

ION System

x4110

10 Gbps Fiber-to-Fiber Converter

Slide-in-Module and NID

CLI Reference

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Revision History

Rev	Date	Description
A	3/2/15	Initial release for v 1.2.4.
B	10/17/16	Update for C4110 v1.2.6; add Vendor Specific Info to DMI; update CLI with go to slot and port (go s=12 l1p=1 and go l1p=2); update contact information.
C	8/21/23	Initial Lantronix re-brand. Remove Glossary, Index, Warranty, & Compliance info. FW v2.0.5: <ul style="list-style-type: none"> Reset input and output buffers on LOS signal detect. Correctly report SFP vendor specific info in DMI statistics of web UI. C4110 updates will work with IONMM v 1.4.3 or higher. Allow time to check link status and send traps.

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Introduction

General

This manual describes the USB and Telnet command line interface (CLI) commands available for ION x4110 operation in an ION System chassis. This manual is for experienced network administrators who are responsible for configuring and maintaining the ION system.

For S4110 and C4110 models, product description, features, applications, manageable features and protocols, refer to the model-specific Install guide manual.

The x4110 is delivered with a default configuration. You can change the configuration via the Web UI and the CLI. The CLI offers the most comprehensive set of management features. The CLI is used during the initial setup, configuration, and troubleshooting, but can also be used for day-to-day management (device management, firmware upgrades, managing security features, etc.).

CLI commands are case sensitive. Enter the CLI commands as shown in this document. In order to execute the CLI commands described in this manual, you must press the Enter key after the command has been entered.

Related Manuals and Online Help

A printed documentation card is shipped with each x4110 device. A substantial set of technical documents, white papers, case studies, etc. are available on the Lantronix [web site](#). Note that this manual provides links to third party web sites for which Lantronix is not responsible. Other ION system and related device manuals are listed below.

- Product Documentation Postcard, 33504
- ION C4110 Install Guide, 33572 (this manual)
- ION S4110 Install Guide, 33573
- ION x4110 Web User Guide, 33574
- ION x4110 CLI Reference, 33575
- ION Management Module (IONMM) Install Guide, 33420 and User Guide, 33457
- Release Notes (firmware version specific)

Note: Information in this document is subject to change without notice. All information was deemed accurate and complete at the time of publication. This manual documents the latest software/firmware version. While all screen examples may not display the latest version number, all of the descriptions and procedures reflect the latest software/firmware version, noted in the [Record of Revisions](#) on page 2.

Note: Some Documentation may have Transition Networks named or pictured. Transition Networks was acquired by Lantronix in August 2021.

For More Information

For Lantronix Documentation, Firmware, App Notes, etc. go to <https://www.lantronix.com/technical-support/>. Note that this manual provides links to third party web sites for which Lantronix is not responsible. For Lantronix Drivers, Firmware, Manuals, Product Notifications, Warranty Policy & Procedures, etc. go to the Lantronix [Technical Resource Center](#). For Lantronix Warranty Policy & Procedure information go to <https://www.lantronix.com/technical-support/warranty/>.

See the related Install Guide for Safety Warnings and Cautions, Safety Statements, Application Examples, Network Scenarios, Pre-Installation, DIP Switch and Jumper settings, and other important information.

Documentation Conventions

The conventions used within this manual for commands/input entries are described in the table below.

Table 1: Documentation Conventions

Convention	Meaning
Boldface text	Indicates the entry must be made as shown. For example: ipaddr=<addr> In the above, only ipaddr= must be entered exactly as you see it, including the equal sign (=).
< >	Arrow brackets indicate a value that must be supplied by you. Do not enter the symbols < >. For example: ipaddr=<addr> In place of <addr> you must enter a valid IP address.
[]	Indicates an optional keyword or parameter. For example: go [s=<xx>] In the above, go must be entered, but s= does not have to be.
{ }	Indicates that a choice must be made between the items shown in the braces. The choices are separated by the symbol. For example: state={enable disable} Enter state=enable or state=disable.
" "	Indicates that the parameter must be entered in quotes. For example: time=<"value"> Enter time="20100115 13:15:00".
>	Indicates a selection string. For example: Select File > Save. This means to first select/click File then select/click Save

Managing Slide-In and Remote Modules via CLI Commands

Management of modules other than the IONMM can be accomplished by entering CLI commands through either the local USB serial interface or a remote Telnet session. CLI commands can operate on the device level or port level. This is indicated by the status of the command prompt's preamble.

For example:

```
AgentIII C1|S7|L1D>
```

or just:

```
C1|S1|L1D>
```

This prompt indicates that any subsequent commands entered are for the module located in chassis 1/slot1. In order to enter a command for a different device or port in the ION system, you must change the location of the command prompt. The go command lets you change the hierarchical location of the command prompt. Before using the command, a familiarity with the hierarchy structure in the ION system is essential.

A representation of the hierarchy is shown in the figure below.

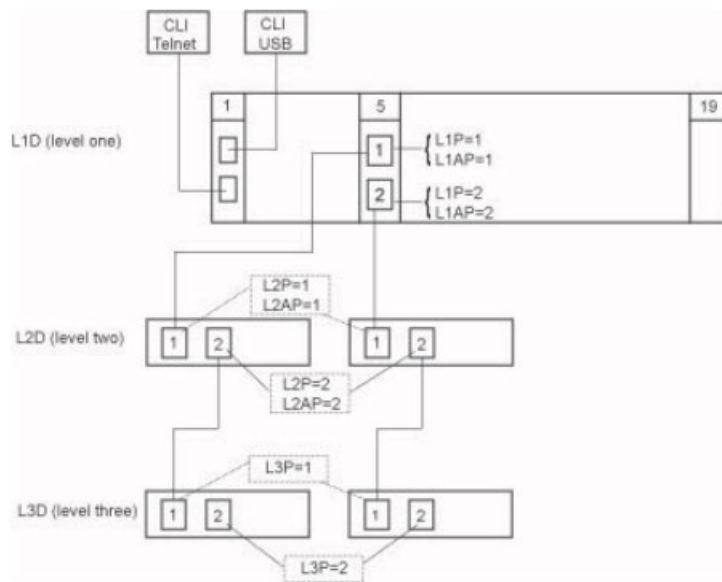


Figure 1: CLI Location Hierarchy

In the above figure, there are three levels of devices:

- L1D, or level one device, refers to devices (IONMM and other chassis-resident devices) that are installed in the chassis.
- L2D, or level two device, refers to a device that is directly connected to a port in a NID in the chassis and has other devices connected to it.
- L3D, or level three device, refers to a device that is directly connected to a port in a level one device.

The ports on a device are divided into two categories: Device ports and Attachment ports.

