CHAPTER 8

InfiniBand Subnet Management Tasks

These topics describe the InfiniBand menu subnet management tasks for Element Manager:

Note See Appendix A, "InfiniBand Concepts" to familiarize yourself with the InfiniBand technology. For hardware-specific information, consult the relevant hardware documentation.

Using the InfiniBand Menu

The InfiniBand menu has two choices for performing InfiniBand subnet management tasks:

- Subnet Management
- Subnet Management (tabular format)

These topics describe how to use the Subnet Management menu option. Most of the tasks can also be performed by selecting the Subnet Management (tabular format) menu option, which presents information and configurable options in tables, but is a less user friendly way to perform your InfiniBand subnet management tasks.

Viewing and Managing Subnet Manager Properties

These topics describe procedures for performing the following tasks:

Viewing Subnet Manager Properties

To view Subnet Manager properties, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Manager window opens.

Step 2 Select a subnet.

A table of Subnet Manager properties appears under the General tab. Table 8-1 describes the fields.

Table 8-1 Subnet Management Window, General Tab Fields

Field	Description
GUID	Displays the GUID of the port on which the Subnet Manager runs.
Status	Status of the Subnet Manager. The status can be master, standby, inactive, or discovery.
Activity Count	Activity counter that increments each time that the Subnet Manager issues a subnet management packet (SMP) or that performs other management activities.
SM Key	64-bit subnet management key assigned to a Subnet Manager.
Priority	Priority of the Subnet Manager relative to other Subnet Managers in the InfiniBand network. Priority is assigned to the higher number.
Sweep Interval	Specifies how frequently a Subnet Manager queries the InfiniBand fabric for network changes.
Response Timeout	Maximum amount of time that the Subnet Manager waits for a response after it sends a packet to a port. If the Subnet Manager does not receive a response in time, the Subnet Manager identifies the port as unresponsive.
Master Poll Interval	Interval at which a slave Subnet Manager polls a master to see if it still runs.
Master Poll Retries	Number of unanswered polls that cause a slave to identify a master as dead.
Max Active SMs	Maximum number of standby Subnet Managers that a master supports. A value of 0 indicates unlimited Subnet Managers.
LID Mask Control	Number of path bits present in the base LID to each channel adapter port. Increasing the LMC value increases the number of LIDs assigned to each port to increase the number of potential paths to reach each port.
Switch Life Time	The lifetime of a packet inside a server switch. This value defaults to 20.

Table 8-1 Subnet Management Window, General Tab Fields (continued)

Field	Description
Switch Link HoQ Life	The lifetime of a packet at the head of queue of a switch port. This value defaults to 20.
CA Link HoQ Life	The lifetime of a packet at the head of queue of the host port. This value defaults to 20. **Note** This value is set automatically to the same value as Switch Link HoQ Life.
Maximum Hop Count	Specifies the number of hops. Range is from 0 to 64. Default is 64. A value of 0 causes the Subnet Manager to calculate and use the lowest possible value that will still ensure connectivity between all endpoints.
MAD Retries	Number of times that a Subnet Manager resends a MAD after not receiving a response. The default value is 5.
Node Timeout	Minimum amount of time in seconds that a HCA is unresponsive before the Subnet Manager removes it from the InfiniBand fabric. The default value is 10 seconds.
Wait Report Response	Whether or not a Subnet Manager waits to receive ReportResponse MADs in response to the Report MAD that it forwards. If this Boolean value is set to false, the Subnet Manager only sends the Report MADs once; if set to true, the Subnet Manager will continue to send the Report MADs until either the Report Response MAD is received or the maximum number of Report MADs have been sent. The default value is false.
SA MAD Queue Depth	Size of a Subnet Administrator internal queue for receiving MADs. The default value is 256.

See the "Configuring Subnet Manager Properties" procedure on page 8-4 for details on how to configure these properties.

Adding a Subnet Manager

To add a Subnet Manager to your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 In the navigation pane, click **Subnet Managers**.

The Subnet Managers display appears in the right pane of the window.

Step 3 Click **Add**.

The Add Subnet Manager window opens.

Step 4 In the Subnet Prefix field, enter a subnet prefix.

Step 5 In the Priority field, enter a subnet priority level.

Step 6 (Optional) In the smKey field, enter a subnet management key.

Step 7 (Optional) In the LID Mask Control field, enter a value to increase the number of LIDs assigned to each port to increase the number of potential paths to reach each port.

Step 8 Click **Add**.

The new Subnet Manager appears in the Summary table in the Subnet Managers display.

Removing a Subnet Manager

To remove a Subnet Manager from your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 In the navigation pane, click **Subnet Managers**.

The Subnet Managers display appears in the right pane of the window.

Step 3 In the Summary table in the Subnet Managers display, click the Subnet Manager that you want to remove.

Step 4 Click **Remove**.

The entry disappears from the display and the server switch configuration.

Configuring Subnet Manager Properties

The Subnet Managers navigation menu provides tuning for a number of system-wide attributes. These topics explain each attribute and describe how to configure it:

Configuring Subnet Manager Priority

Every Subnet Manager in the InfiniBand network carries a priority value, and at any given time the Subnet Manager with the highest integer value priority becomes the master Subnet Manager. To configure the Subnet Manager priority on your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Priority field, select the value, and replace it with the value you want to apply.

The integer value 15 has the highest priority.

Step 4 Click **Apply**.

Configuring the Sweep Interval

The sweep interval specifies how frequently the Subnet Manager queries the InfiniBand fabric for network changes. To configure the sweep interval on your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Sweep Interval field, select the value, and replace it with the value you want to apply.

This interval represents the number of seconds between sweeps.

Step 4 Click **Apply**.

Configuring Response Timeout

The response timeout of a Subnet Manager specifies the maximum amount of time that the Subnet Manager waits for a response after it sends a packet to a port. If the Subnet Manager does not receive a response in the response-time interval, the Subnet Manager identifies the port as unresponsive. To configure the response timeout, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Response Timeout field, select the value, and replace it with the value you want to apply.

The Subnet Manager measures the response timeout in milliseconds.

Step 4 Click **Apply**.

Configuring the Master Poll Interval

The master poll interval determines the interval at which the slave Subnet Manager polls the master to see if the master still runs. To configure the master poll interval, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Master Poll Interval field, select the value, and replace it with the value you want to apply.

The value represents the interval, in seconds.

Step 4 Click **Apply**.

Configuring the Number of Master Poll Retries

Master poll retries specifies the number of unanswered polls that cause a slave to identify a master as dead. To specify this value, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Master Poll Retries field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring the Maximum Supported Number of Active Standby Subnet Managers

Note To configure an unlimited number of active standby (slave) Subnet Managers, enter a value of 0. However, the limit set here is not enforced in this release.

To configure the maximum number of active standby Subnet Managers that the master Subnet Manager supports, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Max active SMs field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring LID Mask Control

Local ID mask control assigns the number of path bits present in the base LID to each channel adapter port. Increasing the LMC value increases the number of LIDs assigned to each port to increase the number of potential paths to reach each port. To configure LID mask control, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the LID Mask Control field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring Switch Lifetime

Switch lifetime is one parameter that governs the transmitter packet discard policy of switches in the subnet. It determines the lifetime of packets in a switch from the point of ingress to egress. If this parameter is set to 20 or greater, then switch lifetimes are infinite (default). See *InfiniBand Architecture Release 1.2, Volume 1* for more information. To configure the switch lifetime, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Switch Life Time field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring Switch Link HoQ Life

Switch link head of queue (HoQ) life determines how long an InfiniBand packet lives at the head of a switch port Virtual Lane (VL) queue before it is discarded. If this parameter is set to 20 or greater, then HoQ lifetimes are infinite (default). See *InfiniBand Architecture Release 1.2, Volume 1* for more information.

