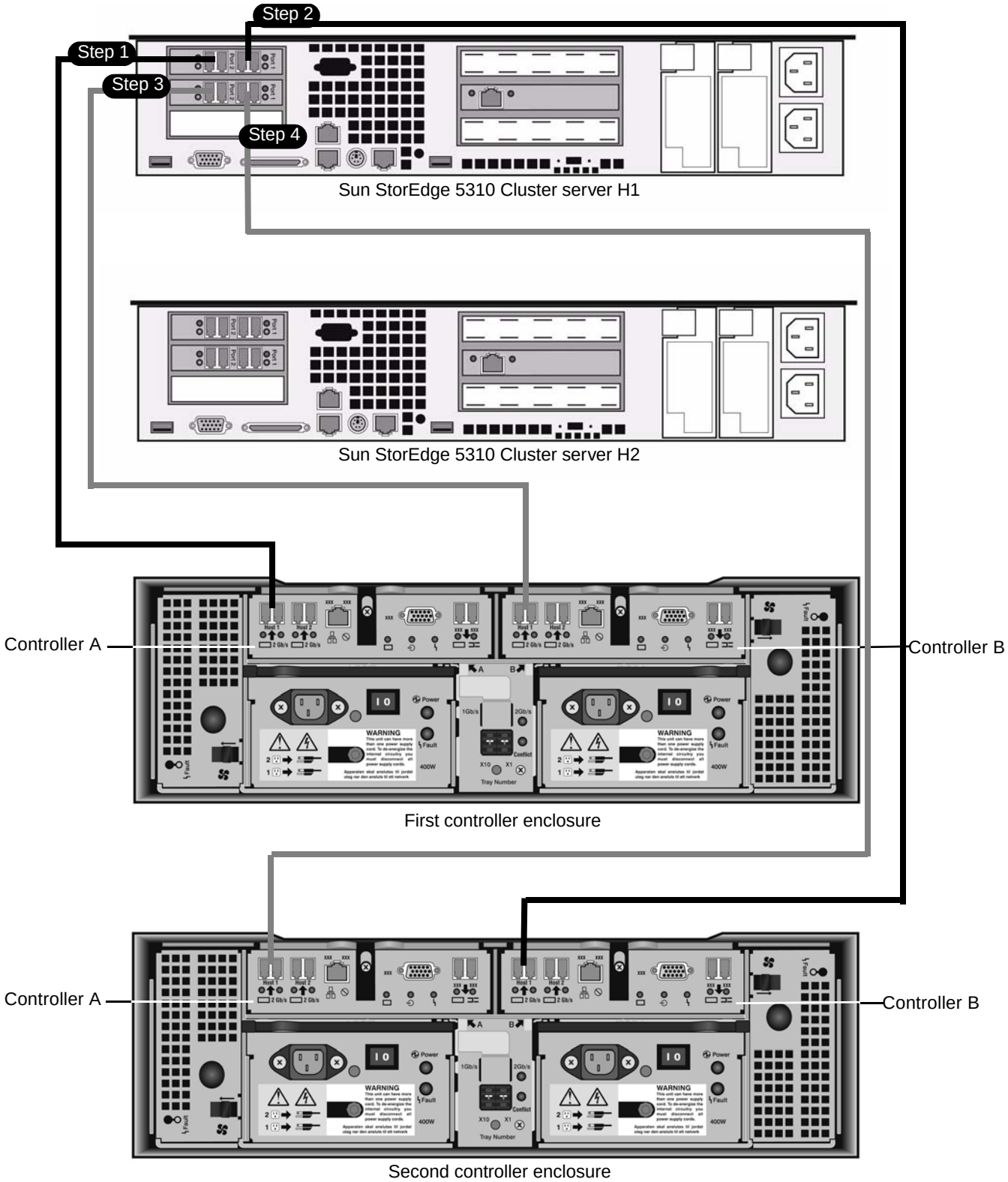

FIGURE 3 Connecting the Sun StorEdge 5310 Cluster to Two Controller Enclosures, Steps 1-4

5. **Connect the HBA port 2 of the first HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller A host 2 port on the first controller enclosure.**
6. **Connect the HBA port 1 of the first HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller B host 2 port on the second controller enclosure.**
7. **Connect the HBA port 2 of the second HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller B host 2 port on the first controller enclosure.**
8. **Connect the HBA port 1 of the second HBA card on the Sun StorEdge 5310 Cluster server H2 to the Controller A host 2 port on the second controller enclosure.**

