CHAPTER 5

InfiniBand Tasks

This chapter describes the Chassis Manager InfiniBand tasks and contains these sections:

Viewing and Managing Subnet Managers

These topics describe how to view and manage subnet managers:

Viewing Subnet Managers

The subnet managers display in Chassis Manager provides an abridged version of the output of the **show ib sm** CLI command. To view the subnet managers in your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Subnet Managers** branch.

The Subnet Managers table appears in the View frame. Table 5-1 describes the fields in the Subnet Managers table.

Table 5-1 Subnet Managers Table Field Descriptions

Field	Description
Subnet Prefix	64-bit value that identifies the InfiniBand subnet.
GUID	GUID of the server switch.
Oper-Status	Displays the operating status (oper-status) of the Subnet Manager.

Viewing Subnet Manager Properties

To view Subnet Manager properties, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Subnet Managers** branch.

The Subnet Managers table appears in the View frame.

Step 3 Click the radio button next to the subnet manager that you want to view, and then click **Properties**.

The Subnet Manager Properties window opens. Table 5-2 describes the fields in this window.

Table 5-2 Subnet Manager Properties Window Fields

Field	Description
Subnet Prefix	Displays the subnet prefix of the subnet manager.
GUID	Displays the GUID of the networking device on which the subnet manager runs.
Status	Status of the subnet manager. It may appear as master, standby, inactive, or discovery.
Activity Count	Activity counter that increments each time that the subnet manager sends a subnet management packet (SMP) or performs other management activities.
SM Key	Subnet Manager Verification Key is used by the master subnet manager to authenticate other master and standby subnet managers. Subnet Manager Key is also used in SA query handling to ensure a request is from a trusted source. Note that Subnet Manager Key is not supported in release 2.9.0.
Priority	Priority of the subnet manager relative to other subnet managers in the InfiniBand network. The higher the number, the greater the priority.
Sweep Interval	Specifies how frequently the subnet manager queries the InfiniBand fabric for network changes.
Response Timeout	Timeout interval in milliseconds that the subnet manager waits before resending a management datagram (MAD).

Table 5-2 Subnet Manager Properties Window Fields (continued)

Field	Description
Master Poll Interval	Interval at which a standby subnet manager polls the master to see if it is still running.
Master Poll Retries	Number of unanswered polls that cause the standby to identify the master as dead.
Max Active SMs	Maximum number of standby subnet managers that the 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	Life time of a packet inside a server switch.
Switch Link HoQ Life	Life time of a packet at the head-of-queue of a switch port.
CA Link HoQ Life	Life time of a packet at the head-of-queue of the host port.
Maximum Hop Count	Maximum number of hops considered by the subnet manager when calculating routes in a subnet. Range is from 0 to 64. The default value is 64. A value of 0 indicates that the subnet manager has been configured to calculate and use the lowest possible value that ensures connectivity between all endpoints.
MAD Retries	Number of times the subnet manager resends a MAD after not receiving a response. The default value is 5.
NodeTimeout	Minimum amount of time in seconds that a HCA may be unresponsive before the subnet manager removes it from the InfiniBand fabric. The default value is 10 seconds.
Wait Report Response	Whether or not the subnet manager waits to receive ReportResponse MADs in response to the Report MADs that it forwards. This value is a boolean value. If 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 ReportResponse MAD is received or the maximum number of Report MADs have been sent. The default value is false.
SA MAD Queue Depth	Size of the internal queue of the SA for receiving MADs. The default value is 256.

Adding a Subnet Manager

To add a subnet manager, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Subnet Managers** branch.

The Subnet Managers table appears in the View frame.

Step 3 Click **Add**.

The Add Subnet Manager window opens.

Step 4 Enter a subnet prefix in the Subnet Prefix field. The default value is fe:80:00:00:00:00:00:00.

Step 5 Assign a priority value (integer) between 0 and 15 in the Priority field. The higher the integer, the higher the priority. The default value is 0.

Step 6 (Optional) Enter a key in the Subnet Manager Key field. The default value is 00:00:00:00:00:00:00:00.

Step 7 Click **Apply**.

Deleting a Subnet Manager

To delete a subnet manager, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Subnet Managers** branch.

The Subnet Managers table appears in the View frame.

Step 3 Click the radio button next to the subnet manager that you want to delete, and then click **Delete**.

Step 4 Click **OK**.

Configuring Subnet Manager Properties

Caution Only advanced users should attempt to fine tune subnet manager properties. Default values are adequate for most purposes,

To configure subnet manager properties, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Subnet Managers** branch.