- Device ports – These are ports on a specified device that are used as service ports for either customer or network connections, and are typically attached to routers or switches. These ports are labeled L1P=, L2P= and L3P=. The L1, L2, and L3 indicate the level of the device that the port is on. Devices attached to a port with this designation cannot be managed by the IONMM.
- Attachment port – These are also ports on a specified device; they are labeled L1AP= and L2AP= and indicate an attachment point for another ION family device that can be managed by the IONMM.

Physically these are the same port. That is, L1P1 and L1AP1 are both port one on a level one device. However, it is how they are used that determines their syntax. For example, L1P1 indicates that the port is used to connect to a service device that is not managed by the IONMM. L1AP1 indicates that the port is used to connect to a level two device that can be managed by the IONMM.

Example 1

In the CLI location hierarchy, to go to the first port (L3P1) on device L3D in the network topology shown in Figure 19, you would enter the following command from the base prompt.

```
C1|S1|L1D>go s=5 l1ap=2 l2ap=1 l3p=1
```

The resulting command line prompt would be:

```
C1|S5|L1AP2|L2AP1|L3P1>
```

Any CLI command appropriate for the port can now be entered.

Example 2

In the CLI location hierarchy, to go to device L2D in the network topology shown in Figure 1, you would enter the following command from the base prompt.

```
C1|S1|L1D>go s=5 l1ap=2 l2d=1
```

The resulting command line prompt would be:

```
C1|S5|L1AP1|L2D>
```

Any CLI command appropriate for the device can now be entered.

The following describes the procedure for using CLI commands to manage the x4110s.

1. Access the x4110 through either a USB connection or a Telnet session.
2. Use the go command to change the operational location to the device/port to be managed. The go command format is:

```
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT]
(l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
```

3. Configure the x4110 using the appropriate commands.
4. To return the location to the IONMM, type home and press Enter.

Managing Standalone Modules Using CLI Commands

Management of standalone modules can be accomplished by entering CLI commands through either the local USB serial interface or a remote Telnet session. CLI commands can operate on the device level or port level. This is indicated by the status of the command prompt's preamble.

For example:

```
AgentIII C1|S7|L1D>
```

or just:

```
C1|S7|L1D>
```

This prompt indicates that any subsequent commands entered are for the device instead of a port. In order to enter a command for a port, you must change the location of the command prompt. The go command allows you to change the hierarchical location of the command prompt.

The go command format is:

```
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT]
(l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
```

Example: In the CLI location hierarchy, to go to port 1 on a device, you would enter the following command from the base prompt:

```
C1|S7|L1D>go l1p=1
```

The resulting command line prompt would be:

```
C1|S7|L1P1>
```

Any CLI command appropriate for the port can now be entered.

Subsequently, to return to the device level, you would enter the following:

```
C1|S7|L1P1>go l1d
```

The resulting command line prompt would be:

```
C1|S7|L1D>
```

Reboot and Reset Command Notes

IMPORTANT: Certain CLI commands affect important stored files. Doing a reboot, restart or upgrade of the IONMM, a power restart of the chassis, or a reset to factory removes temporary files (e.g. configuration backup files, Syslog file). A Factory Reset also removes the permanent settings (e.g. configuration files, HTTPS certification file, SSH key).

These CLI commands can cause a loss of files:

- reboot - cold start the x4110
- reset - reset to factory configuration

See the specific command description for additional information.

Command Line Editing

This section describes how to enter CLI commands. A CLI command is a series of keywords and arguments. Keywords identify a command, and arguments specify configuration parameters.

Display Similar Commands

At the command line, you can use the key or the ? key to show available commands in a category of commands after entering a part of the command. For example, use the key to enter part of the command (show ether in this example) to display all of the available commands that start with show ether. The commands display in a single row.

```
Agent III C1|S2|L1D>show ether
config loopback security statistics tdr
Agent III C1|S2|L1D>show ether
```

Use the ? key after a partial CLI command entry to display all available commands that start with `show ether` but in a single column:

```
Agent III C1|S2|L1D>show ether
config
loopback
security
statistics
tdr
Agent III C1|S2|L1D>show ether
```

Partial Keyword Lookup

If you terminate a partial keyword with a question mark, alternatives that match the initial letters are provided. (Remember to not leave a space between the command and question mark.) For example “s?” shows all the keywords starting with the letter “s.”

Recall Commands

To recall recently-entered commands from the command history, perform one of these optional actions:

Ctrl-P or Up arrow (↑) key: Recall commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall successively older commands.

Ctrl-N or Down arrow (↓) key: Return to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up arrow key. Repeat the key sequence to recall successively more recent commands.

Keystroke Commands

The table below shows the optional keystrokes available to edit command lines (*indicates HyperTerm support, ** indicates command prompt support, *** indicates both HT and command prompt support by this keystroke).

Table 2: Editing Commands

Capability	Keystroke	Purpose
Move the command line around to make changes or corrections	Ctrl-B *** or left (←) arrow key ***	Move the cursor back one character
	Ctrl-F *** or right (→) arrow key ***	Move the cursor forward one character
	Ctrl-A ***	Move the cursor to the beginning of the command line
	Ctrl-E ***	Move the cursor to the end of the command line
Recall commands from the buffer and paste them in the command line	Ctrl-Y ***	Recall the most recent entry in the buffer
	Ctrl-T **	Transpose the character to the left of the cursor with the character located at the cursor
	Ctrl-Y **	Recall the most recent entry in the buffer
Delete entries (if you make a mistake or change your mind)	Delete key *** or Backspace key ***	Erase the character to the left of the cursor
	Ctrl-D ***	Delete the character at the cursor
	Ctrl-K ***	Delete all characters from the cursor to the end of the command line
	Ctrl-U *** or Ctrl-X ***	Delete all characters from the cursor to the beginning of the command line
	Ctrl-W ***	Delete the word to the left of the cursor
	Esc D **	Delete from the cursor to the end of the word
Capitalize or lowercase words or capitalize a set of letters	Esc C *	Change case from capital to lower-case (or lower-case to capital) at the cursor
Redisplay the current command line if the switch unexpectedly sends a message to your screen	Ctrl-L *** or Ctrl-R ***	Redisplay the current command line (reverse-i-search)

System Commands

The following are basic system level commands. These commands are used to show configuration / mode, show help, reboot the system, reset the configuration, and other basic functions.

Password for Login / Access

Syntax: Password: **private**

Description: The default device CLI password. CLI entry requires a successful password entry.

```
Example: login: ION
Password:private<cr>
Hello, this is ION command line (version 1.00).
Copyright 2009 Transition Networks.

Agent III C1|S1|L1D>
```

In order to control the NIDs via a USB interface, the command line prompt must be showing the location of the module to be managed. Use the procedure below to access the NID and login via USB connection.

1. Start the terminal emulator program (e.g., HyperTerminal).
2. When the emulator screen displays, press **Enter**. The login prompt displays. If your system uses a security protocol (e.g., RADIUS, SSH, etc.), you must enter the login and password required by that protocol.
3. Type **ION** (all upper case) and press **Enter**. The password prompt displays. If a “Login incorrect” message displays, ignore it.
4. Type your password. The default is **private** (all lower case).
5. Press **Enter**. The HyperTerminal command line prompt displays (Agent III C1|S0|L1D>).
6. Enter CLI commands to set up, configure, operate, and maintain the NID.