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Switch Link HoQ Life field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring Maximum Hop Count

We recommend that InfiniBand switch elements be connected so that all paths between any pair of switch elements are the same distance (same number of hops), if possible.

The range of values is from 0 to 64. Default is 64. A value of 0 causes the Subnet Manager to calculate and use the lowest possible value that will still ensure connectivity between all endpoints.

Note Selecting any nondefault value restricts the length of paths used by the Subnet Manager. The Subnet Manager might therefore select paths that are optimal for distance, but not for other factors, such as link capacity.

To configure the maximum number of hops for an InfiniBand Subnet Manager, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Maximum Hop Count field, select the value, and replace it with the value you want to apply.

Step 4 Click **Apply**.

Configuring MAD Retries

Management Diagram (MAD) retries specifies the number of times that a Subnet Manager resends a management datagram after not receiving a response. The default value is 5.

To configure MAD retries, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of subnet manager properties appears under the General tab.

Step 3 In the MAD Retries field, select the value, and replace it with the value that you want to apply.

Step 4 Click **Apply**.

Configuring Node Timeout

Node Timeout is the minimum amount of time in seconds that a HCA is unresponsive before the Subnet Manager removes it from the InfiniBand fabric. The default value is 10 seconds.

To configure the node timeout, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Node Timeout field, select the value, and replace it with the value that you want to apply.

Step 4 Click **Apply**.

Configuring Wait Report Response

Wait Report Response configures whether or not a Subnet Manager waits to receive Report Response MADs in response to the Report MAD that it forwards. If you set this Boolean value to false, the Subnet Manager only sends the Report MADs once; if you set it to true, the Subnet Manager will continue to send the Report MADs until either the Report Response MAD is received or the maximum number of Report MADs have been sent. The default value is false.

To configure the wait report response, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of Subnet Manager properties appears under the General tab.

Step 3 In the Wait Report Response field, check the **Enable** box.

Step 4 Click **Apply**.

Configuring Subnet Administrator MAD Queue Depth

This procedure configures the size of a Subnet Administrator internal queue for receiving MADs. The default value is 256.

To configure the Subnet Administrator MAD queue depth, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Click the Subnet Manager that you want to configure.

A table of subnet manager properties appears under the General tab.

Step 3 In the SA MAD Queue Depth field, select the value, and replace it with the value that you want to apply.

Step 4 Click **Apply**.

Viewing and Managing Database Synchronization

Element Manager provides multiple screens that you can use to view and configure database synchronization. This section describes the following tasks:

- Viewing Database Synchronization, page 8-10.
- Viewing Standby Subnet Managers that Synchronize with the Master Subnet Manager, page 8-11
- Configuring Database Synchronization, page 8-12
- Viewing Database Synchronization Active Subnet Manager, page 8-16

Viewing Database Synchronization

To view database synchronization details, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Manager window opens.

Step 2 Select a subnet

Step 3 Click the **Database Sync** tab.

Details appear in the table below the tab. Table 8-2 describes the fields.

Note Database synchronization is enabled by default.

Table 8-2 Subnet Management Window, Database Sync Tab Fields

Field	Description
SM Database Synchronization	Check box to enable or disable synchronization of the database with a standby subnet manager.
Max Backup SMs	The maximum number of backup subnet managers that will synchronize with the master subnet manager.
Session Timeout	The interval, in seconds, during which a synchronization session status management datagram packet must arrive at the master subnet manager to maintain synchronization.
Poll Interval	Interval at which the master subnet manager polls an active slave subnet manager to verify synchronization.
Cold Sync Timeout	Maximum amount of time in which subnet managers can perform a cold synchronization. During the cold-sync, the master subnet manager copies all out-of-sync tables to the standby subnet manager.
Cold Sync Limit	Maximum number of cold synchronizations that can take place during the cold-sync period.
Cold Sync Limit Period	Length in seconds of the interval during which cold-syncs can occur.
New Session Delay	Amount of time in seconds that the master subnet manager waits before it attempts to initiate a synchronization session with a new subnet manager.
Resync Interval	Specifies the interval at which the master subnet manager sends a resynchronization request to all active synchronization sessions.
State	Specifies whether or not the subnet manager is synchronized with the backup.

Viewing Standby Subnet Managers that Synchronize with the Master Subnet Manager

To view the database synchronization attributes for standby Subnet Managers that are synchronizing with the master Subnet Manager, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Manager window opens.

Step 2 Select a subnet.

Step 3 Click the **Subnet Managers Info**.

Step 4 In the right pane, click **Database Sync**.

The summary and details appear in the right pane. Table 8-3 describes the summary fields.

Table 8-3 Subnet Management Info, Database Sync Tab Summary Fields

Field	Descriptions
Port GUID	GUID of this port.
Entry State	Indicates the status of this entry in the Subnet Manager's database synchronization list.
State	State of the database synchronization session to the standby Subnet Manager.

Table 8-4 describes the Details fields.

Table 8-4 Subnet Management Info, Database Sync Tab Details Fields

Field	Descriptions
Entry State	Indicates the status of this entry in the Subnet Manager's database synchronization list.
Session State	State of the port during the current session.
State	State of the database synchronization session to the standby Subnet Manager.
Session Timeout Current	Timeout (in seconds) for receiving synchronization session status MAD packets in order to maintain synchronization.
Poll Interval Current	Interval (in seconds) the master Subnet Manager will send a synchronization session status request MAD packet to an active session.
ReSync Interval Current	Interval the master Subnet Manager will send a resynchronization request to all active synchronization sessions.
New Session Delay Current	Delay before attempting to initiate a synchronization session with a new subnet manager.

Configuring Database Synchronization

The database synchronization feature propagates information from the database of the master Subnet Manager to the standby Subnet Managers. These topics describe how to configure this feature:

- Enabling Subnet Manager Database Synchronization, page 8-13
- Configuring the Maximum Number of Backup Subnet Managers to Synchronize, page 8-13
- Configuring a Session Timeout, page 8-13
- Configuring the Poll Interval, page 8-14
- Configuring the Cold Synchronization Timeout Value, page 8-14
- Configuring the Cold Synchronization Limit Value, page 8-15
- Configuring the Cold Synchronization Limit Period, page 8-15
- Configuring the New Session Delay, page 8-15
- Configuring the Resynchronization Interval, page 8-16

- Viewing the Database Synchronization State, page 8-16

Enabling Subnet Manager Database Synchronization

If you are configuring more than one InfiniBand chassis in your fabric, you probably will want to enable database synchronization of the Subnet Managers.

Note This feature is enabled by default.

To enable Subnet Manager database synchronization to update standby Subnet Managers with information from the master Subnet Manager, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 Click the **Database Sync** tab in the right pane.

Step 4 In the SM Database Synchronization field, check the **Enable** check box.

Step 5 Click **Apply**.

Configuring the Maximum Number of Backup Subnet Managers to Synchronize

To configure the maximum number of backup Subnet Managers that will synchronize with the master Subnet Manager, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane, click the **Database Sync** tab.

