

Applications Note

Minimizing Fibre Channel Zoning Changes for Online Data Migration Using the iSR6200 and MPX200

Products Affected

QLogic Storage Router	Part Number
iSR6240	6240-C12-X
iSR6250	6250-C12-X
iSR6260	6260-C12-X

1 Introduction

This applications note provides an alternate insertion method to use when multiple zoning changes cannot be accommodated for online data migration using the QLogic iSR6200 Series Intelligent Storage Router. This method described in this document requires only two active Fibre Channel zones during iSR6200 or MPX200 insertion in the data path for online data migration.

For additional information on data migration, refer to the *Data Migration Service for iSR6200 User's Guide*.

Figure 1-1 shows an iSR6200 dual-blade configuration.

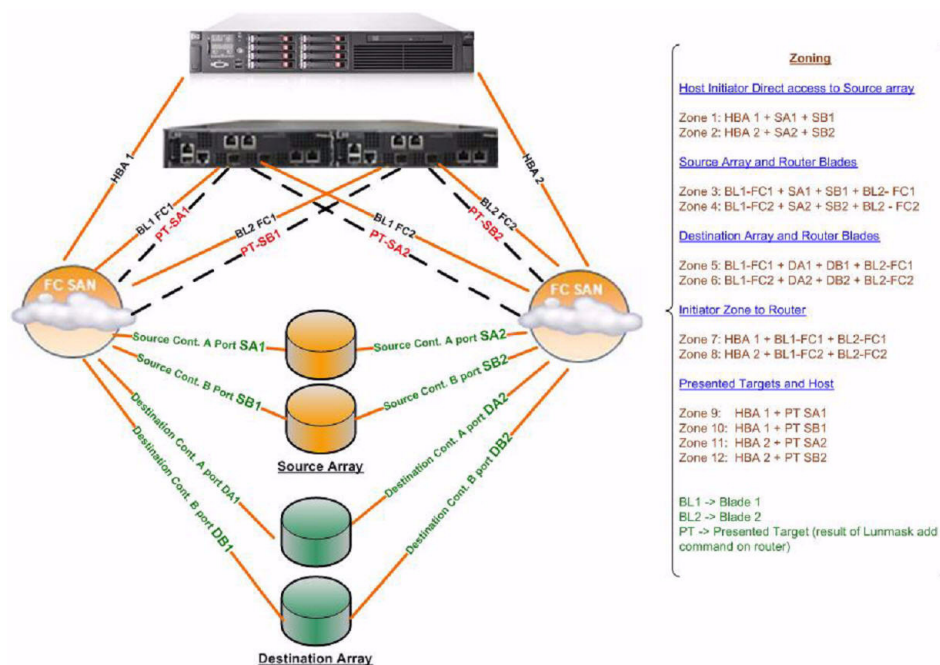


Figure 1-1. Dual-Blade iSR6200 Setup

2 Router Insertion Process

Follow these steps to insert the iSR6200 router with minimal zoning setup and configuration.

NOTE:

The alternate insertion process does not apply to IBM® DS3000, DS4000, and DS5000 arrays with a host running the Linux® Redundant Disk Array Controller (RDAC) driver and Microsoft® Device Specific Module (DSM).

Step 1: Clear the migration logs on the router blades. For details, refer to the *Data Migration Service for iSR6200 User's Guide*.

Step 2: Apply the licenses on the router blades. For details, refer to the *iSR6200 Quick Start Guide* and the *Data Migration Service for iSR6200 User's Guide*.

Step 3: Create an initiator entry using either SANsurfer iSCSI/FC Router Manager or the CLI as follows:

- In SANsurfer iSCSI/FC Router Manager, open the **Wizards** menu, and then click **Add Initiator Wizard**.
- In the CLI, issue the `initiator add` command.

The initiator entity is used to create LUN mapping from the source array to this initiator.

Step 4: Present source and destination LUNs from the Fibre Channel arrays to the router as follows:

1. Zone in source array controller ports with iSR6200 Fibre Channel ports. Create Zone 3 and Zone 4 such that each router blade can access all ports on source array controllers A and B.
2. Zone in destination array controller ports with iSR6200 Fibre Channel ports. Create Zone 5 and Zone 6 such that each router blade can access all ports on destination array controllers A and B.
3. Activate Zones 3 through 6 such that the source and destination arrays are seen by the iSR6200 or MPX200.
4. Present LUNs from both the source and destination arrays to the iSR6200 as follows:
 - a. From the same virtual port group (VPG) as a single *host entry* in the storage array, register the following router Fibre Channel WWPNs:
 - BL1-FC1-VPG1
 - BL1-FC2-VPG1
 - BL2-FC1-VPG1
 - BL2-FC2-VPG1

NOTE:

- For all active-active source arrays, register the router as a Windows® host on the array (for example, CLARiiON® Open on EMC®).
 - For all active-passive source arrays where the host is running DSM for multipath (for example, PowerPath®), register the router as a Windows host on the array (for example, CLARiiON Open on EMC).
 - For all active-passive source arrays where the host is running native multipath—either Windows 2008 Multipath I/O (MPIO) driver, dynamic multipathing (DMP), PV Links, or HP-UX 11.3 native MPIO—register the router as a Windows host with auto-trespass mode (for example, CLARiiON Open type and mode 2 on EMC arrays).
- b. Present the LUN to the router with the same LUN ID, if possible, as that presented directly to the server (initiator). If you are migrating multiple servers at the same time, LUNs may be assigned the same LUN ID for each host. For example, each initiator is assigned separate LUNs but also assigned the same ID, 0. In this case, you must enable multiple VPGs on the router and register each group as a different host entity on that array. Then you can assign LUNs with same LUN ID to each of these VPG hosts.
5. (Optional) To discover the newly-presented LUNs and form the new arrays, if required, follow these steps:
- a. In the left pane of SANsurfer iSCSI/FC Router Manager, click the **Router** tab.
 - b. On the Router page, select the blade, and then click the **FC Discovered Targets** node.
 - c. In the right pane on the FC Presented Targets page, right-click the appropriate target port.
 - d. On the shortcut menu, click **Rescan**.