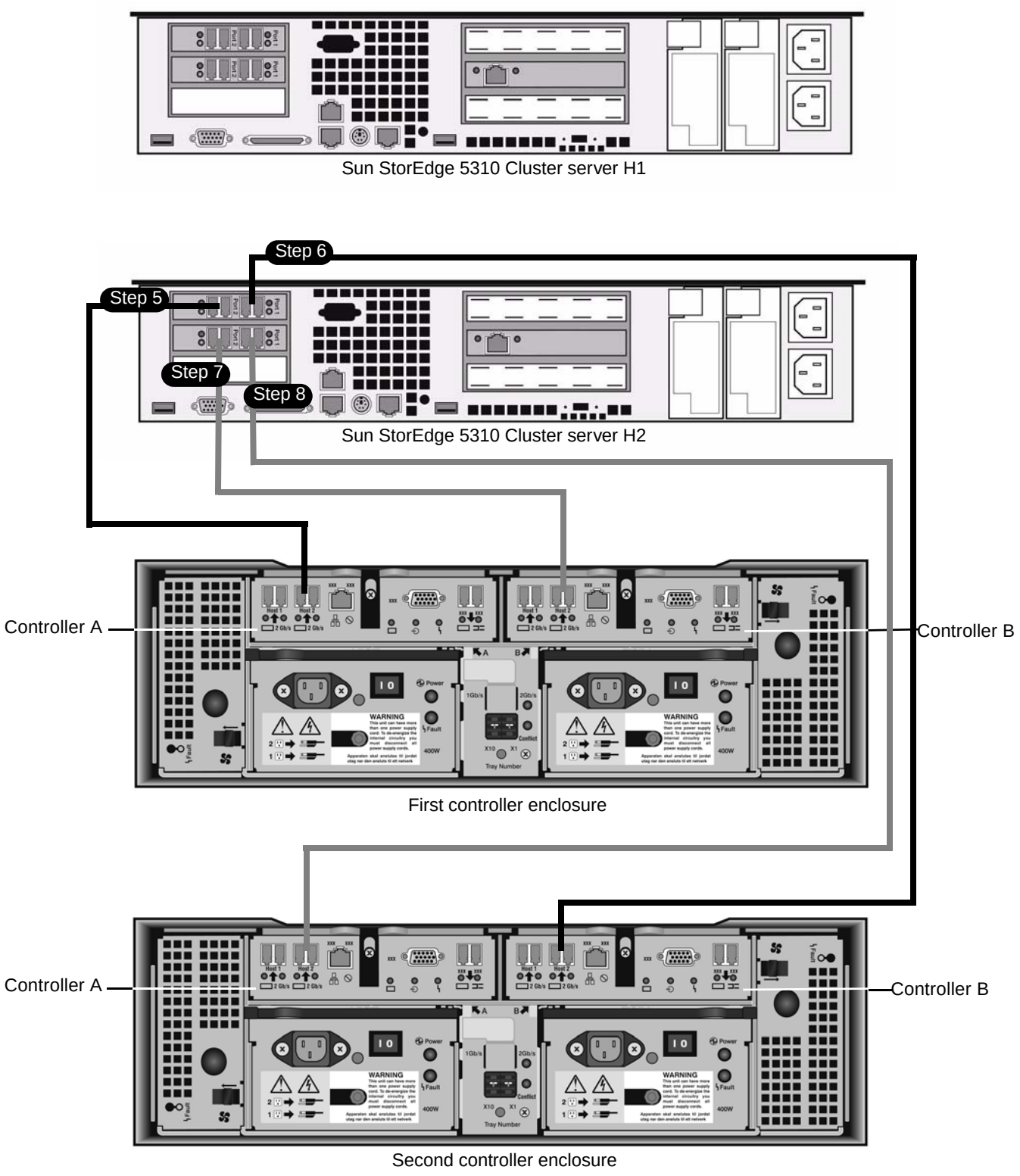

FIGURE 4 Connecting the Sun StorEdge 5310 Cluster to Two Controller Enclosures, Steps 5-8

Connecting the Controller Enclosures to Expansion Enclosures

Each controller enclosure uses Controller A and Controller B expansion ports to connect to FC-AL ports at the back of an expansion enclosure (FIGURE 5).