Step 4 In the Max Backup SMs field, enter an integer value.

Step 5 Click **Apply**.

Configuring a Session Timeout

To configure the session timeout interval, in seconds, during which a synchronization session status MAD packet must arrive at the master Subnet Manager to maintain synchronization, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the Session Timeout field, enter an integer value.

This value determines the timeout duration, in seconds.

Step 5 Click **Apply**.

Configuring the Poll Interval

To configure the interval, in seconds, at which the master Subnet Manager polls an active slave Subnet Manager to verify synchronization, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

Step 2 The Subnet Management window opens.

Step 3 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 4 In the right pane of the display, click the **Database Sync** tab.

Step 5 Enter an integer value in the Poll Interval field.

This value sets the poll interval, in seconds.

Step 6 Click **Apply**.

Configuring the Cold Synchronization Timeout Value

To configure the amount of time, in seconds, that a cold synchronization tries to initiate before it times out, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the **Cold Sync Timeout** field, enter an integer value.

This value sets the timeout interval, in seconds.

Step 5 Click **Apply**.

Configuring the Cold Synchronization Limit Value

To configure the maximum number of cold synchronizations to perform during a given cold synchronization period, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the Cold Sync Limit field, enter an integer value.

This value sets the maximum number of synchronizations that can occur during the synchronization period. (See "Configuring the Cold Synchronization Limit Period" section on page 8-15.)

Step 5 Click **Apply**.

Configuring the Cold Synchronization Limit Period

To specify the length of the interval during which cold synchronizations may occur, follow these steps:

Step 1 From the **InfiniBand** menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the Cold Sync Limit Period field, enter an integer value.

This value sets the length of the interval during which cold synchronizations may occur.

Step 5 Click **Apply**.

Configuring the New Session Delay

To configure the amount of time that the master Subnet Manager waits before it attempts to initiate a synchronization session with a new Subnet Manager, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the New Session Delay field, enter an integer value.

This value determines the amount of time, in seconds, that the master Subnet Manager waits before it attempts to initiate a synchronization session with a new Subnet Manager.

Step 5 Click **Apply**.

Configuring the Resynchronization Interval

To specify the interval at which the master Subnet Manager sends a resynchronization request to all active synchronization sessions, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Click the Subnet Manager that you want to configure.

Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 In the Resync Interval field, enter an integer value.

This value specifies the interval, in seconds, at which the master Subnet Manager sends a resynchronization request to all active synchronization sessions.

Step 5 Click **Apply**.

Viewing the Database Synchronization State

To view the database synchronization state and verify that the master Subnet Manager and slave Subnet Manager(s) are synchronized, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Select the Subnet Manager with the state you wan to view.

Step 3 In the right pane of the display, click the **Database Sync** tab.

Step 4 Look at the **State** field.

Viewing Database Synchronization Active Subnet Manager

To view the list of standby databases that are synchronizing with the master subnet manager and their synchronization status follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

The Subnet Manager window opens.

Step 2 Click **DB Sync Active SM** tab.

Table 8-5 describes the fields in this tab.

Table 8-5 DB Sync Active SM fields

Fields	Descriptions
Subnet Prefix	Displays the subnet for which the table is reported to.
Port GUID	Displays the guid of the standby Subnet Manager.
Entry State	Displays the status of this entry in the Subnet Manager's database synchronazation list.
Session State	Displays the status of the database synchronization session between the master Subnet Manager and the standby Subnet Manager.
State	Displays the synchronization status of the standby Subnet Manager
Session Timeout	Displays the database synchronization heartbeat interval (in seconds) between the master and standby Subnet Manager.
Poll Interval Current	Displays the frequency at which a master subnet manager polls an active database synchronization session status
ReSync Interval Current	Displays the periodicity at which the master subnet manager attempts to resynchronize with a standby Subnet Manager .
New Session Delay Current	Displays the number of seconds the master Subnet Manager will wait after the standby Subnet Manager's initial discovery, before it attempts to establish a database synchronization session with the master Subnet Manager.

Viewing and Managing Nodes and Ports

This section provides procedures for performing the following tasks:

- Viewing Node Information, page 8-17
- Viewing Port Information, page 8-18
- Routing Around Nodes and Ports, page 8-24

Viewing Node Information

To view Subnet Manager node information, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Expand the Subnet Manager that you want to view.

Step 3 Select **Nodes**.

The Nodes in Subnet tab displays the Node GUID, Type, Description, Number of Ports, System Image GUID, and the Vendor ID information. See Table 8-6 for details.

Step 4 Click **Show Advanced** to display the additional information about each of the nodes in the subnet. This information includes Base Version, Class Version, Port GUID, Partition Cap, Device ID, Revision, and Local Port Number. Table 8-6 describes these fields.

Table 8-6 Nodes in Subnet Tab Fields

Field	Description
Node GUID	64-bit globally unique identifier of the node.
Type	Type of node being managed. The value appears as channel adapter, switch, router, or error. An error entry indicates an unknown type.
Description	Text string describing the device.
Number of Ports	Number of physical ports on the node.
System Image GUID	GUID of an associated supervisory node. No supervisory node exists if the output displays 00:00:00:00:00:00:00:00.
Vendor ID	Device vendor ID. The value appears the same for all ports on the node.
Base Version	Supported base management datagram (MAD) version. Indicates that this channel adapter, switch, or router supports versions up to and including this version. See section 13.4.2, “Management Datagram Format,” in *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
Class Version	Supported MAD class format version. Indicates that this channel adapter, switch, or router supports versions up to, and including, this version.
Port GUID	GUID of this port. One port within a node can return the node GUID as its Port GUID if the port is an integral part of the node.
Partition Cap	Capacity of entries in the partition table for channel adapter, router, and the switch management port. The value appears the same for all ports on the node. This defaults to at least 1 for all nodes including switches. You cannot configure this value.
Device ID	Manufacturer-assigned device identification.
Revision	Manufacturer-assigned device revision.
Local Port Number	The link port number from which this subnet management packet (SMP) arrived. The value appears the same for all ports on the node.

Viewing Port Information

To view information about specific ports, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Expand the Subnet Manager with ports you want to view.

Step 3 Select **Nodes**.

Step 4 Expand **Nodes.**

Step 5 Expand the computer icon for the node with ports you want to view

Step 6 Select a specific port to see the information described in Table 8-7. Figure 8-1 shows a sample display.