The Subnet Managers table appears in the View frame.

Step 3 Click the radio button next to the subnet manager that you want to view, and then click **Properties**.

The Subnet Manager Properties window opens.

Step 4 Enter an integer (0–15) in the Priority field to configure the priority of the subnet manager; the higher the number, the greater the priority.

Step 5 Enter an integer (1– 268435455) in the Sweep Interval field to configure the sweep interval, in seconds, of the subnet manager.

Step 6 Enter an integer (100 –5000) in the Response Timeout field to configure how long the subnet manager waits, in milliseconds, for a response from a connection before it resends a MAD. The default value is 200 milliseconds.

Step 7 Enter an integer (1–60) in the Master Poll Interval field to configure the interval, in seconds, at which the slave subnet manager polls the master to see if the master still runs.

Step 8 Enter an integer (1–10) in the Master Poll Retries field to configure the number of unanswered polls that cause the standby to identify the master as dead.

Step 9 Enter an integer value (0–9999) in the Max Active Subnet Managers field to configure the maximum number of standby subnet managers that the master supports. This value defaults to 0, which indicates unlimited subnet managers.

Step 10 Enter an integer value (0–7) in the LID Mask Control field to configure LID mask control on your subnet manager.

Step 11 Enter an integer value between 0 and 20 in the Switch Life Time field.

Step 12 Enter an integer value between 0 and 20 in the Switch Link HoQ Life field.

Step 13 Enter an integer (0–100) in the MadRetries field to configure the number of times the subnet manager resends a MAD after not receiving a response. The default value is 5.

Step 14 Enter an integer (1–2000) in the NodeTimeout field to configure the minimum amount of time in seconds that a HCA may be unresponsive before the subnet manager removes it from the InfiniBand fabric. The default value is 10 seconds.

Step 15 Check or uncheck the **WaitReportResponse** check box to configure whether or not the subnet manager waits to receive ReportResponse MADs in response to the Report MADs that it forwards.

This is a boolean value. If 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 ReportResponse MAD is received or the maximum number of Report MADs have been sent. The default value is False.

Step 16 Enter an integer (256–1024) in the SaMadQueueDepth field to configure the size of the internal queue of the SA for receiving MADs. The default value is 256.

Step 17 Click **Apply** to apply your change(s) to your server switch.

Viewing InfiniBand Services

These topics describe how to view InfiniBand services:

Viewing InfiniBand Services Summary Information

Subnet services provide various features for your InfiniBand fabric, such as the ability to run particular protocols. To view the subnet services on your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Select the **Services** branch.

The Services table appears in the View frame. Table 5-3 lists and describes the fields in the Services table.

Table 5-3 Services Table Fields

Field	Description
Name	Name of the subnet service.
Subnet Prefix	Subnet prefix of the subnet service.
Service ID	ID of the service.
Service GID	GID of the port that offers the service.
PKey	Partition key used to contact the service.

Viewing InfiniBand Service Properties

To view InfiniBand service properties, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame, and select the **Services** branch.

The Services table appears in the View frame.

Step 2 Click the radio button next to the service whose properties you want to view, and then click **Properties**.

The InfiniBand Service Properties window opens. Table 5-4 lists and describes the fields in this window.

Table 5-4 InfiniBand Service Properties Window Fields

Field	Description
Subnet Prefix	Subnet prefix of the service.
Service ID	ID of the service.
Service GID	GID of the service.

Table 5-4 InfiniBand Service Properties Window Fields (continued)

Field	Description
PKey	Partition key of the service.
Lease	Lease period of the service.
Key	Key of the service.
Name	Name of the service.
Data (8 bit)	8-bit service data.
Data (16 bit)	16-bit service data.
Data (32 bit)	32-bit service data.
Data (64 bit)	64-bit service data.

Viewing InfiniBand Nodes

These topics describe how to view InfiniBand node information:

- Viewing InfiniBand Node Summary Information, page 5-7
- Viewing Node Properties, page 5-8
- Viewing Node Ports, page 5-10
- Viewing Node Neighbors, page 5-10

Viewing InfiniBand Node Summary Information

Both InfiniBand switches and InfiniBand hosts qualify as InfiniBand nodes. To view the nodes in your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the InfiniBand frame, and select the **Nodes** branch.

The Nodes table appears in the View frame. Table 5-5 lists and describes the fields in the Nodes table.