Log Out (Quit)

Syntax : **q**(uit)

Description: Exit the current mode and return to the previous mode (i.e., the CLI command line prompt).

```
Example : Agent III C1|S17|L1D>q
login:
```

Note: The NID does not automatically log out upon exit or after a timeout period, which could leave it vulnerable if left unattended. Follow your organizational policy on when to log out.

Clear the Screen

Syntax: **cls**

Description: Clears the screen and returns to the location of the IONMM card.

Go Back to IONMM

Syntax: **home**

Description: Sets the command prompt back to the location of the IONMM card.

Example: If the IONMM card is in chassis 1/slot 1 (c=1 s=1) and the command prompt was at c=1 s=17 11d and then you entered the following command:

```
Agent III C1|S17|L1D>home
```

the new command line prompt would be:

```
Agent III C1|S1|L1D>
```

Go to Another Location

Syntax: go [c=<0-16>] [s=<0-32>] [l1ap=<1-15>] [l2ap=<1-15>] (l1p=<1-5>|l2p=<1-15>|l3p=<1-15>|l1d|l2d|l3d)

Description: Sets the location (device or port) where subsequent commands are destined for. This information will appear on the command prompt line as the location where the command will be executed.

where:

c = Chassis number (1–16) of the chassis where the card/port is located.

s = Slot number (1–32) of the slot in the chassis where the card/port is located.

Note: if the chassis parameter (c=) is specified you must specify a slot number.

l1ap = Port number (1–16) on a level 1 device that is used to attach to a level 1 device.

l2ap = Port number (1–16) on a level 2 device that is used to attach to a level 2 device.

zz = mandatory; specifies the port or device where subsequent commands are destined for. Valid choice are:

l1d – indicates the level 1 device to which subsequent commands are destined.

l1p=<port#> – port number (1–16) on a level 1 device.

l2d – indicates the level 2 device.

l2p=<port#> – port number (1–16) on a level 2 device.

l3d – indicates the level 3 device.

l3p=<port#> – port number (1–16) on a level 3 device.

Usage: go [c=**CHASSIS**] [s=**SLOT**] [l1ap=**PORT**] [l2ap=**PORT**] (l1p=**PORT**|l2p=**PORT**|l3p=**PORT**|l1d|l2d|l3d)

Example 1: The following command would cause all subsequent commands to be executed for the device in slot 5 of chassis 1.

```
C1|S1|L1D>go s=5 l1d
```

The new command prompt would be:

```
C1|S5|L1D>
```

Example 2: The following would cause all subsequent commands to be executed for port 2 on the device in slot 5.

```
C1|S5|L1D>go 11p=2
```

The new command prompt would be:

```
C1|S5|L1P2>
```

Example 3: The following would cause all subsequent commands to be executed for a remote device connected to port 2 of a chassis-resident module in slot 5.

```
C1|S5|L1D>go 11ap=2 12d
```

The new command prompt would be:

```
C1|S5|L1AP2|L2D>
```

Help (?)

Syntax: ?

Description: Display help for CLI commands by typing a question mark (?). Typing a ? at the command line prompt displays a list of base commands (show, set, etc.).
To display a list of the options for a particular command or parameter, type the command/parameter then a space and then ?.

Examples:

The following will display a list of all base commands.

```
C1|S2|L1D>?
```

While the following will display a list of all the entries for the **set** commands that start with the letter “l”.

```
C1|S15|L1P1>set l ?  
l2cp  
loam  
lpt
```

The following displays a list of all the entries for the **set lpt** commands:

```
C1|S15|L1P1>set lpt ?  
monitor-port  
state
```

The following displays a list of the valid values for the **set lpt state** command:

```
C1|S15|L1P1>set lpt state ?  
disable  
enable  
notSupported  
C1|S15|L1P1>
```

By typing a ? after each parameter in a command string you can see what the options are, either for what the next parameter is or for what options must be specified following an equal sign.

List

Syntax: **list**

Description: Display all available command line commands.

Example (partial list):

```
Agent III C1|S0|L1D>list
add acl condition type=(srcmacaddr|ipv4addr|ipv4addr|range|ipv4network|tcpport|
tcpport|range|udpport|udpport|range|icmp) srcdst=(src|dst) oper=(equal|notequal)
value=VAL
add acl rule position=(head|tail) table=(raw|filter|nat|mangle) chain=(prerout
ing|input|forward|output|postrouting) policy=(accept|drop|trap) [traprate=TRAPRATE]
[condition=CONDLIST]
add fwddb mac=MAC [conn-port=PORT] [priority=PRIO] [type=(static|staticNRL|staticPA)]
add ip6tables acl condition type=(srcmacaddr|ipv6addr|ipv6network|tcpport|tcp
port|range|udpport|udpport|range|icmp) srcdst=(src|dst) oper=(equal|notequal) value=VAL
:           :           :           :           :           :
show usb-port state
show vlan-db config
start ether tdr test
start https certificate
stat
tftp get iptype=(ipv4|ipv6|dns) ipaddr=ADDR remotefile=RFILE [localfile=LFILE]
tftp put iptype=(ipv4|ipv6|dns) ipaddr=ADDR localfile=LFILE [remotefile=RFILE]
tftp upgrade iptype=(ipv4|ipv6|dns) ipaddr=ADDR remotefile=RFILE
update firmware-db file=FILENAME
upgrade module
Agent III C1|S17|L1D>
```

Show Current Directory

Syntax: **pwd**

Description: Displays the current directory.

```
Example:    Agent III C1|S17|L1D>pwd
             /
             Agent III C1|S17|L1D>
```

Change Modes (Quit)

Syntax : **quit**

Description: Exit the current mode and return to the previous mode (i.e., the CLI command line prompt). Note that the x4110 does not automatically log out upon exit or after a timeout period, which could leave it vulnerable if left unattended. Follow your organizational policy on when to log out.

```
Example:    Agent III C1|S17|L1D>quit
             login:
```

Reboot

Syntax: **reboot**

Description: Performs a reboot (“Cold start the system”) of the device in the command line prompt. After a x4110 reboot via CLI while connected via USB port, you must disconnect and then reconnect USB cable for the console to become accessible again.

```
Example:    Agent III C1|S17|L1D>reboot
             Warning: this command will restart system, connection will be lost and
             please login again!
             Agent III C1|S17|L1D>
```



Warning: doing a reboot or restart of the x4110 may cause some configuration backup files to be lost and the USB or Telnet session to drop. Doing a reboot, restart or upgrade of the IONMM, a power restart of the chassis, or a reset to factory removes temporary files (e.g. configuration backup files, Syslog file). A Factory Reset also removes the permanent settings (e.g. configuration files, HTTPS certification file, SSH key).