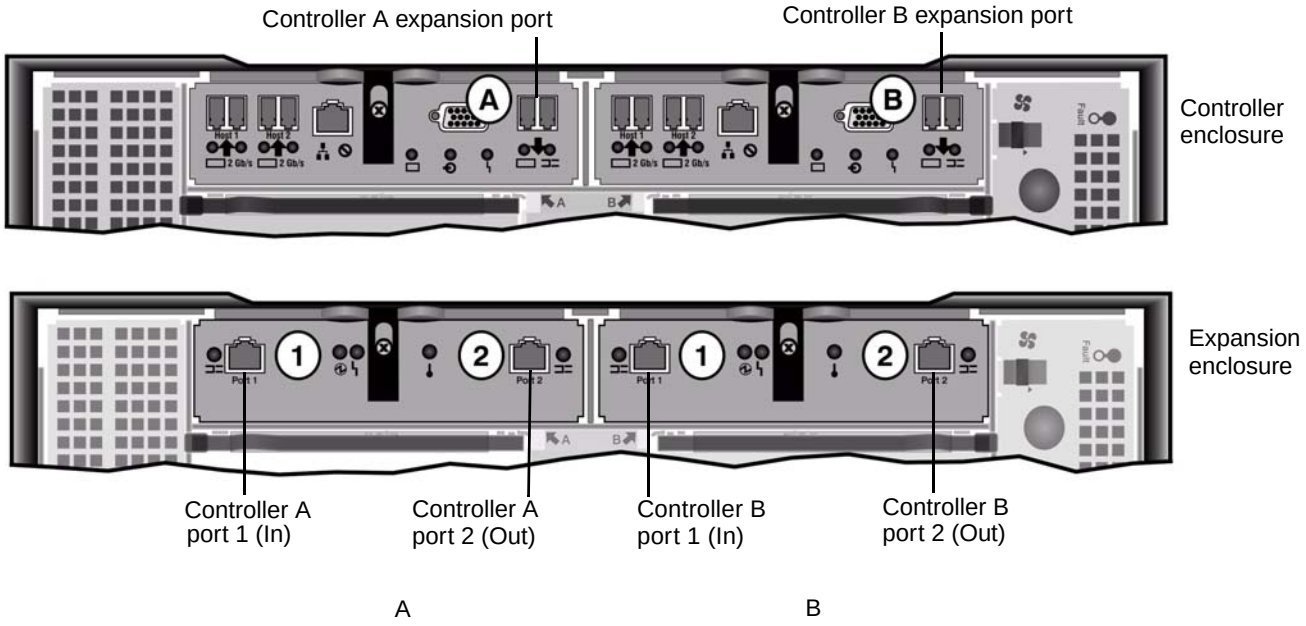

FIGURE 5 Controller Enclosure and Expansion Enclosure Ports

The controller enclosures and the expansion enclosures connect with a pair of Active Copper cables. These are copper cables with transceiver electronics built into their connector ends. They plug directly into the SFP ports of the controllers and expansion enclosures.

Note – This section contains instructions for connecting controller enclosures and expansion enclosures. These instructions apply for one controller enclosure or for two controller enclosures. If you are using two controller enclosures, follow the same instructions to connect expansion enclosures to *each* controller enclosure.

Caution – A controller enclosure used with EU S expansion enclosures must not contain any fibre channel disk drives. Do not mix EU F and EU S expansion enclosures connected to a controller enclosure.

Note – A maximum of seven EU F or eight EU S expansion enclosures can be attached to a controller enclosure.

The cabling differs depending on the number of expansion enclosures you are connecting:

- For one expansion enclosure, refer to "Cabling a Controller Enclosure to One Expansion Enclosure" on page 10.
- For two expansion enclosures, refer to "Cabling a Controller Enclosure to Two Expansion Enclosures" on page 11.

- For three expansion enclosures, refer to "Cabling a Controller Enclosure to Three Expansion Enclosures" on page 12.
- For four to seven expansion enclosures, refer to the *Sun StorEdge 5310 NAS Appliance Hardware Installation, Configuration, and User Guide*.

Cabling a Controller Enclosure to One Expansion Enclosure

To connect a controller enclosure and one expansion enclosure, two 2-meter Active Copper cables are required. Refer to FIGURE 6.