Figure 8-1 Individual Port Information

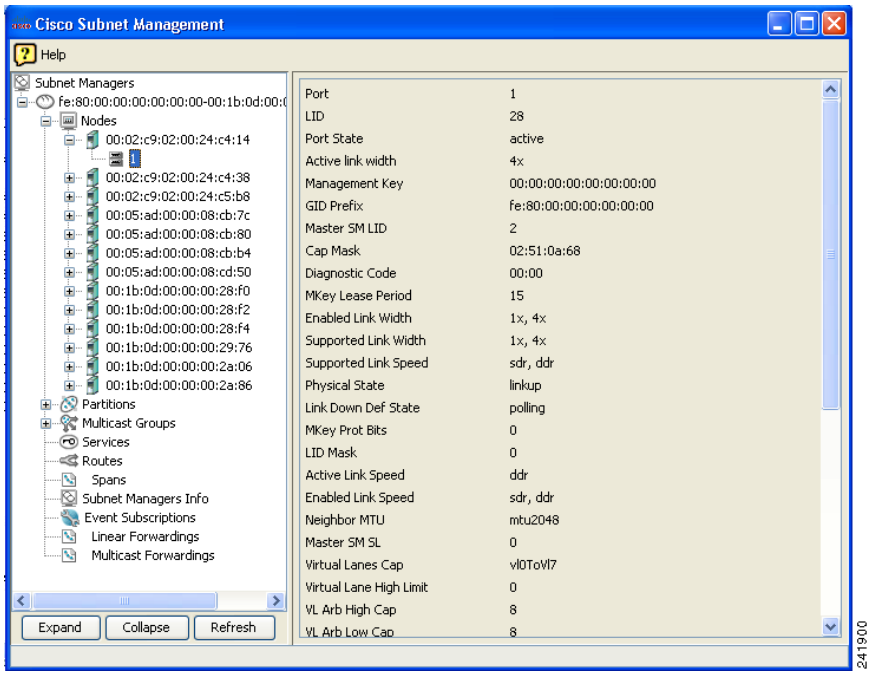

Table 8-7 Ports Field Descriptions

Field	Description
Port	Local port number for this port.
LID	16-bit base LID of this port.
Port State	State of the port, as follows: • noStateChange • sleep • polling • disabled • portConfigurationTraining • linkup • linkErrorRecovery • reserved • active • down
Active link width	Used in conjunction with Active Link Speed to determine the link rate between two nodes. The value appears as 1x, 4x, or 12x.
Management Key	64-bit management key for this port. See section 14.2.4, "Management Key" and 3.5.3, "Keys," in *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
GID Prefix	64-bit Global identifier prefix for this port. The subnet manager assigns this prefix based upon the port routes and the rules for local identifiers. See section 4.1.3, "Local Identifiers," in *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
Master SM LID	16-bit base LID of the master subnet manager managing this port.
Cap Mask	The capability mask identifies the functions that the host supports. 32-bit bitmask that specifies the supported capabilities of the port. A bit value of 1 (one) indicates a supported capability. The bits are 0, 11-15, 18, 21-31 (Reserved and always 0.), 1 IsSM, 2 IsNoticeSupported, 3 IsTrapSupported, 4 IsResetSupported, 5 IsAutomaticMigrationSupported, 6 IsSLMappingSupported, 7 IsMKeyNVRAM (supports M_Key in NVRAM), 8 IsPKeyNVRAM (supports P_Key in NVRAM), 9 Is LED Info Supported, 10 IsSMdisabled, 16 IsConnectionManagementSupported, 17 IsSNMPTunnelingSupported, 19 IsDeviceManagementSupported, 20 IsVendorClassSupported.Values are expressed in hexadecimal.
Diagnostic Code	16-bit diagnostic code. See section 14.2.5.6.1 "Interpretation of Diagcode," in *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information. This field does not currently apply to your server switch.
MKey Lease Period	Initial value of the lease-period timer, in seconds. The lease period is the length of time that the M_Key protection bits are to remain non-zero after a SubnSet (PortInfo) fails an M_Key check. After the lease period expires, clearing the M_Key protection bits allows any subnet manager to read (and then set) the M_Key. Set this field to 0 to indicate that the lease period never expires. See *InfiniBand Architecture®, Vol. 1, Release 1.1*, section 14.2.4, "Management Key."

Table 8-7 Ports Field Descriptions (continued)

Field	Description
Enabled Link Width	Enabled link width (bandwidth). The value can be one of the following: • no state change • 1x • 4x • 1x, 4x • 8x • 1x, 8x • 4x, 8x • 1x, 4x, 8x • 12x • 1x, 12x • 4x, 12x • 1x, 4x, 12x • 8x, 12x • 1x, 8x, 12x • 4x, 8x, 12x • 1x, 4x, 8x, 12x • reserved • linkwidthsupported value
Supported Link Width	Supported link width. The value appears as one of the following: • 1x, • 1x, 4x • 1x, 4x, 8x • 1x, 4x, 12x, • 1x, 4x, 8x, 12x • reserved
Supported Link Speed	Supported link speed. The value appears as one of the following: • sdr • sdr, ddr
Physical State	Indicates the physical state of the port, whether or not electricity flows between nodes and that they can perform a handshake. The value appears as noStateChange, sleeping, polling, disabled, portConfigurationTraining, linkup, or linkErrorRecovery. The state, upon power-up, defaults to polling.
Link Down Def State	Default LinkDown state to return to. The value appears as noStateChange, sleeping, or polling. See section 5.5.2, “Status Outputs (MAD GET),” *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
MKey Prot Bits	Management key protection bits for the port. The bits are 0, 1, 2, and 3. See section 14.2.4.1, “Levels of Protection,” *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.

Table 8-7 Ports Field Descriptions (continued)

Field	Description
LID Mask	Local identifier (LID) mask control (LMC) for multipath support. LMC resides on each channel adapter and router port on the subnet. It provides multiple virtual ports within a single physical port. The value of the LMC specifies the number of path bits in the LID. A value of 0 (zero) indicates one LID can apply to this port. See sections 3.5.10, "Addressing," and 4.1.3, "Local Identifiers," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
Active Link Speed	Speed of an active link. The value appears as one of the following: • sdr • ddr
Enabled Link Speed	Maximum speed that the link can handle. The value appears as one of the following: • sdr • ddr • sdr, ddr
Neighbor MTU	Active maximum transmission unit (MTU) enabled on this port for transmit. Check the MTU cap value at both ends of every link and use the lesser speed. The value appears as 256, 512, 1024, 2048, or 4096.
MasterSmSL	Administrative service level required for this port to send a non-SMP message to the subnet manager.
Virtual Lanes Cap	Maximum range of data virtual lanes supported by this port. The value appears as vl0, vl0-Vl1, vl0-Vl3, vl0-Vl7, or vl0-Vl14. See also oper-VL. Each port can support up to 15 virtual lanes (VLs 0 - 15). The VL-cap field displays the range of those lanes (for example, lanes 0 - 7) that the port currently supports.
Virtual Lane High Limit	Maximum high-priority limit on the number of bytes allowed for transmitting high-priority packets when both ends of a link operate with multiple data virtual-lanes. Used with the virtual-lane arbitration table. The maximum high-limit matches the VLArbHighCap on the other side of the link and then negotiating downward.
VLArbHighCap	Highest arbitration value allowed by the arbiter in determining the next packet in a set of packets to send across the link. Used with the virtual-lane arbitration table and specified as a VL/Weight pair. See section 14.2.5.9, "VL Arbitration Table," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
VLArb Low Cap	Lowest arbitration value allowed by the arbiter in determining the next packet in a set of packets to send across the link. Used with the virtual-lane arbitration table and specified as a VL/Weight pair. See section 14.2.5.9, "VL Arbitration Table," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
MTU Cap	Used in conjunction with Neighbor MTU to determine the maximum transmission size supported on this port. The lesser of MTU cap and Neighbor MTU determines the actual MTU used. The value appears as 256, 512, 1024, 2048, or 4096.
VL Stall Count	Number of sequentially dropped packets at which the port enters a VLStalled state. The virtual lane exits the VLStalled state (8 * HLL) units after entering it. See section 18.2.5.4, "Transmitter Queuing," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for a description of HLL.