Reboot Procedure

At times you may have to reboot (restart) the ION system. This operation can be accomplished by either the CLI or Web UI.

Note: this operation can take several minutes. The amount of time for the reboot to complete depends on the ION system configuration. When the reboot is finished, some devices (usually remote devices) will show the error condition of a "red box" around items like IP address, Trap Manager IP addresses, and/or DNS Entries. The 'red box' condition occurs while the devices are resetting; this condition can continue several minutes after the reboot.

After a x4110 reboot via CLI while connected via USB port, you must disconnect and then reconnect USB cable for the console to become accessible again.

1. Access the x4110 through either a USB connection or a Telnet session.
2. At the command prompt type: **reboot** and press **Enter**. A warning displays: *this command will restart system, connection will be lost and please login again!* The ION system reboots the x4110. If this operation is performed on a standalone module, the connection / session is terminated.
3. To reestablish the connection / session, wait about one minute, and then:
 - For a USB connection
 - a) Select **Call>Disconnect**.
 - b) Select **File>Exit**.
 - c) Disconnect then reconnect one end of the USB cable.
 - d) Start a USB session.
 - For a Telnet session
 - a) Press **Enter**.
 - b) Start a Telnet session.

Example:

```
Agent III C1|S2|L1D>reboot
Warning: this command will restart system, connection will be lost and please login
again!
Agent III C1|S2|L1D>
```

Reset Factory Configuration

Syntax: **reset factory**

Description: Resets a card to its factory default configuration.

Example: Agent III C1|S17|L1D>**reset factory**
Warning: this command will restart the specified card, connection will be lost!
Agent III C1|S17|L1D>



Warning: doing a x4110 reset to factory restarts the device and drops the Telnet or HyperTerminal connection. Doing a reset to factory removes temporary files (e.g. configuration backup files, Syslog file) and also removes the permanent settings (e.g. configuration files, HTTPS certification file, SSH key).

Resetting Defaults Procedure

1. Access the x4110 through either a USB connection or a Telnet session.
2. At the command prompt type: **reset factory**.
3. Press **Enter**. The following displays:

```
Agent III C1|S2|L1P2>reset factory
Error: this command should be executed on a device!
Agent III C1|S2|L1P2>go l1d
Agent III C1|S0|L1D>reset factory
Error: Fail to get SIC configure mode!
Agent III C1|S0|L1D>
```

All configuration parameters will be reset to their factory values.

Note: Your USB and/or Telnet session will be disconnected.

4. Set the IP configuration.

Reset Device Uptime

Syntax: **reset uptime**

Description: Resets the x4110 Up Time counter to zero, and immediately begins to increment.

Example: Agent III C1|S17|L1D>**reset uptime**
Agent III C1|S17|L1D>

Use the **show card info** command to display the current system uptime.

Note: the reset uptime command is not available for the Power Supply modules.

Reset Device Uptime Procedure

1. Access the x4110 through either a USB connection or a Telnet session.
2. At the command prompt type: **reset uptime** and press **Enter**. The System Up Time field resets to zero, and immediately begins to increment.

For example:

```
Agent III C1|S17|L1D>reset uptime  
Agent III C1|S17|L1D>
```

Show Card Information

Syntax: **show card info**

Description: Displays the system information for the IONMM or slide-in module. The system information can be alphabetic, numeric or a combination.

Example: (C4110 in slot 2):

```
Agent III C1|S2|L1D>show card info
System name:        C4110
Uptime:            00:17:26
MAC:                00-c0-f2-22-17-15
Port number:        2
Serial number:      4444
Config mode:        software
Software:           1.2.6
Bootloader:         0.1.0
Hardware:           1.0.0
Agent III C1|S2|L1D>
```

Show Card Type

Syntax: **show cardtype**

Description: Displays the device's card type (model number).

Example: (C4110 in slot 2):

```
Agent III C1|S1|L1D>show cardtype
Card type:                            IONMM
Agent III C1|S1|L1D>go c=1 s=2 l1d
Agent III C1|S2|L1D>show cardtype
Card type:                            C4110-4848
Agent III C1|S2|L1D>
```

Show Chassis Information

Syntax: **stat**

Description: Displays information about all slide-in modules installed in the chassis and all standalone modules connected to the slide-in modules (remotes), and their ports.

Example:

```
Agent III C1|S1|L1D>stat
ION statck
   Chassis -- BPC
   [  1]  IONMM
           Port 1
           Port 2
   [  2]  C4110-4848
           Port 1
           Port 2
   [  3]  C3221-1040
           Port 1
           Port 2
           Port 3
   [  4]  C3100-4040
           Port 1
           Port 2
   [  6]  C4120-1040
           Port 1
           Port 2
   [ 22]  IONPS-A-R1
           Temperature Sensor
           Voltage Sensor
           Power Sensor
           Fan
Agent III C1|S1|L1D>
```

Show Slot Information

Syntax: **show slot info**

Description: Displays information about the ION chassis backplane, slide-in modules installed in the chassis, and related status. This command is only valid on an IONMM.

Example: Display the current slot information.

```
Agent III C1|S2|L1D>show slot info
Error: This command is only valid on an IONMM!
Agent III C1|S2|L1D>home
Agent III C1|S1|L1D>show slot info
Chassis BPC information:

Serial number:      101829
Model name:         IONBPC-219
Software:           1.2.1
Hardware:           1.0.0
Bootloader:        0.1.0

Slot information:
slot      slot status      description                                     power status
-----
1         occupied          ION Management Module AGENT                    on
2         occupied          ION Media Conversion Module C4110-4848         on
3         empty
4         empty
5         occupied          ION Media Conversion Module C4120-1040         on
6         empty
7         occupied          ION Media Conversion Module C2210-1013         on
8         empty
9         empty
10        empty
11        empty
12        empty
13        empty
14        empty
15        empty
16        empty
17        empty
18        empty
19        empty
Agent III C1|S1|L1D>
```

Set Circuit ID

Syntax: **set circuit-ID**=<xx>

Description: Lets you define an ASCII text string up to 63 bytes and override the default Circuit ID, which is *vlan-module-port* in binary format, for a device and/or device ports. Use the **show circuit-ID** command to display the Circuit ID information for a device or port.

Example:

```
Agent III C1|S17|L1P1>set circuit XX/YYYY/000000/111/CC/SEG
Agent III C1|S17|L1P1>show circuit-ID
Circuit-ID:           XX/YYYY/000000/111/CC/SEG
Agent III C1|S17|L1P1>
```

Note: the dash (“-“) is required, and the letters “ID” must be upper-case. The x4110 supports the Circuit ID, a company-specific identifier assigned by the user to identify the converter and individual ports in any manner the user chooses. In the ION system, the Circuit ID port identifier is based on the agent-local identifier of the circuit (defined in RFC 3046), detected by the agent and associated with a particular port.