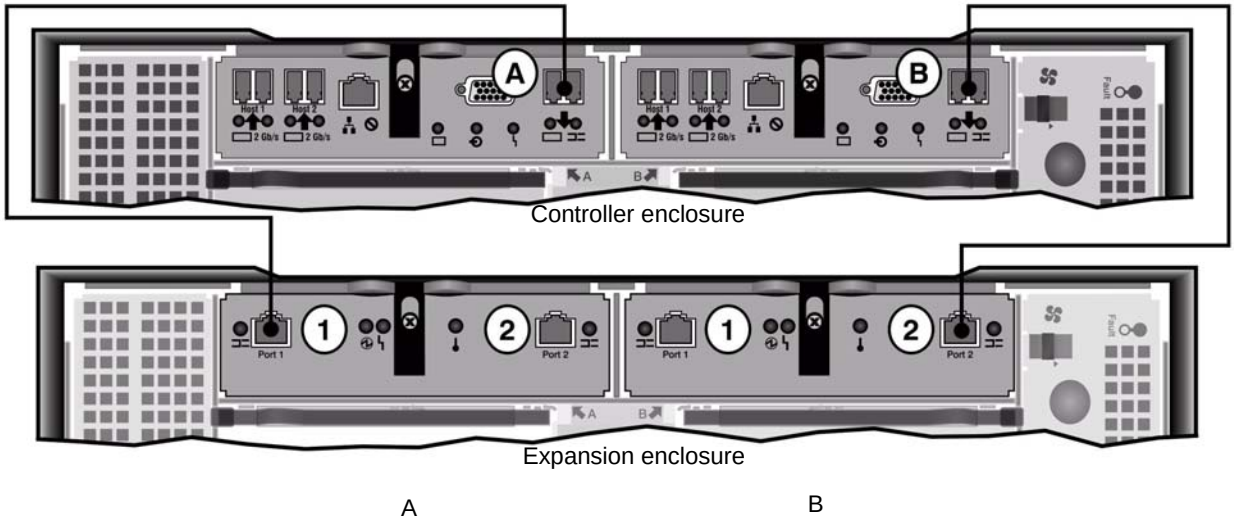

FIGURE 6 Controller Enclosure and One Expansion Enclosure Cable Interconnection

1. **Connect one Active Copper cable between the A side expansion port of the controller enclosure and the A side port 1 of the expansion enclosure.**
2. **Connect one Active Copper cable between B side expansion port of the controller enclosure and the B side port 2 of the expansion enclosure.**

Cabling a Controller Enclosure to Two Expansion Enclosures

To connect a controller enclosure and two expansion enclosures, four 2-meter Active Copper cables are required. Refer to FIGURE 7.