Table 8-7 Ports Field Descriptions (continued)

Field	Description
HOQ Life	Maximum duration allowed to packets at the head of a virtual-lane queue. Used with VL Stall Count to determine the outgoing packets to discard.
Oper VL	Administrative limit for the number of virtual lanes allowed to the link. Do not set this above the Virtual Lanes Cap value. The value appears as vl0, vl0-Vl1, vl0-Vl3, vl0-Vl7, or vl0-Vl14.
In Partition Enforcement	Boolean value that indicates whether or not to support optional partition enforcement for the packets that were received by this port. No default value applies.
Out Partition Enforcement	Boolean value that indicates whether or not to support optional partition enforcement for the packets transmitted by this port. No default value applies.
In Filter RawPacket Enforcement	Boolean value that indicates whether or not to support optional raw packet enforcement for the raw packets that were received by this port. No default value applies.
Out Filter RawPacket Enforcement	Boolean value that indicates whether or not to support optional raw packet enforcement for the raw packets transmitted by this port. No default value applies.
MKeyViolation	Number of subnet management packets (SMPs) that have been received on this port with invalid M_Keys since initial power up or the last reset. See section 14.2.4, "Management Key," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
PKeyViolation	Number of subnet management packets that have been received on this port with invalid P_Keys since initial power up or the last reset. See section 9.2.7, "Partition Key (P_KEY)," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
QKeyViolation	Number of subnet management packets that have been received on this port with invalid Q_Keys since initial power up or the last reset. See section 10.2.4, "Q Keys," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
GUID Cap	Number of GUID entries allowed for this port in the port table. Any entries that exceed this value are ignored on write and read back as zero. See section 14.2.5.5, "GUIDCap," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
Subnet Timeout	Maximum propagation delay allowed for this port to reach any other port in the subnet. This value also affects the maximum rate at with traps can be sent from this port. Switch configuration affects delay. Requestors can use this parameter to determine the interval to wait for a response to a request. Duration matches (4.096 ms * 2^SubnetTimeout).
Response Time	Maximum time allowed between the port reception of a subnet management packet and the transmission of the associated response. See section 13.4.6.2, "Timers and Timeouts," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.

Table 8-7 Ports Field Descriptions (continued)

Field	Description
Local Phys Error	Threshold at which ICRC, VCRC, FCCRC, and all physical errors result in an entry into the BAD PACKET or BAD PACKET DISCARD states of the local packet receiver. See section 7.12.2, "Error Recovery Procedures," *InfiniBand Architecture®, Vol. 1, Release 1.1*, for more information.
Local Overrun Error	Threshold at which the count of buffer overruns, across consecutive flow-control update periods, results in an overrun error. A possible cause of such errors is when an earlier packet has physical errors and the buffers are not immediately reclaimed.

Routing Around Nodes and Ports

These topics describe how to route around nodes and ports using the Nodes displays:

- Routing Around Nodes, page 8-24
- Routing Around Ports, page 8-25

For a complete discussion of routing around components, including routing around chassis, see the "Routing Around Components in an InfiniBand Network" section on page 8-34.

Routing Around Nodes

To route around a node or to re-include a node that had previously been excluded, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Expand the Subnet Manager that manages the node you want to work on.

Step 3 Expand **Nodes.**

A list of nodes managed by the Subnet Manager appears in the left pane.

Step 4 Select the node you want to exclude from routing calculations or include in routing calculations.

Step 5 Right-click the highlighted node.

Step 6 Select **Start Routing Around** or **Stop Routing Around**.

Routing Around Ports

To route around a port, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens. Each Subnet Manager appears in the navigation pane with a Subnet Manager icon ( ).

Step 2 Expand the Subnet Manager that you want to view.

Step 3 Expand **Nodes.**

A list of nodes managed by the Subnet Manager appears in the left pane.

Step 4 Expand the node containing the port you want to work on.

Step 5 Select the port you want to exclude from routing calculations or to include in routing calculations.

Step 6 Right-click the highlighted port.

Step 7 Select **Start Routing Around** or **Stop Routing Around**.

Viewing and Managing Partitions

This section provides procedures for performing the following tasks:

Viewing Partitions

To view the partitions on your InfiniBand network, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with partitions that you want to view.

The navigation menu expands.

Step 3 Click the **Partitions** ( ) branch.

The partitions summary appears in the right pane. Table 8-8 describes the fields in this pane.

Table 8-8 Partitions Summary Field Descriptions

Field	Description
Partition Key	Partition key (numeric identifier) of the partition.
Full Member Count	Number of full partition members.
Limited Member Count	Number of limited partition members.
IPoIB	Specifies whether IPoIB is enabled for this partition.

Creating a Partition

To create an InfiniBand partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager under which you want to create a partition.

Step 3 Select the **Partitions** ( ) branch.

Step 4 Click **Add**.

The Add Partition window opens.

Step 5 In the PKey field, enter a partition key for the new partition.

Step 6 Check the **IPoIB** check box to enable or uncheck to disable IPoIB for the partition.

Step 7 Click **OK**.

Removing a Partition

To delete a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with partition that you want to delete.

Step 3 Expand the **Partitions** ( ) branch.

Step 4 Click the partition in the Summary display that you want to remove, and then click **Remove**.

Enabling or Disabling IPoIB for a Partition

Disabling IPoIB removes all current multicast group members and prevents further multicast joins. To enable or disable IPoIB on a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the partitions for which you want to enable or disable IPoIB.

The navigation menu expands.

Step 3 Click the **Partitions** ( ) branch.

The partitions summary appears in the right pane.

Step 4 Click on the summary line of the partition for which you want to enable or disable IPoIB.

Step 5 Click **Edit**.

The Add Partition window opens.

Step 6 Check the **IPoIB** check box to check (enable) or uncheck (disable) IPoIB for the partition.

Step 7 Click **OK**.

Viewing Partition Details

To view partition details, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with partitions that you want to view.

Step 3 Expand the **Partitions** ( ) branch to display all partitions.

Step 4 Click the partition key of the partition with details that you want to view.

The members (full and limited) of the partition appear in the display.

Note To view the GUIDs of the Server Switch management ports in the display, click **Show Switch Mgmt Ports**. Click **Hide Switch Mgmt Ports** to remove these GUIDs from the display.

Adding Full Members to a Partition

Full members of a partition can communicate to other full members and to limited members.

These topics describe how to add full members to a partition:

- Adding Available Members to a Partition, page 8-28
- Adding Unavailable Members to a Partition, page 8-28

Adding Available Members to a Partition

To add available members to a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the partition to which you want to add a member.

Step 3 Expand the **Partitions** ( ) branch to display all partitions in the navigation menu.

Step 4 Select the partition key of the partition to which you want to add members.

The members (full and limited) of the partition appear in the display.

Step 5 In the Available Members field, click the port that you want to add to the partition, and then click the right arrow next to the Full Members field.

Adding Unavailable Members to a Partition

To add unavailable members (members that do not appear in the Available Members pool) to a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the partitions to which you want to add a member.

Step 3 Expand the Partitions ( ) branch to display all partitions in the navigation menu.

Step 4 Click the partition key of the partition to which you want to add members.

The members (full and limited) of the partition appear in the display.

Step 5 Click **Add Other**.

The Add Other Partition Member window opens.

Step 6 In the Node GUID field, enter the GUID of the host that includes the port(s) that you want to add to the partition.

Step 7 In the Port field, specify the port(s) that you want to add to the partition.

Step 8 Click the **Full** radio button, and then click **Add**.