Table 5-5 Nodes Table Field Descriptions

Field	Description
Subnet Prefix	Subnet prefix of the node. The prefix of the node matches the prefix of the Subnet Manager that manages the node.
Node GUID	GUID of the switch or host.
Description	Description of the node.
Type	Identifies the hardware type of the node.

Viewing Node Properties

To view the properties of a switch or host in your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the InfiniBand frame.

Step 3 Select the **Nodes** branch.

The Nodes table appears in the View frame.

Step 4 Click the radio button next to the node that you want to view, and then click **Properties**.

The Topology Node Properties window opens. Table 5-6 describes the Topology Node Properties fields in the window.

Table 5-6 Topology Node Properties Window Field Descriptions

Field	Description
Subnet Prefix	64-bit value that identifies the InfiniBand subnet to which this node belongs.
Node GUID	GUID of this 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 1.0*, 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.
Type	Type of node being managed. The value is channel adapter, switch, router, or error. An error entry indicates an unknown type.
Num Ports	Number of physical ports on this node.
Port GUID	GUID of this port. A port within a node can return the node GUID as its Port GUID if the port is an integral part of the node and is not field-replaceable (not swappable).
Partition Cap	Capacity of entries in the partition table for channel adapter, router, and the switch management port. The value is the same for all ports on the node. This is set to at least 1 for all nodes including switches. This value is fixed and unconfigurable.
Device ID	Manufacturer-assigned device identification.
Revision	Manufacturer-assigned device revision.
Local Port Num	The link port number from which this subnet management packet (SMP) arrived. The value is the same for all ports on the node.
Vendor ID	Device vendor ID. The value is the same for all ports on the node.
Description	Description of the node.
System Image GUID	The system image GUID of this node. All nodes within a particular system (chassis) are assigned the same system image GUID.

Table 5-7 lists and describes the Switch Properties fields in the window.

Table 5-7 Topology Node Properties Window Field Descriptions, Switch Properties

Field	Description
Linear FDB Cap	Maximum number of entries allowed in the linear unicast forwarding table. 0 (zero) indicates that there is no linear forwarding database.
Random FDB Cap	Maximum number of entries allowed in the random unicast forwarding table. 0 (zero) indicates that there is no random forwarding database.
MCast FDB Cap	Maximum number of entries allowed in the multicast forwarding table.
Linear FDB Top	Specifies the top of the linear forwarding table. Packets received with unicast LIDs greater than this value are discarded by the switch. This parameter applies only to switches that implement linear forwarding tables and is ignored by switches that implement random forwarding tables.
Default Port	Specifies the default port to which to forward all the unicast packets from other ports whose destination local identifier (DLID) does not exist in the random forwarding table.
Default Primary MCast Port	Specifies the default port to which to forward all the multicast packets from other ports whose DLID does not exist in the multicast forwarding table.
Default Non-Primary MCast Port	Specifies the port to which to forward all the multicast packets from default-pri-mcast-port whose DLID does not exist in the multicast forwarding table.
Lifetime Value	Specifies the duration a packet can live in the switch. Time units are in milliseconds. See section 18.2.5.4, “Transmitter Queueing,” in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
Switch Port State Change	Indicates a change in port state. The value is either 0 (no change) or 1.
LID Per Port	Number of LID/LMC combinations that may be assigned to a given external port for switches that support the random forwarding table. This value is always 0. 0 indicates that there is one LID per port.
Partition Enforce Cap	Number of entries in this partition enforcement table per physical port. 0 (zero) indicates that partition enforcement is not supported by the switch.
In Enforce Cap	Indicates if the switch is capable of partition enforcement on received packets. The value is true (1) or false.
Out Enforce Cap	Indicates if the switch is capable of partition enforcement on transmitted packets. The value is true (1) or false.
In Filter Raw Packet Cap	Indicates if the switch is capable of raw packet enforcement on received packets. The value is true (1) or false.
Out Filter Raw Packet Cap	Indicates if the switch is capable of raw packet enforcement on transmitted packets. The value is true (1) or false.

Viewing Node Ports

To view the InfiniBand ports on a node in your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the InfiniBand frame.

Step 3 Select the **Nodes** branch.

The Nodes table appears in the View frame.

Step 4 Click the radio button next to the node whose ports you want to view, and then select **Show Ports** from the Show Options drop-down menu.

The InfiniBand Ports display appears in the View frame, but lists only the ports that belong to the node that you selected. For details, see the "Viewing InfiniBand Ports" section on page 5-10 or see Table 5-8.