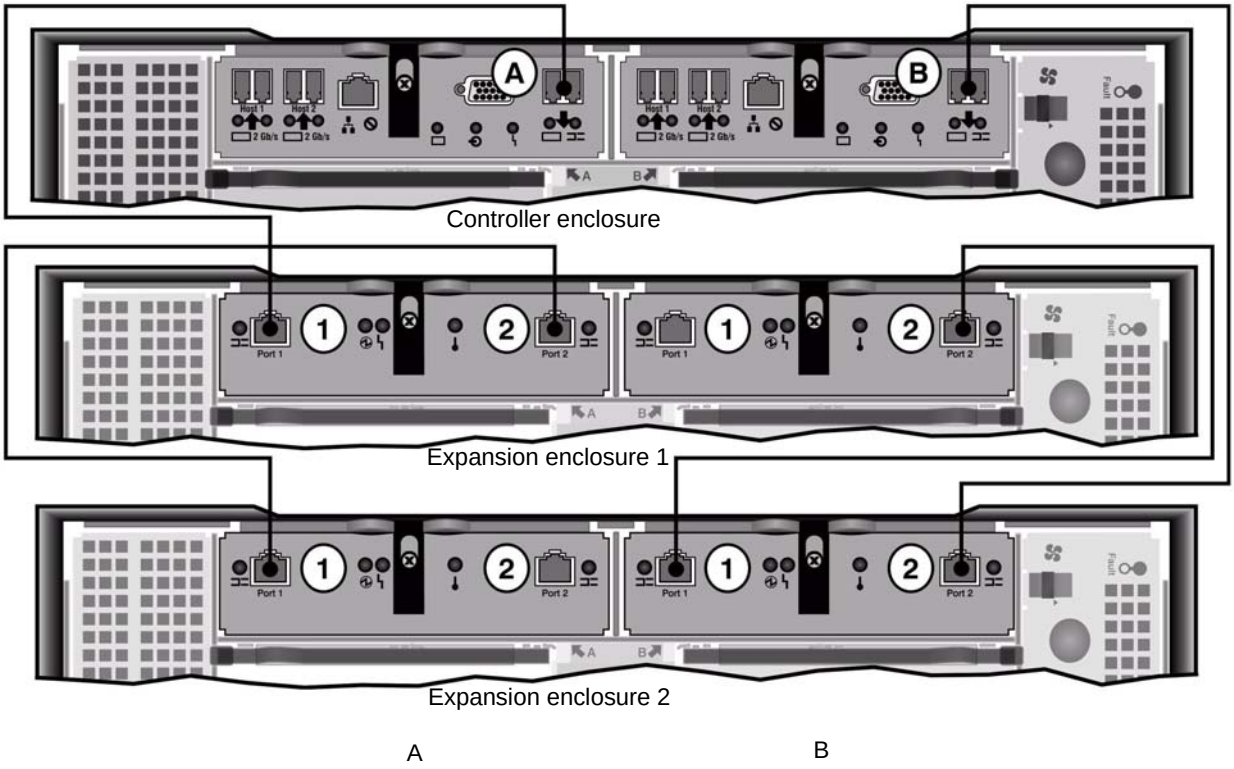

FIGURE 7 Controller Enclosure and Two Expansion Enclosures Cable Interconnection

1. **Connect one Active Copper cable between the A side expansion port of the controller enclosure and the A side port 1 of expansion enclosure 1.**
2. **Connect one Active Copper cable between the A side port 2 of expansion enclosure 1 and the A side port 1 of expansion enclosure 2.**
3. **Connect one Active Copper cable between the B side expansion port of the controller enclosure and the B side port 2 of expansion enclosure 2.**
4. **Connect one Active Copper cable between the B side port 1 of expansion enclosure 2 and the B side port 2 of expansion enclosure 1.**

Cabling a Controller Enclosure to Three Expansion Enclosures

To connect a controller enclosure and three expansion enclosures, six 2-meter Active Copper cables are required. Refer to FIGURE 8.

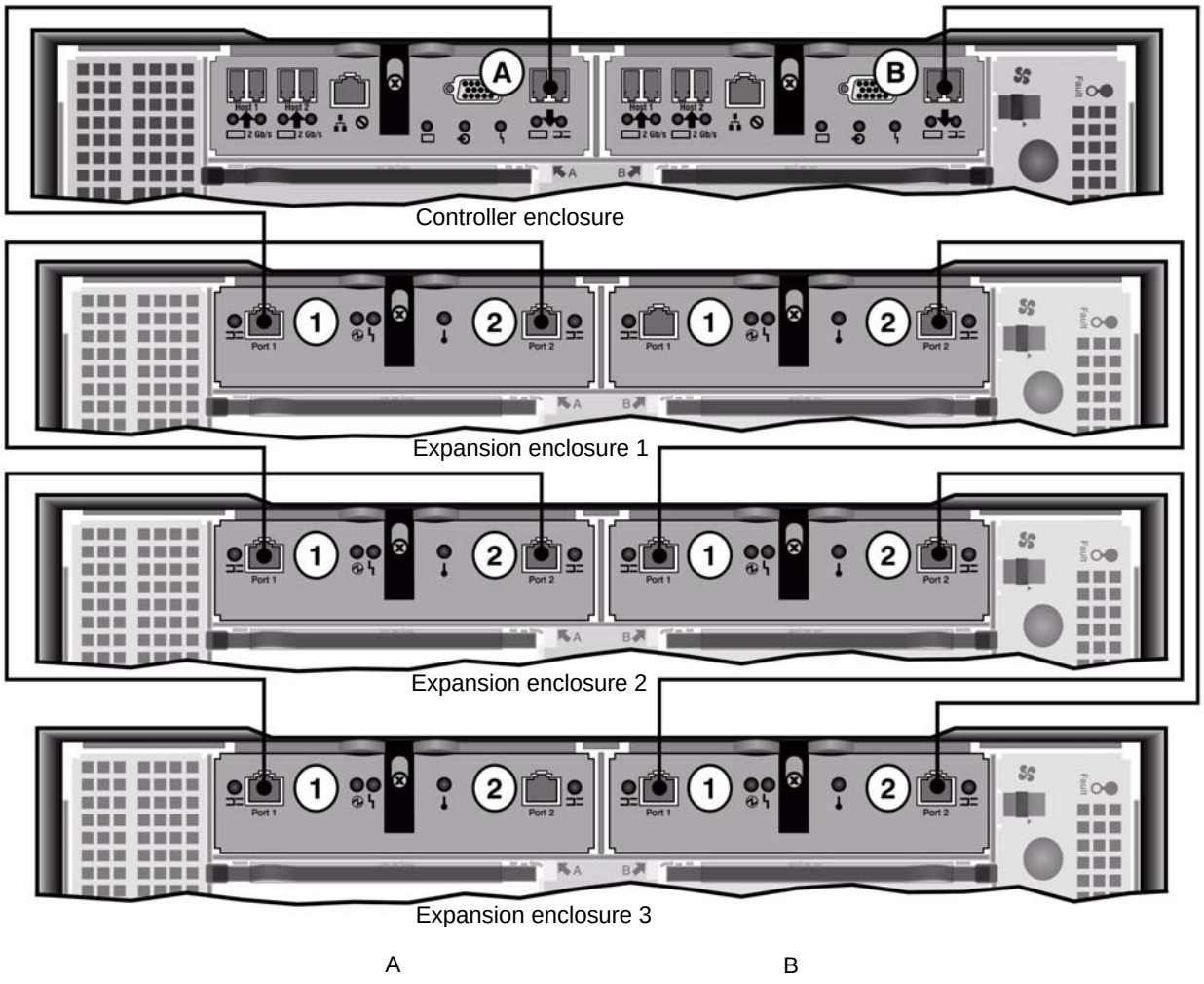

FIGURE 8 Controller Enclosure and Three Expansion Enclosures Cable Interconnection

Caution – Do not mix EU F (fibre channel) and EU S (SATA) expansion enclosures attached to a controller enclosure.