Show Circuit ID

Syntax: **show circuit-ID**

Description: Displays the current Circuit ID for the device or port. Use the **show circuit-ID** command to display the current Circuit ID information defined for a device or port.

Example:

```
Agent III C1|S17|L1P1>set circuit XX/YYYY/000000/111/CC/SEG
Agent III C1|S17|L1P1>show circuit-ID
Circuit-ID:           XX/YYYY/000000/111/CC/SEG
Agent III C1|S17|L1P1>
```

Note: the dash (“-“) is required, and the letters “ID” must be upper-case (in capital letters).

Circuit ID Config Procedure

1. Access the x4110 through either a USB connection or a Telnet session.
2. At the device's command prompt type: **set circuit-ID=<xx> where**:
xx = the Circuit ID to be used for this device or port.
3. Press **Enter**.
4. Verify the Circuit ID setting. Type **show circuit-ID** and press **Enter**. Note that the dash ("-") is required, and the letters "ID" must be upper-case. The Circuit ID information displays. For example:

```
C1|S16|L1D>set circuit XX/YYYY/000000/111/CC/SEG
C1|S16|L1D>show circuit-ID
Circuit-ID:      XX/YYYY/000000/111/CC/SEG
C1|S16|L1D>
```

5. At the each of the device port's command prompts, enter the Circuit ID as in step 2 and 3.
6. At the each of the device port's command prompts, verify the Circuit ID setting as in step 4.
For example:

```
C1|S16|L1D>go l1p=1
C1|S16|L1P1>set circuit-ID=xx/yyyy/000000/111/cc/seg
C1|S16|L1P1>show circuit-ID
Circuit-ID:      xx/yyyy/000000/111/cc/seg
C1|S16|L1P1>
C1|S16|L1P1>go l1p=2
C1|S16|L1P2>set circuit XX/YYYY/000000/111/CC/SEG
C1|S16|L1P2>show circuit-ID
Circuit-ID:      XX/YYYY/000000/111/CC/SEG
C1|S16|L1P2>
```

Set Device Description

Syntax: **set device description=<xx>**

Description: Lets you configure an ASCII text string up to 63 bytes and override the default information, which is *vlan-module-port* in binary format.

1. Access the x4110 through either a USB connection or a Telnet session.
2. At the device's command prompt type: **set device description=<xx>** where:
xx = the Device Description to be used for this device or port.
3. Press **Enter**.
4. Verify the Device Description setting. Type **show device description** and press **Enter**. Note that the dash ("-") is required, and the letters "ID" must be upper-case. The Device Description information displays.

Example:

```
Agent III C1|S17|L1D>set device description
CIRCUIT
Agent III C1|S17|L1D>set device description D-CIRCUIT
Agent III C1|S17|L1D>show device description
Device description: D-CIRCUIT
Agent III C1|S17|L1D>
```

Show Device Description

Syntax: **show device description**

Description: Displays the currently-configure ASCII text string up to 63 bytes and override the default information, which is *vlan-module-port* in binary format.

Example:

```
Agent III C1|S17|L1D>set device description
CIRCUIT
Agent III C1|S17|L1D>set device description D-CIRCUIT
Agent III C1|S17|L1D>show device description
Device description: D-CIRCUIT
Agent III C1|S17|L1D>
```

Data Rate Timing Commands

The C4110 can be used in applications where links supporting data rates from 1Gig to 10Gig require fiber extension or where 10Gig links require an interface between two fiber networks. It performs 3R (re-amplify, re-shape, re-time) signal regeneration. The S4110 is protocol ‘agnostic’, supporting a wide variety of protocols in a network; from 1 to 11.5Gbps, including 10G LAN, 10G WAN, 10G Fiber Channel, SONET OC192, 10G OTN (G.709), 1/2/4/8 Gig Fiber Channel, 1 Gig Ethernet, or Sonet OC-48. The fiber length and type is defined by the SFP+ module inserted.

The OC (Optical Carrier) specifies the speed of fiber optic networks conforming to the SONET standard. The speeds for common OC levels include OC-1 = 51.85 Mbps, OC-3 = 155.52 Mbps, OC-12 = 622.08 Mbps, OC-24 = 1.244 Gbps, OC-48 = 2.488 Gbps, OC-192 = 9.952 Gbps, and OC-255 = 13.21 Gbps.

Set Optical Data Rate Timing

Syntax: **set dataRateTiming *ratexxxx*** (case sensitive)

Description: Configure the x4110 data rate timing. The settings are **set dataRateTiming =**

rate10GE = 10GE = 10 gigabit Ethernet (10GbE or 10 GigE) (factory default).

rate10GFC = 10GFC = 10GbE Fibre Channel.

rate10GFCFEC = 10GFC + FEC = 10GbE Fibre Channel with Forward Error Correction.

rate1GE = 1GE = 1 gigabit Ethernet.

rate1GFC = 1GFC = 1GbE Fibre Channel.

rate2_5GE = 2.5G = 2.5 gigabit Ethernet.

rate2GFC = 2GFC = 2G Fiber Channel with 2.125 gigabaud Line rate and 400 MBps throughput (at full duplex).

rate4GFC = 4GFC = 4G Fiber Channel with 4.25 gigabaud Line rate and 800 MBps throughput (at full duplex).

rate8GFC = 8GFC = 8G Fiber Channel with 8.5 gigabaud Line rate and 1,600 MBps throughput (at full duplex).

rateOC192 = WAN/OC-192 = OC-192 network line with transmission speeds up to 9953.28 Mbit/s.

rateOC192FEC = WAN/OC-192+FEC = OC-192 network line with transmission speeds up to 9953.28 Mbit/s with Forward Error Correction.

rateOC48 = Sonet OC-48 network line with transmission speeds to 2488.32 Mbit/s.

Example: Show the available data rates and set the rate to 10GE:

```
Agent III C1|S2|L1D>set dataRateTiming ?
  rate10GE
  rate10GFC
  rate10GFCFEC
  rate1GE
  rate1GFC
  rate2GFC
  rate2_5GE
  rate4GFC
  rate8GFC
  rateOC192
  rateOC192FEC
  rateOC48
Agent III C1|S4|L1D>set dataRateTiming rate10GE
Agent III C1|S4|L1D>
```

Show Data Rate Timing

Syntax: **show dataRateTiming**

Description: Display the current x4110 data rate timing setting. The settings are described above.

Example: Show the data rate set in the command example above.

```
Agent III C1|S4|L1D>show dataRateTiming
Data Rate Timing/Retiming: rate10GE
Agent III C1|S4|L1D>
```

Messages:

Error: this command should be executed on a device!

Error: System is busy, please retry this command later!

Error: Software version of this card is too old, please upgrade it!

Error: Data Rate Timing is not supported on this card!

The data rate timing limit is not supported on C4110 card!

Error: Invalid data rate timing!