Step 5: Present source array LUNs to the server for online data migration. Create a presented target using either SANsurfer iSCSI/FC Router Manager or the CLI as follows:

- In SANsurfer iSCSI/FC Router Manager, open the **Wizards** menu, and then click **Presentation Wizard**. Follow the Target Presentation/LUN Mapping Wizard to automatically detect the portal on which the target is discovered and to create a presented target on that portal.

Because SANsurfer Router Manager performs an array-based LUN presentation, the LUN is presented to an initiator through all of the discovered target ports. The visibility of a LUN through a target on the initiator depends on your zoning configuration.

- In the CLI, issue the `lunmask add` command and select the appropriate target and portal. For example:
 - HBA1 > SA1 > LUN1 > BL1 FC1 VPG1 creates presented target PT-SA1.
 - HBA2 > SB2 > LUN1 > BL2 FC2 VPG1 creates presented target PT-SB2.

Step 6: Insert the iSR6200 in the data path and remove direct LUN access between the host and the storage array as follows:

1. Activate zone by zoning in the router's presented target port with the initiator port. Create and activate Zones 9 through 12 such that each initiator port can access the LUN through both of the array controllers, A and B.

The initiator discovers additional paths for the same LUN, and the multipath software continues the I/O based on the policy setting on the initiator.

2. Log into the array management utility and remove the LUN presentation through HBA 1. This ensures that no direct path to the array exists from HBA 1. Ensure that this path was one of the active paths through which the I/O was running by using multipath I/O (MPIO)-specific commands on the hosts. For example, on EMC PowerPath, issue the `powermt display dev=all` command to display the active path through which I/O is running.

Based on the failover policy, I/O on the initiator continues through other available paths, either through the other direct path or the router presented path.

3. Use the array management utility to remove the LUN presentation through HBA 2.

When this step is complete, all direct LUN presentation to the router has been removed. The available path on the initiator is the only router-presented target path.

NOTE:

On HPUX 11.23 with physical volume (PV) link support, you must reduce the volume group (VG) before removing direct paths through the array management utility. For details, see [HP-UX 11.23 \(PV Links\)](#).

3 Router Insertion for HP-UX

This section provides router insertion procedures for both HP-UX 11.23 (PV Links) and HP-UX 11.31.

3.1 HP-UX 11.23 (PV Links)

1. On the HP-UX host, if a volume group does not exist, create a volume group (VG). Then issue the `vgextend` command to extend the VG and add all of the available direct paths in the group.
2. While the I/O is running, add router paths to the host (see [Router Insertion Process, Step 6, substep 1](#)).
3. To provide the VG with all direct paths and router paths, extend the VG with the router paths. On the HP-UX, issue the `vgextend` command to add the router paths to the LUN in the VG.
4. On the HP-UX host, remove the directly-connected path by issuing the `vgreduce` command.

After all the direct paths are reduced from the VG, only router-presented paths are available. All the I/O fails over to the router paths.
5. In the router CLI, issue the `show perf byte` command to check that I/O is running through the router's Fibre Channel ports.
6. Log into the array management utility and remove the LUN mapping to the host (the method varies depending on the array). Ensure that you remove all direct paths for the LUN (see [Router Insertion Process, Step 6, substeps 2 and 3](#)). However, in this case, there is no I/O running through these paths, because paths are removed on hosts as a result of the `vgreduce` command.

3.2 HP-UX 11.31

1. On the HP-UX host, if a volume group does not exist, create a VG. Then issue the `vgextend` command to extend the VG and add all of the available direct paths in the group.
2. Start the I/O host, and while the I/O is running, check the path status; it must be either active or standby.

3. Add router paths to the host, issue the `ioscan` command, and then check the availability of the path. Ensure that the router-presented paths are successfully presented to the host and that the paths are available (claimed state).
4. Issue the `scsimgr lun_map` command and verify the new router paths (both direct paths and router-presented paths) to the LUN. Confirm that native multipath has successfully identified the router path and that the paths are in an available state.

NOTE:

Native multipath may load-balance the I/O on direct paths and router paths for I/O on an active controller, because this controller is now available directly as well as through the router.

5. Log into the array management utility and remove LUN mapping to the host (the method varies depending on the array). Ensure that you remove all direct paths for the LUN (see [Router Insertion Process, Step 6](#), substeps 2 and 3).
All the I/O fails over to the router paths.
6. To check the path status on the host, issue the `scsimgr lun_map` command again. Confirm that native multipath shows that the direct paths are now seen in a “Failed” state.
7. To verify that I/O is running through the router’s Fibre Channel ports, issue the router CLI `show perf byte` command.

Document Revision History
Revision A, September 7, 2010
Changes
Initial release of new applications note.