Viewing Node Neighbors

To view the neighbors of an InfiniBand node on your fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the InfiniBand frame.

Step 3 Select the **Nodes** branch.

The Nodes table appears in the View frame.

Step 4 Click the radio button next to the node whose neighbors you want to view, and then select **Show Neighbors** from the Show Options pull-down menu.

The InfiniBand Neighbors display appears in the View frame but lists only the neighbors of the node that you selected. For details, see the "Viewing Neighboring InfiniBand Devices" section on page 5-16 or see Table 5-10.

Viewing InfiniBand Ports

Thee topics describe how to view InfiniBand port information:

Viewing All InfiniBand Ports

To view the InfiniBand ports on your InfiniBand fabric, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the Tree frame.

Step 3 Select the **Ports** branch in the Tree frame.

The InfiniBand Ports table appears in the View frame. Table 5-8 describes the fields in the InfiniBand Ports table.

Table 5-8 InfiniBand Ports Table Field Descriptions

Field	Description
Subnet Prefix	Subnet prefix of the device on which the port resides.
Node GUID	GUID of the node on which the port resides.
Port	Numeric identifier of the port.
LID	Local identifier of the port.
State	Displays the port state as active, armed, noStateChange, initialize, reserved, or down.
Active Link Width	Speed of the connection to this port. The value is 1x, 4x, or 12x.

Viewing InfiniBand Port Properties

To view the properties of an InfiniBand port, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the Tree frame.

Step 3 Select the **Ports** branch in the Tree frame.

The InfiniBand Ports table appears in the View frame.

Step 4 Click the radio button next to the port whose properties you want to view, and then click **Properties**.

The Topology Port Properties window opens. Table 5-9 describes the fields in the Topology Port Properties window.

Table 5-9 Topology Port Properties Window Field Descriptions

Field	Description
Subnet Prefix	64-bit value that identifies the InfiniBand subnet to which this port belongs.
Node GUID	64-bit GUID of the node to which this port belongs.
Port	Port number (integer) of the node.
LID	16-bit identifier of the port.

Table 5-9 Topology Port Properties Window Field Descriptions (continued)

Field	Description
Port State	Displays the port state as active, armed, noStateChange, initialize, reserved, or down.
Active Link Width	Active link width is used with Active Link Speed to determine the link rate between two nodes. The value is 1x, 4x, or 12x.
MKey	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 1.0*, for more information.
GID Prefix	64-bit GID prefix for this port. This prefix is assigned by the subnet manager, based upon port routes and the rules for local identifiers. See section 4.1.3, "Local Identifiers," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
Master SM LID	16-bit identifier 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 1.0*, for more information. This field does not currently apply to your device.
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 nonzero 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 is never to expire. See *InfiniBand Architecture*, Vol. 1, Release 1.0, section 14.2.4, "Management Key," for more information.

Table 5-9 Topology Port Properties Window 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 is 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. This is used to determine that electricity is flowing between nodes and they can perform a handshake. The value is noStateChange, sleeping, polling, disabled, portConfigurationTraining, linkup, or linkErrorRecovery. The default state upon power-up is polling.
Link Down Def State	Default LinkDown state to return to. The value is noStateChange, sleeping, or polling. See section 5.5.2, “Status Outputs (MAD GET),” in *InfiniBand Architecture, Vol. 2, Release 1.0*, for more information.
MKey Protocol 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,” in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.

Table 5-9 Topology Port Properties Window Field Descriptions (continued)

Field	Description
LID Mask	Local-identifier mask control (LMC) for multipath support. An LMC is assigned to 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 is allowed on this port. See sections 3.5.10, "Addressing," and 4.1.3, "Local Identifiers," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
Active Link Speed	Speed of an active link. The value is sdr or 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 enabled on this port for transmit. Check the MTU Cap value at both ends of every link and use the lesser speed. The value is mtu256, mtu512, mtu1024, mtu2048, or mtu4096.
Master SM SL	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 is vl0, vl0ToVl1, vl0ToVl3, vl0ToVl7, or vl0ToVl14. 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 (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 is determined by checking the VL Arb High Cap on the other side of the link and then negotiating downward.
VL Arb High Cap	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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
Vl Arb 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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
MTU Cap	Used 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 is mtu256, mtu512, mtu1024, mtu2048, or mtu4096.
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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for a description of HLL.