Adding Limited Members to a Partition

Limited members of a partition can communicate with full members of the partition but not with other limited members.

These topics describe how to add limited members to a partition:

- Adding Available Limited Members, page 8-29
- Adding Unavailable Members, page 8-29

Adding Available Limited Members

To add available limited members to a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the partition to which you want to add a member.

The navigation menu expands.

Step 3 Expand the **Partitions** ( ) branch to display all partitions in the navigation menu.

Step 4 Click the partition key of the partition to which you want to add members.

The members (full and limited) of the partition appear in the display.

Step 5 In the Available Members field, click the port that you want to add to the partition, and then click the right arrow next to the Limited Members field.

Adding Unavailable Members

To add an unavailable member (member does not appear in the Available Members pool) to a partition, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the partition to which you want to add a member.

Step 3 Expand the **Partitions** ( ) branch to display all partitions in the navigation menu.

Step 4 Select the partition key of the partition to which you want to add members.

The members (full and limited) of the partition appear in the display.

Step 5 Click **Add Other**.

The Add Other Partition Member window opens.

Step 6 In the Node GUID field, enter the GUID of the node that includes the port(s) that you want to add to the partition.

Step 7 In the Port field, specify the port(s) that you want to add to the partition.

Step 8 Click the **Limited** radio button, and then click **Add**.

Viewing and Managing Multicast Groups

This section provides procedures for performing the following tasks:

Viewing Multicast Groups

To view the multicast groups on your InfiniBand network, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with partitions that you want to view.

The navigation menu expands.

Step 3 Select the **Multicast Groups** ( ) branch.

The multicast groups summary appears in the right pane. Table 8-9 describes the fields in this pane.

Table 8-9 Multicast Group Summary Field Descriptions

Field	Description
MGID	Numeric multicast group identifier of each multicast group on the InfiniBand fabric.
QKey	16-bit Q-Key of this multicast group.
MTU	Maximum transmission unit of the multicast group.
PKey	Partition key of the multicast group.

Viewing Multicast Group Details

To view multicast group details, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with multicast groups that you want to view.

The navigation menu expands.

Step 3 Expand the **Multicast Groups** ( ) branch to display all groups in the navigation menu.

Step 4 Click the MGID of the multicast group with details that you want to view, and then click the **General** tab.

Multicast group details appear in the display. Table 8-10 describes the fields in this display.

Table 8-10 Multicast Group General Details Field Descriptions

Field	Description
QKey	16-bit Q-Key of this multicast group.
MLID	16-bit LID of this multicast group
MTU	Maximum transmission unit of the multicast group.
TClass	Traffic class for the multicast group.
PKey	16-bit partition key for this multicast group.
Rate	Traffic rate of this multicast group.
Packet Life Time	Maximum estimated time for a packet to traverse a path within the multicast group.
SL	Service level of this multicast group.
Flow Label	Flow label used for this multicast group.
Hop Limit	Identifies the maximum number of hops a packet can take before being discarded.
Scope	Scope of this multicast group.
User Configured	Displays true if a user configured the entry; otherwise displays false.

Viewing Multicast Group Members

To view multicast group members, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with multicast groups that you want to view.

The navigation menu expands.

Step 3 Expand the **Multicast Groups** ( ) branch to display all groups in the navigation menu.

Step 4 Click the MGID of the multicast group with details that you want to view.

Multicast group members appear in a table at the bottom of the display. Table 8-11 describes the fields in this display.

Table 8-11 Multicast Group Members Field Descriptions

Field	Description
Port GID	Global identifier of a port that belongs to the multicast group.
Join State	Displays whether the port is a full member or limited member of the group.
Proxy Join Status	This field displays false except for trusted requests. For details, see *InfiniBand Architecture®, Vol. 1, Release 1.1*.

Adding Multicast Groups

To configure multicast groups, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Manager window opens.

Step 2 Expand a subnet.

Step 3 Select **Multicast Groups**.

Step 4 Click **Add**.

Step 5 From the drop-down list, select **MGID**.

Step 6 In the Multicast Group ID field, enter an MGID.

Step 7 (Optional) In the QKey field, enter a queue key.

Step 8 In the MTU field, select a value to configure the maximum transmission unit of the group.

Step 9 In the PKey field, enter a partition key.

Step 10 In the Rate field, select a rate.

Step 11 In the Service Level field, enter an integer value (between 0 and 15).

Step 12 Click **Add**.

Note The TClass, Packet Lifetime, Flow Label, and Hop Limit attributes are not supported in this release.

Adding IPoIB Broadcast Multicast Groups

To configure IPoIB broadcast multicast groups, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Manager window opens.

Step 2 Expand a subnet.

Step 3 Select **Multicast Groups**.

Step 4 Click **Add**.

Step 5 From the drop-down list, choose **IPoIB**.

Step 6 (Optional) In the QKey field, enter a queue key.

Step 7 From the drop-down list, select an MTU value.

Step 8 Enter a partition key in the PKey field.

Step 9 From the Rate field, select a data rate.

Step 10 In the Service Level field, enter an integer value (between 0 and 15).

Step 11 In the Scope field, choose a scope value.

Step 12 Click **Add**.

Note The TClass, Packet Lifetime, Flow Label, and Hop Limit attributes are not included in this release.

Viewing and Managing InfiniBand Routes

This section provides procedures for performing the following tasks:

- Viewing InfiniBand Routes, page 8-33
- Routing Around Components in an InfiniBand Network, page 8-34
- Removing Routes from the Route-Around Table, page 8-36

Viewing InfiniBand Routes

To view the route between a pair of LIDs in the InfiniBand fabric, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the **Subnet Managers** with services that you want to view.

Step 3 Select the **Routes** ( ) branch.

Step 4 Click the **Route Filter** tab.

InfiniBand routes fields appear in the right pane.

Step 5 In the Source LID field, enter the source LID of the route.

Step 6 In the Destination LID field, enter the destination LID of the route.

Step 7 Click **Show Route**.

Step 8 Click the **Switch Route** tab.

Table 8-12 describes the fields under the Switch Route tab.

Table 8-12 Switch Route Field Descriptions

Field	Description
Node GUID	Global unique ID of the node.
In Port	Port of ingress.
Out Port	Port of egress.

Step 9 Click the **Switch Element Route** tab.

Table 8-13 describes the fields under the Switch Element Route tab.

Table 8-13 Switch Element Route Field Descriptions

Field	Description
Chassis GUID	Global unique ID of the node.
In Port	Port of ingress.
Out Port	Port of egress.

Routing Around Components in an InfiniBand Network

To route around a chassis, nodes, or ports that are accumulating errors or to route around a component that you want to remove, follow the steps outlines in the subsections that follow.

Uses of this feature include the following:

- Isolating ports that have accumulated errors to avoid a potential job failure. The route-around feature enables you to stop traffic from passing over a link while a job is still running, without disrupting the job.
- Isolating a specific component, such as an InfiniBand switch card, allowing that component to be removed without the potential for job failure. You might do this, for example, before component upgrade or other replacement.

Caution The route-around feature has the potential to exclude any chassis, node, or port from routing calculations to the extent that it is possible to disable entirely a connection between a pair of endpoints. Use care to avoid segmenting the InfiniBand fabric when using this feature.

Note You can also route around nodes or ports (but not chassis) from the Nodes table as described in the "Routing Around Nodes and Ports" section on page 8-24.