1. **Connect one Active Copper cable between the A side expansion port of the controller enclosure and the A side port 1 of expansion enclosure 1.**
2. **Connect one Active Copper cable between the A side port 2 of expansion enclosure 1 and the A side port 1 of expansion enclosure 2.**
3. **Connect one Active Copper cable between the A side port 2 of expansion enclosure 2 and the A side expansion port 1 of expansion enclosure 3.**
4. **Connect one Active Copper cable between the B side expansion port of the controller enclosure and B side port 2 of expansion enclosure 3.**

5. **Connect one Active Copper cable between the B side port 1 of expansion enclosure 3 and the B side port 2 of expansion enclosure 2.**
6. **Connect one Active Copper cable between the B side port 1 of expansion enclosure 2 and the B side port 2 of expansion enclosure 1.**

   For additional cabling instructions, refer to the *Sun StorEdge 5310 NAS Appliance Hardware Installation, Configuration, and User Guide*.

Connecting the Server Health-Monitoring and Network Cables

Each server in a Sun StorEdge 5310 Cluster system uses a dedicated Ethernet connection to communicate with its partner and perform periodic "health checks."

Connecting the Sun StorEdge 5310 Cluster to Copper Fast Ethernet or Gigabit Ethernet Networks

If your system supports fast Ethernet or Gigabit networking, refer to FIGURE 9 for network interface card (NIC) port locations. On this system the NIC Port emc1 is configured as auto-sensing 100/1000Base-T ethernet (copper).

1. **Connect an RJ-45 unshielded twisted-pair cable from your Local Area Network (LAN) to the NIC Port emc1 connector on the rear of each of the Sun StorEdge 5310 Cluster servers.**
2. **Use the Cat5 Ethernet crossover cable to connect the Heartbeat Port fxp1 on server H1 to the Heartbeat Port fxp1 on server H2.**
3. **You can connect NIC Port emc2 for additional network services.**

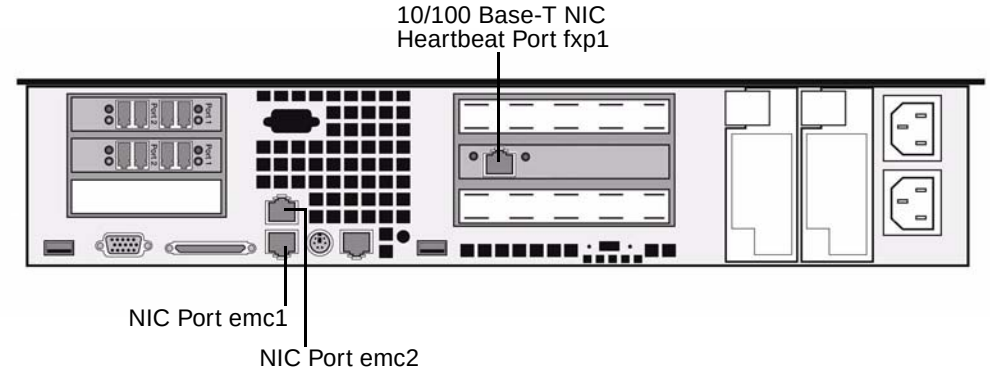

FIGURE 9 Ports for a Fast Ethernet Network

Connecting the Sun StorEdge 5310 Cluster to Optional Optical Gigabit Ethernet Networks

If your servers contain the optical Gigabit Ethernet cards, refer to FIGURE 10 for NIC and optical Gigabit port locations.

1. **Connect an LC cable from your LAN to the right (Port emf3) optical Gigabit Ethernet connector on the rear of each of the Sun StorEdge 5310 Cluster servers.**
2. **Use the Cat5 Ethernet crossover cable to connect the Heartbeat port emc1 (lower left) on server H1 to the Heartbeat port emc1 on server H2.**