Table 5-9 Topology Port Properties Window 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 is vl0, vl0ToVl1, vl0ToVl3, vl0ToVl7, or vl0ToVl14.
In Partition Enforcement	Boolean value that indicates whether or not to support optional partition enforcement for the packets received by this port. There is no default value.
Out Partition Enforcement	Boolean value that indicates whether or not to support optional partition enforcement for the packets transmitted by this port. There is no default value.
In Filter Raw Packet Enforcement	Boolean value that indicates whether or not to support optional raw packet enforcement for the raw packets received by this port. There is no default value.
Out Filter Raw Packet Enforcement	Boolean value that indicates whether or not to support optional raw packet enforcement for the raw packets transmitted by this port. There is no default value.
MKey Violation	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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
PKey Violation	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)," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
QKey Violation	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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, 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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, 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 which traps can be sent from this port. Delay is affected by switch configuration. This parameter, along with Response Time, is used to determine the interval to wait for a response to a request before taking other action. Duration is calculated as (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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.

Table 5-9 Topology Port Properties Window Field Descriptions (continued)

Field	Description
Local Physical 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," in *InfiniBand Architecture, Vol. 1, Release 1.0*, for more information.
Local Overrun Error	Threshold at which the count of buffer overruns, across consecutive flow-control update periods, result 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.

Viewing Neighboring InfiniBand Devices

These topics describe how to view information about neighboring InfiniBand devices:

- Viewing All Neighboring InfiniBand Devices, page 5-16
- Viewing InfiniBand Neighbor Properties, page 5-17

Viewing All Neighboring InfiniBand Devices

To view the InfiniBand devices that directly connect to your device, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the Tree frame.

Step 3 Select the **Neighbors** branch in the Tree frame.

The InfiniBand Neighbors table appears in the View frame. Table 5-10 lists and describes the fields in this table.

Table 5-10 InfiniBand Neighbors Table Field Descriptions

Field	Description
Subnet Prefix	64-bit value that identifies the InfiniBand subnet to which this neighbor node belongs.
Local Node GUID	64-bit GUID of the InfiniBand node.
Local Port ID	Port ID of the InfiniBand node. The value is an integer between 0 and 255.
Remote Node GUID	64-bit GUID of the neighboring InfiniBand node to which the local node is linked.
Remote Port ID	Port ID of the neighboring InfiniBand node to which the local node is linked. The value is an integer between 0 and 255.

Viewing InfiniBand Neighbor Properties

To view InfiniBand neighbor properties, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Topology** in the Tree frame.

Step 3 Select the **Neighbors** branch.

The InfiniBand Neighbors table appears in the View frame.

Step 4 Click the radio button next to the neighbor whose properties you want to view, and then click **Properties**.

The Topology Neighbor Properties window opens. Table 5-11 describes the fields in this window.

Table 5-11 Topology Neighbor Properties Window Field Descriptions

Field	Description
Subnet Prefix	Subnet prefix of the neighbor node.
Local Node GUID	GUID of the neighbor that you selected.
Local Port ID	Local port on the neighbor that you selected that connects to your server switch.
Local Node Type	Node type of the neighbor node.
Remote Node GUID	GUID of the physical switch within your server switch that connects to the neighbor node.
Remote Port ID	Port on the physical switch within your server switch that connects to the neighbor node.
Remote Node Type	Node type of the physical switch within your server switch that connects to the neighbor node.
Link State	State of the connection between the neighbor and the switch within your server switch.
Link Width Active	Bandwidth of the connection between the neighbor and the switch within your server switch.

Viewing IOUs

To view the I/O Units (IOUs) on your device, follow these steps:

Note This feature is not available on all hardware platforms. IOUs and IOCs can be viewed only on chassis that support I/O modules (gateways).

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Device Management** in the Tree frame.

Step 3 Select the **IOU** branch.

The IOU display appears in the View frame. Table 5-12 describes the fields in this display.

Table 5-12 IOU Display Field Descriptions

Field	Description
Change ID	Cumulative number of changes to the controller list since the device last booted.
Max Controllers	Maximum number of controllers that your device can support.
Diag Device ID	Indicates that diagnostics can (1) or cannot (0) provide IOC details.
Option ROM	Indicates the presence or absence of Option ROM.
Controller List	Lists each slot on your device that can potentially contain a controller and identifies whether or not a controller resides in that slot.

Viewing IOCs

These topics describe viewing information about IOCs:

- Viewing All IOCs, page 5-18
- Viewing IOC Properties, page 5-19

Viewing All IOCs

To view the I/O controllers (IOCs) on your device, follow these steps:

Note This feature is not available on all hardware platforms. IOUs and IOCs can be viewed only on chassis that support I/O modules (gateways).