These topics describe how to route around components in an InfiniBand network:

Viewing Route-Around Information

To view active route-around operations, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with services that you want to view.

Step 3 Select the **Routes** () branch.

Step 4 Click the **Route Around** tab.

Excluded routes appear in the right pane. Table 8-14 describes the fields in the pane.

Table 8-14 Route Around Tab Field Descriptions Pane

Field	Description
Type	Type of component excluded. Possible values are port, node, and chassis.
GUID	GUID of the excluded node, chassis, or node of the excluded port.
Port Number	Excluded port number.

Adding Routes to the Route-Around Table

To add a component to the route-around table, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the routing information that you want to change.

Step 3 Select the **Routes** () branch.

Step 4 Click the **Route Around** tab.

Step 5 Click **Add**..

A Route Around dialog box appears.

Step 6 In the Add Route Around dialogue box, define the route you want to exclude from routing calculations:

a. In the Type drop-down menu, select the **Port**, **Node**, or **Chassis** to be excluded.

b. In the GUID field, enter the GUID of the node or chassis.

c. In the Port Number field, specify the port number if you selected Port from the Type drop-down menu.

Step 7 Click **Add**.

Removing Routes from the Route-Around Table

To remove a route-around from the table, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with the routing information that you want to change.

Step 3 Select the **Routes** ( ) branch.

Step 4 Click the **Route-Around** tab.

Step 5 Select the route-around that you want to remove from the table.

Step 6 Click **Remove**.

Viewing InfiniBand Services

To view the InfiniBand services that run on your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with services that you want to view.

Step 3 Click the **Services** ( ) branch.

Details of InfiniBand services appear in the right pane. Table 8-15 describes the fields in the Summary section of the pane.

Table 8-15 Services Summary Field Descriptions Pane

Field	Description
Name	ASCII identifier of the service.
Service Id	Numeric identifier that nodes use to call the service.
Service GID	64-bit ID of the service.
PKey	16-bit multicast GID address.

Viewing and Managing Port Spans

Switched Port Analyzer (SPAN) feature enables users to mirror the packets ingressing from one switch port to one or more specified ports (destination). With this feature you can mirror traffic only to ports on the same switch.

Note The SPAN feature is not supported by SFS 3001 and SFS 3012 server switches.

These topics describe procedures for performing the following tasks:

- Viewing Port SPAN, page 8-37
- Adding a Port SPAN, page 8-37
- Removing a Port SPAN, page 8-38
- Viewing Port Span Route, page 8-38

Viewing Port SPAN

To view the SPAN on your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with services that you want to view.

Step 3 Click the **Spans** branch.

Details of InfiniBand SPANs appear in the right pane. Table 8-16 describes the fields in the Summary section of the display.

Table 8-16 SPAN Field Descriptions

Field	Description
Source Node GUID	The 64-bit GUID of the source node.
Source Port Number	Port number of the source node port whose incoming packets are mirrored.
Destination Node GUID	The 64-bit GUID of the destination node.
Destination Port Number	Port number of the destination node port where the mirrored are received.
Status	Status of the port SPAN that is represented by this row.
Status Detail	Status details of the port SPAN that is represented by this row.

Adding a Port SPAN

To add a port SPAN to your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with services that you want to view.

Step 3 Click the **Spans** branch.

Details of SPANs appear in the right pane.

Step 4 To add a new Port SPAN, click **Add**.

The Add Port Span window opens.

Step 5 In the Source Node GUID field, enter source GUID.

Step 6 In the Source Port Number enter a valid port number.

Step 7 In the Destination Node GUID, enter the destination GUID.

Step 8 In the Destination Port Number, enter a valid port number.

Step 9 Click **Add**.

Removing a Port SPAN

To remove a port SPAN from your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with services that you want to view.

Step 3 Click the **Spans** branch.

Details of SPANs appear in the right pane.

Step 4 In the right pane, click the port SPAN that you want to delete.

Step 5 Click **Remove**.

Viewing Port Span Route

To view the port SPAN route information on your server switch, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

The Subnet Management (tabular format) window opens.

Step 2 Click the **Port Span Route** tab.

Table 8-17 describes the fields under the Port Span Route tab.

Table 8-17 Port Span Route

Fields	Description
Subnet Prefix	Subnet prefix of this IB subnet.
Source Node GUID	The 64-bit GUID of the source node.

Table 8-17 Port Span Route (continued)

Fields	Description
Source Port Number	Port number of the source node port whose incoming packets are mirrored.
Destination Node GUID	The 64-bit GUID of the destination node.
Destination Port Number	Port number of the destination node port where the mirrored packets are received.
Hop Index	Index identifying the current hop in the port span route.
Node GUID	The 64-bit GUID of the node at this hop in the route.
In Port Number	Ingress port number at the hop.
Out Port Number	Egress port number at this hop.
Subnet Prefix	Subnet prefix of this IB subnet.
Source Node GUID	The 64-bit GUID of the source node.
Source Port Number	Port Number of the source node port whose incoming packets are mirrored.

Viewing Other Subnet Managers Information

To view information on other Subnet Managers in the network, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with neighbor Subnet Managers that you want to view.

The navigation menu expands.

Step 3 Expand **Subnet Managers Info**.

The Port GUID, Priority, and Subnet Manager state information appears in the right pane.

Table 8-18 describes the fields in the Details pane.

Table 8-18 Subnet Managers Information Details Pane

Field	Description
Port GUID	Displays the port GUID of the networking device on which the Subnet Manager runs.
SM Key	64-bit subnet management key assigned to the Subnet Manager. The Subnet Manager key serves as the prefix of all GIDs and brands nodes as members of this subnet.
Activity Count	Activity counter that increments each time the Subnet Manager issues a subnet management packet (SMP) or that performs other management activities.
Priority	Priority of the Subnet Manager relative to other Subnet Managers in the network. The number 15 has the highest priority.
SM State	State of the Subnet Manager.

Note This menu provides information on subnet managers that are not local to the chassis to which an Element Manager is connected.

Viewing Event Subscriptions

To view the Subnet Management event subscriptions information, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

The Subnet Management window opens.

Step 2 Expand the Subnet Manager with event subscriptions that you want to view.

The navigation menu expands.

Step 3 Choose **Event Subscriptions**.

The LID, Node GUID, and Port Number information appears in the right pane.

Table 8-19 describes the fields under Subnet Management Event Subscriptions Details.

Table 8-19 Subnet Management Event Subscriptions Details Pane

Field	Description
LID	Local ID of the subscriber.
Node GUID	Global unique ID of the subscriber node.
Port Number	Port number of the subscriber.
Source QPN	24-bit source queue pair number of the subscriber.
GID	Global ID.
LID Range Start	Lowest legal Local ID number.
LID Range End	Highest legal Local ID number.
Is Generic	If ‘true,” forward all generic traps. If “false,” forward all vendor-specific traps.
Type	Type of trap for which you subscribed.
Trap Number Device ID	If generic, this is the trap number for which you subscribed. If not generic, this is the device ID for which you subscribed. 0xFFFF means forward all trap numbers/device IDs.
Response Time Value	Response time value of the subscriber.
Producer Type Vendor ID	If not generic, this is the 24-bit IEEE OUI assigned to the vendor.

Viewing Forwarding Tables

This section provides procedures for performing the following tasks:

Viewing Multicast Forwarding Information

To view the multicast forwarding configuration, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

Step 2 Click the **MulticastForwardings** tab.