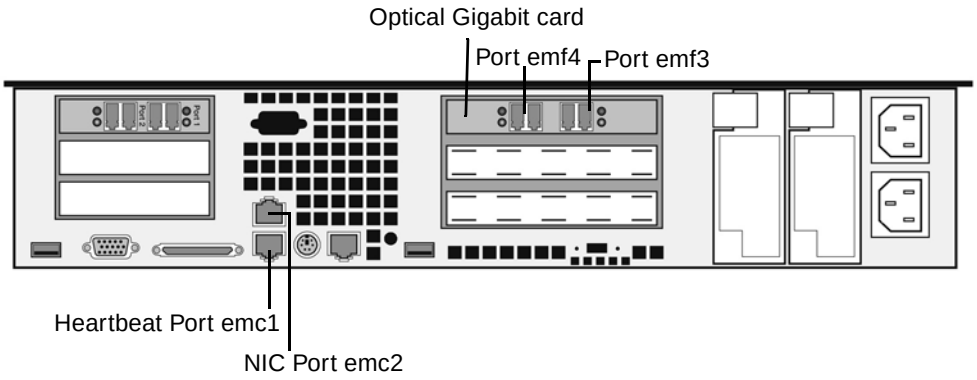

FIGURE 10 Ports for an Optical Gigabit Network

Powering Up the Units

Caution – The expansion enclosures and controller enclosures must always be powered up and properly connected to each other and the Sun StorEdge 5310 Cluster before powering up the Sun StorEdge 5310 Cluster. The expansion enclosures must be powered up *first*, before the controller enclosures and Sun StorEdge 5310 Cluster. If these instructions are not followed, the system could start slowly.

Note – To achieve fault tolerance, units with two power supplies should receive power from two different AC circuits.

Caution – When you power off the controller enclosures and expansion enclosures, wait five seconds before you power them back on. If you power the units off and on too quickly, unexpected results may occur.

Powering on the Expansion Enclosures

To turn on each expansion enclosure:

1. **Verify that all cables between the Sun StorEdge 5310 Cluster, controller enclosures, and expansion enclosures are properly secured.**
2. **Power on each expansion enclosure by setting the two power supply switches to the On position.**
3. **Check that all front-panel LEDs turn solid green to indicate good operation.**
4. **Wait 60 seconds before powering on the controller enclosures.**

Powering on the Controller Enclosures

To turn on each controller enclosure:

1. **Verify that all cables between the Sun StorEdge 5310 Cluster, controller enclosures, and expansion enclosures are properly secured.**
2. **Power on each controller enclosure by setting the two power supply switches to the On position.**
3. **Check that all front-panel LEDs turn solid green to indicate good operation.**

Powering on the Sun StorEdge 5310 Cluster

Note – You will power up and configure one server at a time.

After making sure all cables between the expansion enclosures and controller enclosures and the Sun StorEdge 5310 Cluster are securely connected and the Sun StorEdge 5310 Cluster is connected to the network and the heartbeat Ethernet cable is connected, turn on the Sun StorEdge 5310 Cluster by using the following procedure:

Caution – All power cables must be connected before you press the Power button.

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1. **Power up the server H1 (serial number ending in "-H1") by pressing the Power button on the front panel (behind the faceplate).**

Caution – Do not power up server H2 until directed in the instructions that follow.

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2. **Verify server H1 has completed booting up: the LCD should display "Quiet."**
3. **To complete the power up sequence, continue with the next section "Setting Up and Configuring the System" below.**

Setting Up and Configuring the System

To get the Cluster system up and running, you must specify IP addresses, basic configuration information, and LUN ownership.

Setting IP Addresses

If your network supports DHCP, an IP address will automatically be assigned to your LAN ports.

1. **If DHCP is not available, assign a static IP address using the server H1's LCD module:**
   - Select Menu.
   - Select "A. Network Config".
   - Select "A. Set Gateway" and enter the gateway address.
   - Select "C. Set Port-emc1" or "C. Set Port-emc2" (depending on which port is the first regular LAN port) and enter the IP address, subnet mask, and broadcast address as prompted. This IP address information is assigned to the first regular (non-heartbeat) LAN port on your system.
   - Select "Exit" twice to return to the main menu.

Caution – Do not change the private IP address on the network port that is used for the heartbeat.

Note – To verify your settings, HB Port (the heartbeat port) will show a private IP address and Port emc1 or Port emc2 (the first regular LAN port) will show the information you just entered.

You can edit the port information and assign addresses to other ports in the same way.