Error: Set data rate timing failed!

Error: Cannot set data rate timing on this card!

Error: Get dataRateTiming status no such object.

The CLI displays “Unknown Line Rate Mode” until a data retiming rate has been saved.

DMI Commands

The following commands are used for Diagnostic Monitoring Interface (DMI) operations.

Note: These commands can only be entered for a fiber port that supports DMI. Not all x4110 models or SFP models support DMI. The SFP models that support DMI have a “D” at the end of the model number. If you enter a DMI command on a x4110 model that does not support DMI, the message “*The DMI feature is not supported on current port.*” displays.

Show DMI Configuration

Syntax: **show dmi info**

Description: Displays the configuration of the Diagnostic Monitoring Interface (DMI) for a port.

Example 1 Display the current DMI configuration for port 1.

```
Agent III C1|S2|L1P1>show dmi info
Diagnostic monitoring interface information:
-----
DMI connector type:                LC
DMI indentifier:                   DWDM-SFP/SFP+
DMI Nominal bit rate:              1300*Mbps
DMI 9/125u Singlemode Fiber (k):   80*km
DMI 9/125u Singlemode Fiber (m):  25500*m
DMI 50/125u Multimode Fiber (m):   N/A
DMI 62.5/125u Multimode Fiber (m): N/A
Copper(m):                         N/A
DMI fiber interface wavelength:    1550*nm
DMI temperature:                   28.1*C
DMI temperature:                   82.6*F
DMI temperature alarm:             normal
DMI transmit bias current:         39292*uA
DMI transmit bais alarm:           normal
DMI Transmit power:               1686*uW
DMI Transmit power:                2.269*dBM
DMI Transmit power alarm:         normal
DMI Receive power:                0*uW
DMI Receive power alarm:          lowAlarm
DMI Vendor name:                   Transition
DMI Vendor Part Number:            TN-DWDM-SFP-5012
DMI Vendor serial number:          TWDW34Z001
DMI Vendor revision:               2.0
DMI Vendor date code:              2016-07-30
DMI Vendor Transceiver type:       SFP 1000BASE-X
DMI Vendor OUI:                    00-C0-F2
DMI Receive power intrusion threshold: 10*uW
Agent III C1|S2|L1P1>
```

Example 2 Display the current DMI configuration for port 2.

```
Agent III C1|S2|L1P1>go l1p=2
Agent III C1|S2|L1P2>show dmi info
Diagnostic monitoring interface information:
-----
DMI connector type:                LC
DMI indentifier:                   SFP/SFP+/SFP28
DMI Nominal bit rate:              10500*Mbps
DMI 9/125u Singlemode Fiber (k):   10*km
DMI 9/125u Singlemode Fiber (m):   10000*m
DMI 50/125u Multimode Fiber (m):   N/A
DMI 62.5/125u Multimode Fiber (m): N/A
Copper(m):                         N/A
DMI fiber interface wavelength:    1310*nm
DMI temperature:                   44.4*C
DMI temperature:                   111.9*F
DMI temperature alarm:             normal
DMI transmit bias current:         36416*uA
DMI transmit bais alarm:           normal
DMI Transmit power:                564*uW
DMI Transmit power:                -2.487*dBM
DMI Transmit power alarm:          normal
DMI Receive power:                 28*uW
DMI Receive power:                 -15.528*dBM
DMI Receive power alarm:           lowWarn
DMI Vendor name:                   Transition
DMI Vendor Part Number:            TN-10GSFP-LR1
DMI Vendor serial number:          8800022
DMI Vendor revision:               0001
DMI Vendor date code:              2011-08-09
DMI Vendor Transceiver type:       SFP 10G
DMI Vendor OUI:                    00-C0-F2
DMI Receive power intrusion threshold: 0*uW
Agent III C1|S2|L1P2>
```

For More Information on topics such as Fiber Optics Power Measurements, Fiber and Cable Loss, OTDRs, Bandwidth, Reflectance/Optical Return Loss, and Fiber Optic Cleaning Procedures see The Fiber Optic Association - Tech Topic in the FOA Guide to Optics and Premises Cabling on the FOA website at <http://www.thefoa.org/tech/FAQS/FAQ-TEST.HTM#bw>.

Set DMI Receive Power Preset Level

Syntax: `set dmi rx-power-preset-level=<xx>`

Description: Defines the lowAlarm threshold for RxPowerAlarm. If a non-zero value (in microwatts) is specified, the module will stop passing traffic when the receive power drops below the new threshold. This feature is sometimes referred to as Intrusion Detection, since tapping into a fiber to intercept traffic leads to a reduction in receive power.

Sets the Diagnostic Monitoring Interface (DMI) receive preset power level.

where: **xx** = Pwr-val: A preset level for Rx Power on the Fiber port (0-65535).

Example: Set the level to 110 and show the resulting DMI information:

```
Agent III C1|S2|L1P1>set dmi rx-power-preset-level=110
Agent III C1|S2|L1P1>show dmi info
Diagnostic monitoring interface information:
-----
DMI connector type:                LC
DMI indentifier:                   DWDM-SFP/SFP+
DMI Nominal bit rate:              1300*Mbps
DMI 9/125u Singlemode Fiber (k):   80*km
DMI 9/125u Singlemode Fiber (m):   25500*m
DMI 50/125u Multimode Fiber (m):   N/A
DMI 62.5/125u Multimode Fiber (m): N/A
Copper(m):                         N/A
DMI fiber interface wavelength:    1550*nm
DMI temperature:                   26.7*C
DMI temperature:                   80.1*F
DMI temperature alarm:             normal
DMI transmit bias current:         38984*uA
DMI transmit bais alarm:           normal
DMI Transmit power:                1686*uW
DMI Transmit power:                2.269*dBm
DMI Transmit power alarm:          normal
DMI Receive power:                 0*uW
DMI Receive power alarm:           lowAlarm
DMI Vendor name:                   Transition
DMI Vendor Part Number:            TN-DWDM-SFP-5012
DMI Vendor serial number:          TWDW34Z001
DMI Vendor revision:               2.0
DMI Vendor date code:              2016-07-30
DMI Vendor Transceiver type:       SFP 1000BASE-X
DMI Vendor OUI:                   00-C0-F2
DMI Receive power intrusion threshold: 110*uW
Agent III C1|S2|L1P1>
```

Messages: *Error: No DMI support on this port!*

Error: This card is in hardware mode and no setting allowed!

DMI Config Procedure

The DMI (Diagnostic Maintenance Interface) function displays x4110 diagnostic / maintenance information such as **fiber** interface characteristics, diagnostic monitoring parameters, and supported **fiber** media lengths. DMI can be configured in the x4110 via the CLI as follows.