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Device Management** in the Tree frame.

Step 3 Select the **IOCs** branch.

The IOCs display appears in the View frame. Table 5-13 describes the fields in this display.

Table 5-13 IOCs Display Field Descriptions

Field	Description
GUID	GUID of the controller.
Vendor ID	Organization Unique Identifier (OUI) of the vendor.
Device ID	Vendor-assigned device identifier.
Device Version	Vendor-assigned device version.
IO Class	I/O class that the IOC supports.
Protocol	Standard protocol definition that the IOC supports.

Viewing IOC Properties

To view the properties of the I/O controllers (IOCs) on your device, follow these steps:

Note This feature is not available on all hardware platforms.

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Device Management** in the Tree frame.

Step 3 Select the **IOCs** branch.

The IOCs display appears in the View frame.

Step 4 Click the radio button next to the IOC that you want to view, and then click **Properties**.

The IOC Properties window opens. Table 5-14 describes the fields in this window.

Table 5-14 IOC Properties Window Field Descriptions

Field	Description
GUID	GUID of the controller.
Vendor ID	Organization Unique Identifier (OUI) of the vendor.
Device ID	Vendor-assigned device identifier.
Device Version	Vendor-assigned device version.
Subsystem Vendor ID	Vendor-assigned subsystem vendor identifier.
Subsystem ID	Vendor-assigned subsystem identifier.
IO Class	I/O class that the IOC supports.
IO Subclass	Subclass of the I/O class protocol of the IOC.
Protocol	Standard protocol definition that the IOC supports.
Protocol Version	Protocol version that the IOC supports.
Send Msg Queue Depth	Maximum number of messages that the send message queue supports.
RDMA Read Queue Depth	Maximum depth of the per-channel RDMA Read Queue.
Send Msg Size	Maximum size, in bytes, of send messages.
RDMA Transfer Size	Maximum size, in bytes, of outbound RDMA transfers that the IOC initiates.

Table 5-14 IOC Properties Window Field Descriptions (continued)

Field	Description
Controller Op Cap Mask	Integer value (from 8 cumulative bits) between 1 and 255 that represents the operation type(s) that the IOC supports: • bit 0: ST; Send Messages To IOCs • bit 1: SF; Send Messages From IOCs • bit 2: RT; RDMA Read Requests To IOCs • bit 3: RF; RDMA Read Requests From IOCs • bit 4: WT; RDMA Write Requests To IOCs • bit 5: WF; RDMA Write Requests From IOCs • bit 6: AT; Atomic Operations To IOCs • bit 7: AF; Atomic Operations From IOCs
Service Entries	Number of services that the IOC provides.

Viewing IOC Services

These topics describe how to view information about IOC services:

Viewing All IOC Services

To view the IOC services on your device, follow these steps:

Note This feature is not available on all hardware platforms.

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Device Management** in the Tree frame.

Step 3 Select the **IOC Services** branch in the Tree frame.

The IOC Services table appears in the View frame. Table 5-15 lists and describes the fields in this table.

Table 5-15 IOC Services Table Field Descriptions

Field	Description
GUID	GUID of the node that provides the service.
Service Name	ASCII identifier of the service.
Service ID	Numeric identifier that nodes use to call the service.

Viewing Properties of IOC Services

Note This feature is not available on all hardware platforms.

To view the properties of IOC services on your device, follow these steps:

Step 1 Expand **InfiniBand** in the Tree frame.

Step 2 Expand **Device Management** in the Tree frame.

Step 3 Select the **IOC Services** branch in the Tree frame.

The IOC Services table appears in the View frame.

Step 4 Click the radio button next to the service whose properties you want to view, and then click **Properties**.

The InfiniBand Service Properties window opens. Table 5-16 describes the fields in this window.

Table 5-16 InfiniBand Service Properties Window Field Descriptions

Field	Description
Subnet Prefix field	Subnet prefix of the service.
Service ID field	Numeric identifier that nodes use to call the service.
Service GID field	Global ID (GID) of the service.
PKey field	Partition key of the service.
Lease field	Lease period of the service.
Key field	Subnet management key of the service.
Name field	ASCII identifier of the service.
Data (8 bit) field	8-bit descriptor of the service.
Data (16 bit) field	16-bit descriptor of the service.
Data (32 bit) field	32-bit descriptor of the service.
Data (64 bit) field	64-bit descriptor of the service.