2. **From the server H1 LCD Menu, select "C. Take All LUNs".**
3. **When prompted to "take all LUNs," press the Up arrow to select "Yes," and press the SEL button or Right arrow to start taking LUNs.**

   The LCD will display "Taking LUNs" followed by a message "Took *n* LUNs". After a few seconds, the display returns to the Network Config menu.
4. **Select "Exit" to return to the main menu.**

   Server H1 is now in the ALONE state.
5. **Power up the server H2 (serial number ending in "-H2") by pressing the Power button.**
6. **Wait until server H2's LCD display status is "QUIET."**
7. **Use instructions in Step 1 to assign server H2's IP address and gateway address.**

Configuring the Cluster System

Follow the instructions below to use the Web Admin application to configure the system:

1. **From a client on the same network, open a Java platform-enabled web browser with Java Plug-In and enter the IP address for server H1.**
2. **Accept the "Applet Security Certificate" and wait until the Web Admin applet gets loaded on this system.**
3. **At the Web Admin login screen click Apply. (The password can be set later. Refer to the *Sun StorEdge 5310 NAS Appliance Software Installation, Configuration, and User Guide*.)**

4. **Read the license agreement in the Configuration Wizard dialog box, and click Accept.**
5. **Click Next in the Welcome dialog box to go to the Select Environment screen.**
6. **You can configure Windows, Unix, or Both environments now. (You can always add additional configuration information later.) Click Next to continue.**
7. **From the Set Server Name screen, enter the server name and populate the other fields accordingly, and then click Next.**
8. **From the Enable Failover screen, select "Enable Automatic Failover" and "Enable Link Failover", and click to enable Automatic Failover and Enable Link Failover.**

   A default value of "60" seconds is assigned in both the Down Timeout and Restore Timeout fields.
9. **Enter the Partner Configuration Name and the Gateway IP address for server H2 (Partner Name factory default is "head2").**

   The information you enter here is used to start server H2 via the heartbeat connection. The Partner Name is the host name you want to assign to server H2. Any network information server H2 obtained via DHCP or manually via the LCD panel will be displayed here and can be corrected, if necessary.

   The field for Private IP for the heartbeat connection should already be populated (IP 10.10.10.2 private network) and should not be changed.
10. **Click Next.**
11. **On the Configure Network Adapters screen, verify the information is correct.**

    You may configure additional network interfaces at this time. However, if you change the configuration of the port to which the browser is attached, the browser session will be disconnected.
12. **Click Next to continue.**
13. **On the Set Gateway Address screen, enter the gateway address and click Next to continue.**
14. **For all the other wizard configuration steps, please refer to the *Sun StorEdge 5310 NAS Appliance Software Installation, Configuration, and User Guide* for more information.**

Note – When adding your DNS server, click **Add** to ensure the DNS server has been added.

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15. **Review the configuration information you have added.**

Note – Be sure the configuration information is accurate before continuing.

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16. **Click Finish on the Wizard Confirmation Screen.**

    The system will configure the settings and indicate it in the Save Configuration screen. It will also display a message that "both NAS Server Heads will Reboot" for the failover changes to be applied.
17. **Click Close on the Save Configuration screen.**

Note – Server H1 reboots automatically, and you must manually reboot server H2.

To manually reboot server H2:

1. **On server H2's LCD module, select "B. Shutdown Server" from the menu.**
2. **Select "B. Reboot". The LCD will display "Are you sure? No". Press the Up arrow to change to "yes". Then press SEL or Right arrow to reboot.**

   After several minutes server H1 should come up in the ALONE state, and server H2 should come up in the QUIET state. Verify this by looking at the LCD panel.

Assigning LUN Ownership

To finish the configuration process, you must assign LUN ownership for both servers.

1. **Launch a new browser window and enter server H1's IP address.**
2. **At the Web Admin login screen click Apply. A password is not required. (The password can be set later. Refer to the *Sun StorEdge 5310 NAS Appliance Software Installation, Configuration, and User Guide*.)**
3. **From the left side navigation panel, select Fault Tolerance -> Recover and click Recover.**

   Check the status of the recover process in the logging window (bottom pane).
4. **In the Restore Raid Configuration window, assign some of the LUNs to server H2.**

Note – You must assign at least one LUN to each server. In most situations, you will want approximately equal amounts of storage assigned to each server in the cluster.

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5. **Click Apply.**

Note – The appropriate LUN assignments will be saved in the (New) Restore Raid Configuration window and the Current RAID Configuration window.

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6. **Click Recover, and the LUNs will be distributed between both the servers.**

   At this point both servers will change to the NORMAL state.

Note – Verify that both servers are in the NORMAL state on the LCD Panel display or on the Web Admin main page where the Server Status should display NORMAL.

Assigning LUN Paths

You should assign LUN paths on each server to balance multipath access from each server to each storage controller.

1. **In the navigation panel, select Fault Tolerance > Set LUN Path.**
2. **Select a LUN and click Edit.**
3. **Select the desired controller from the Primary Path drop-down list.**

   Evenly divide assignment of LUNs to the two available paths. For example, the first and third LUN to 1/0 and the second and fourth LUN to 1/1.
4. **Click Apply.**

Refer to the *Sun StorEdge 5310 NAS Appliance Software Installation, Configuration, and User Guide* for additional information about LUNs and other detailed software setup and use.