1. Access the x4110 through either a USB connection or a Telnet session.
2. Set the Diagnostic Monitoring Interface receive preset power level. Type: **set dmi rx-power-preset-level=xx** where xx is a preset level for Rx Power on the Fiber port, in the range of 0-65535.
3. Press **Enter**. For example: **set dmi rx-power-preset-level=10**.
4. Display the DMI information. Type: **show dmi info** and press **Enter**. For example:

```
Agent III C1|S5|L1P2>set dmi rx-power-preset-level 2
Agent III C1|S5|L1P2>show dmi info
Diagnostic monitoring interface information:
-----
DMI connector type:                LC
DMI indentifier:                  DWDM-SFP/SFP+
DMI Nominal bit rate:              1300*Mbps
DMI 9/125u Singlemode Fiber (k):   80*km
DMI 9/125u Singlemode Fiber (m):   25500*m
DMI 50/125u Multimode Fiber (m):   N/A
DMI 62.5/125u Multimode Fiber (m): N/A
Copper(m):                        N/A
DMI fiber interface wavelength:    1550*nm
DMI temperature:                   30.0*C
DMI temperature:                   86.0*F
DMI temperature alarm:             normal
DMI transmit bias current:         39292*uA
DMI transmit bais alarm:           normal
DMI Transmit power:                1692*uW
DMI Transmit power:                2.284*dBM
DMI Transmit power alarm:          normal
DMI Receive power:                 0*uW
DMI Receive power alarm:           lowAlarm
DMI Vendor name:                   Transition
DMI Vendor Part Number:            TN-DWDM-SFP-5012
DMI Vendor serial number:          TWDW34Z001
DMI Vendor revision:               2.0
DMI Vendor date code:              2016-07-30
DMI Vendor Transceiver type:       SFP 1000BASE-X
DMI Vendor OUI:                    00-C0-F2
DMI Receive power intrusion threshold: 2*uW
Agent III C1|S5|L1P2>
```


DMI Parameters

The DMI tab parameters are described in the table below.

Table 3: DMI Parameters

Parameter	Description
Interface Characteristics	
DMI connector type	The external optical or electrical cable connector provided as the interface. For example: LC, SC, Dual BNC coax connectors, DB9 for RS232 and RS485, 6 Pos Terminal Block for RS485, RJ-11, unshielded twisted pair, SC fiber, 1550nm 40km, SC fiber, 1 x 9, 125km Gigabit, ST Single-Fiber 155Mbps, 6-pin RS-485 Terminal Block, DIN 6-Pin for RS232, LC Multimode Fiber, SFP cage, 5 Pos Terminal Block for RS485, Single-Fiber Multimode, SC Multimode (long haul), LC Singlemode (long haul), XFP slot, or SFP+ slot.
DMI identifier	Specifies the physical DMI device ID from the standard; for example: SFP/SFP+/SFP28, SG, Optical pigtail, MPO 1x12 (Multifiber Parallel Optic), MPO 2x16, Module/connector soldered to motherboard, SFP, 300-pin XBI, XENPAK, XFP, XFF, XFP-E, XPAK, X2, DWDM-SFP/SFP+, QSFP, QSFP+, CXP, Shielded Mini Multilane HD 4X or 8X, QSFP28, CXP2, CDFP (Style 1/Style 2), Shielded Mini Multilane HD 4X or 8X Fanout Cable, CDFP (Style 3), microQSFP, QSFP-DD Double Density 8X Pluggable Transceiver, HSSDC II, Copper Pigtail, RJ45 (Registered Jack), No separable connector, or MXC 2x16.
DMI Nominal bit rate	Bitrate in units of 100Mbps (for example: 10500, or 10.G Gbps) (measured rate).
DMI 9/125u Singlemode Fiber (km)	Specifies the link length that is supported by the transceiver while operating in single mode (SM) fiber. The unit of measure is kilometers (km). For example, 8Km.
DMI 9/125u Singlemode Fiber (m)	Specifies the link length that is supported by the transceiver while operating in single mode (SM) fiber. The unit of measure is meters (m). For example, 80m.
DMI 50/125u Multimode Fiber (m)	Specifies the link length that is supported by the transceiver while operating in 50 micron Multimode (MM) fiber. The value is in meters.
DMI 62.5/125u Multimode Fiber (m)	Specifies the link length that is supported by the transceiver while operating in 62.5 micron Multimode (MM) fiber. The value is in meters.
Copper (m)	Specifies the link length that is supported by the transceiver while operating in copper cable. The value is in meters.
DMI fiber interface wavelength	The Nominal transmitter output wavelength at room temperature (measured wavelength). The unit of measure is nanometers (for example: 1550 nm or 850 nm).
DMI temperature	Measured temperature of fiber transceiver in tenths of degrees C (Celsius). For example: 30.1°C.
DMI temperature	Measured Temperature of fiber transceiver in tenths of degrees F (Fahrenheit). For example: 86.2 °F.
DMI temperature alarm	Alarm status for temperature of fiber transceiver. An <i>ionDMITemperatureEvt</i> event is sent when there is a warning or alarm on DMI temperature. Normal -1,

Parameter	Description
	Not Supported - 2, Low Warn - 3, High Warn - 4, Low Alarm - 6 High Alarm - 7
DMI transmit bias current	Measured transmit bias current on local fiber interface, in uA (microamperes). For example, 5936 uA (microamps).
DMI transmit bias alarm	Alarm status for transmit bias current on local fiber interface. Normal -1, Not Supported - 2, Low Warn - 3, High Warn - 4, Low Alarm - 6 High Alarm - 7
DMI Transmit power	Measured transmit power on local fiber measured in microwatts. For example, 240 uW (microwatts).
DMI Transmit power	Transmit power on local fiber measured in dBm (decibels relative to one milliwatt) which defines signal strength. For example: -2.291 dBm.
DMI Transmit power alarm	Alarm status for transmit power on local fiber. Normal -1, Not Supported - 2, Low Warn - 3, High Warn - 4, Low Alarm - 6 High Alarm - 7
DMI Receive power	Receive power (measured power measurement) on local fiber measured in microwatts (for example: 11 uW).
DMI Receive power alarm	Alarm status for receive power on local fiber: Normal -1, Not Supported - 2, Low Warn - 3, High Warn - 4, Low Alarm - 6 High Alarm - 7
DMI Vendor name	A 16 character field that contains ASCII characters. The full name of the corporation, a commonly accepted abbreviation of the name of the corporation, the SCSI company code for the corporation, or the stock exchange code for the corporation. For example: Transition or other.
DMI Vendor Part Number	A 16-byte field that contains ASCII characters, defining the vendor part number or product name. A value of all zeroes in the 16-byte field indicates that the vendor PN is unspecified. For example, TN-SFP-LX1, TN-SFP-BXD, TN-SFP-OC3M, TN-SFP-OC3S, TN-10GSFP-SR or similar. For the TN-DWDM-SFP-xxxx, the xxxx indicates the center wavelength (e.g., for a TN-DWDM-SFP-5012, the 5012 indicates 1550.12 nm center wavelength laser support).
DMI Vendor serial number	A 16 character field that contains ASCII characters, defining the vendor's serial number for the transceiver. A value of all zeroes in the 16-byte field indicates that the vendor SN is unspecified. For example: TWDW34Z001, 8800022, 102201102, or similar.