Table 8-20 describes the information that appears.

Table 8-20 Multicast Forwarding Entries

Field	Description
Node Guid	GUID of the switch node in the subnet with the FDB that you want to access.
MLID	Local ID of the multicast group.
Port Mask 0	Shows to which ports a multicast packet for the given LID will be transmitted.
Port Mask 1	Port mask.

Viewing Linear Forwarding Information

To view the linear forwarding configuration, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management**.

Step 2 Click the **LinearForwardings** tab.

Table 8-21 describes the displayed fields.

Table 8-21 Linear Forwarding Entries

Field	Description
Node Guid	GUID of the switch node in the subnet with the FDB that you want to access.
LID	Local ID.
Port Number	Port number of the port through which the given LID will be forwarded.

Viewing and Managing Arbitration Profiles

These topics describe procedures for performing the following tasks:

Viewing SLtoVLMapping Table of Switches

To view the SLtoVLMapping table of switches, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

Subnet Management window (tabular format) opens.

Step 2 Click the **SLtoVLMappingTables of Switches** tab.

Table 8-22 describes the fields.

Table 8-22 SLtoVL Mapping Tables of Switches

Field	Description
SubnetPrefix	64-bit value used to identify an IB subnet.
NodeGUID	64-bit globally unique identifier of the node.
InPortNum	The input port of the IB packet.
OutPortNum	The output port of the IB packet.
SLMapping	An array of 16 elements representing the SL to VL mapping for a switch node's input/output port pair. Each element is one octet in size and represents the value of the VL that an SL is mapped to. The value of the SL is implicit in the index of an element. For example, value at index 0 represents the SL0 to VL mapping, value at index 1 represents SL1 to VL mapping, and so on.

Viewing SLtoVLMapping Table of CAs

To view SLtoVL mapping table of CAs, follow these steps:

Step 1 From the **InfiniBand** menu, choose **Subnet Management** (tabular format).

Subnet Management window (tabular format) window opens.

Step 2 Click the **SLtoVL Mapping Table of CAs** tab.

Table 8-23 describes the fields

Table 8-23 SLtoVL Mapping table of CAs

Fields	Descriptions
SubnetPrefix	64-bit value used to identify an IB subnet.
NodeGUID	64-bit globally unique identifier of the node.
OutPortNum	The output port of the IB packet.
SLMapping	An array of 16 elements representing the SL to VL mapping for a CA's port. Each element is one octet in size and represents the value of the VL that an SL is mapped to. The value of the SL is implicit in the index of an element. For example, value at index 0 represents the SL to VL mapping, value at index 1 represents SL1 to VL mapping and so on.

Viewing SLtoVL Mapping Profiles

To view SLtoVL mapping profiles, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

Subnet Management window (tabular format) window opens.

Step 2 Click the **SLtoVL Mapping Profiles** tab.

Table 8-24 describes the fields

Table 8-24 SL to VL Mapping Profiles

Field	Description
SubnetPrefix	64-bit value used to identify an IB subnet.
OperationalVL	Shows the range of operational VLs configured in the subnet.
Action	From the drop-down list, select set, apply, or delete.
Status	Programming status of the VL arbitration table for the port.
SL0toVL	SL0 to VL mapping.
SL1toVL	SL10 to VL mapping.
SL2toVL	SL20 to VL mapping.
SL3toVL	SL30 to VL mapping.
SL4toVL	SL40 to VL mapping.
SL5toVL	SL50 to VL mapping.
SL6toVL	SL60 to VL mapping.
SL7toVL	SL70 to VL mapping.
SL8toVL	SL80 to VL mapping.

Table 8-24 SL to VL Mapping Profiles

Field	Description
SL9toVL	SL90 to VL mapping.
SL10toVL	SL10 to VL mapping.
SL11toVL	SL11 to VL mapping.
SL12toVL	SL12 to VL mapping.
SL13toVL	SL13 to VL mapping.
SL14toVL	SL14 to VL mapping.
SL15toVL	SL15 to VL mapping.

Viewing VL Arbitration Profiles

To view VL arbitration profiles, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

Subnet Management window (tabular format) opens.

Step 2 Click the **VL Arbitration Profile** tab.

Table 8-25 describes the fields.

Table 8-25 VL Arbitration Profiles

Fields	Descriptions
SubnetPrefix	64-bit value used to identify an IB subnet.
NodeGUID	Optional 64-bit GUID value that narrows the scope of the profile to a node.
PortNum	Optional value that narrows the scope of the profile to a port on a node.
Scope	Used to specify the scope of this multicast group.
Status	Configuration status of the VL arbitration profile.
HighLimit	Limit of high-priority component of the VL arbitration table described by the profile.
LowPrioLowerBlk	Lower 32 entries in the low-priority block of the VL arbitration table described by the profile. This field is an array of 32 elements, each 2 octets in size. The first octet of an element is the VL value and the second is its weightage.
LowPrioUpperBlk	Upper 32 entries in the low-priority block of the VL arbitration table described by the profile. This field is an array of 32 elements, each 2 octets in size. The first octet of an element is the VL value and the second is its weightage.

Table 8-25 VL Arbitration Profiles (continued)

Fields	Descriptions
HighPrioLowerBlk	Lower 32 entries in the high-priority block of the VL arbitration table described by the profile. This field is an array of 32 elements, each 2 octets in size. The first octet of an element is the VL value and the second is its weightage.
HighPrioUpperBlk	Upper 32 entries in the high-priority block of the VL arbitration table described by the profile. This field is an array of 32 elements, each 2 octets in size. The first octet of an element is the VL value and the second is its weightage.

Viewing VL Arbitration Tables

To view VL arbitration tables, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

Subnet Management window (tabular format) opens.

Step 2 Click the **VL Arbitration Tables** tab.

Table 8-26 describes the fields

Table 8-26 VL Arbitration Tables

Field	Description
SubnetPrefix	64-bit subnet prefix of this IB subnet.
NodeGUID	The 64-bit node GUID of this VL arbitration entry.
PortNum	Local port ID of this VL arbitration entry.
Priority	Used to specify the priority information to retrieve.
PriorityInfo	This field is an array of 32 elements, each 2 octets in size. The first octet of an element is the VL value and the second is its weightage.

Configuring VL Arbitration Config Group

Config group is for provisioning the VLArbitrationTables profile for the ports in a fabric switch. Data provisioned through this group can be retrieved using the Subnet Management VL ArbitrationProfiles Table.

To configure the card type for one interface card, follow these steps:

Step 1 From the InfiniBand menu, choose **Subnet Management** (tabular format).

Subnet Management (tabular format) opens.

Step 2 Click the **VLArbitrationConfigGroup** tab.

Step 3 In the SubnetPrefix column, enter the 64 bit subnet prefix.

Step 4 In the Action field, click the radio button of the action that you want to perform for this group.

Step 5 In the NodeGUID field, enter the 64 bit node GUID.

Step 6 In the PortNum field, enter the port number.

Step 7 In the HighLimit field, enter the value that limits the high-priority component of the VL arbitration table described by the profile.

Step 8 In the Priority field, click the radio button of the priority you want to set for the VL arbitration table.

Step 9 In the Index field, enter the value for index (valid values are 1 to 31).

Step 10 In the VL field, enter the value of the virtual lane (valid values are 1 to14).

Step 11 In the Weight field, enter the value (valid values are 0 to 255).

Step 12 Click **Apply**.