Parameter	Description
DMI Vendor revision	A 4-byte field that contains ASCII characters, defining the vendor product revision number. A value of all zeroes in the 4-byte field indicates that the vendor revision is unspecified. For example e.g., 2.0.
DMI Vendor date code	An 8-byte field that contains the Vendor's date code in ASCII characters: 84-85 ASCII code, two low order digits of year. (00 = 2000). 86-87 ASCII code, digits of month (01 = Jan through 12 = Dec) 88-89 ASCII code, day of month (01-31) 90-91 ASCII code, vendor specific lot code, may be blank. For example 2016-07-30.
DMI Vendor SFP type	The SFP transceiver type. For example: None, Not Supported, SFP 100FX, SFP 1000BASE-T, SFP 1000BASE-CX, SFP 1000BASE-SX, SFP 1000BASE-LX, SFP 1000BASE-X, SFP 2G5, SFP 5G, or SFP 10G.
DMI Vendor OUI	The vendor Organizationally Unique Identifier field (Vendor OUI) is a 3-byte field that contains the IEEE Company Identifier for the vendor (e.g., 00-C0-F2). A value of all zeroes in the 3-byte field indicates that the Vendor OUI is unspecified.
DMI Receive power intrusion threshold	A preset level for Rx Power on the Fiber port. If the DMI read value falls below the preset value, an intrusion is detected, and a trap is generated (0-10). The message displays: <i>ALARM: Receive power is below specified threshold. Fiber trap intrusion may be in progress.</i> See below for alarm recovery.

DMI Messages:

Message: % Parameter value is out of range.

% Unknown command.

Meaning: There was an error in one or more CLI command parameters. .

Recovery: Verify the command parameters and re-enter the CLI command. .

Message: Error: No DMI support on this port!

The DMI feature is not supported on current port.

Meaning: C4110 port 2 DMI is not shown if there is no SFP in port 1. Without an SFP in port 1, the port 2 DMI will display "The DMI feature is not supported on the current port.". When an SFP is inserted into port 1, the port 2 DMI displays as expected.

Recovery: Insert an SFP in Port 1 and click the **Refresh** button.

Message: Error: Get DMI Vendor name no such object.

Error: Get DMI Vendor Part Number no such object.

Error: Get DMI Vendor serial number no such object.

Error: Get DMI Vendor revision no such object.

Error: Get DMI Vendor date code no such object.

Error: Get DMI Vendor SFP type no such object.

Error: Get DMI Vendor OUI no such object.

Recovery:

1. Verify the command parameters and re-enter the CLI command.
2. Verify the SFP is supported.
3. Verify that DMI is supported.

Ethernet Port Commands

The following commands are used for Ethernet port operations. The functions of some of the Ethernet port commands below depend on the type of port or SFP.

Note: These commands can only be entered at the port level - when the last part of the command line prompt indicates the location is a port (e.g., L1P1>).

Show Ethernet Port Configuration

Syntax: **show ether config**

Description: Displays the Ethernet port configurations on a slide-in module. Different ports capabilities vary, so the display content will vary according to the model and port type.

Example 1: A Port 1 example is shown below.

```
Agent III C1|S2|L1P1>show ether config
Port-14848
SM port:
-----
Speed:                            10G
Duplex:                           full
Agent III C1|S2|L1P1>
```

Example 2: A Port 2 example is shown below.

```
Agent III C1|S2|L1P1>go l1p=2
Agent III C1|S2|L1P2>show ether config
Port-24848
MM port:
-----
-
Speed:                            100M
Duplex:                           full
Agent III C1|S2|L1P2>
```

Use this procedure to define the port's Ethernet transmission speed and Duplex mode to be used on the Ethernet port. The defaults are 10 Mbps and Full Duplex. **Note:** This command is only applicable on a copper port. **Note:** Auto Cross and Auto negotiation are only shown for the copper port.

1. Access the x4110 through either a USB connection or a Telnet session.

Check the configuration settings. Type: **show ether config** and press **Enter**. The Ethernet configuration displays. The example above shows port 1 first and then port 2.

Recording Model Information and System Information

After performing the troubleshooting procedures, and before calling or emailing Technical Support, please record as much information as possible in order to help the Technical Support Specialist.

1. Select the ION system MAIN tab. (From the CLI, use the commands needed to gather the information requested below. This could include commands such as show card info, show slot info, show system information, show ether config, show ip-mgmt config, or others as request by the Support Specialist.

2. Record the Model Information for your system.

Serial Number: _____ Model: _____

Software Revision: _____ Hardware Revision: _____

Bootloader Revision: _____

3. Record the System Configuration information for your system.

System Up Time: _____ Configuration Mode: _____

Number of Ports: _____ MAC Address: _____

Data Rate Retiming: _____

LED Status: _____

4. Provide additional Model and System information to your Technical Support Specialist. See “Basic ION System Troubleshooting”.

Your service contract number: _____

A description of the failure: _____

A description of any action(s) already taken to resolve the problem (e.g., changing switch mode, rebooting, etc.): _____

The serial and revision numbers of all involved Lantronix products in the network:

A description of your network environment (layout, cable type, etc.): _____

Network load and frame size at the time of trouble (if known): _____

The device history (i.e., have you returned the device before, is this a recurring problem, etc.):

Any previous Return Material Authorization (RMA) numbers: _____

Appendix A: CLI Messages and Recovery

The following messages may display during CLI operations.

Ambiguous command

A. This message indicates either a) the input for one of the parameters is incorrect, or b) a hyphen is missing between two parts of the command.

1. Verify the CLI command syntax.
2. Retry the operation.

B. You typed part of a valid CLI command and pressed **Enter** before completing the command syntax. For example, if you type

```
C1|S7|L1D>add v
```

and then press the **Enter** key, the message “% *Ambiguous command.*” displays.

1. Type the part of the command that failed (**add v** in the example above), type a question mark (?), and the press **Enter**. The valid commands that start with the part of the command you initially entered are displayed.
2. Verify the CLI command syntax.
3. Retry the operation.

C. The system was unable to resolve the desired command based on the portion of the command entered. For example, you entered the following: C1|S7|L1D>set dot1

1. Verify the command syntax.
2. Retry the CLI command syntax. See Appendix A.
3. If the problem persists, contact Technical Support.

Cannot get link pass through information on this card

This message indicates that a link pass through (LPT) CLI command was entered for an IONMM. CLI commands for LPT operations are only valid for slide-in modules other than the IONMM.

1. Use the **go** command to change from the IONMM to the specific slide-in module. The **go** command format is:
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
2. Retry the operation. For a complete list of the available commands, see the ION System CLI Reference Manual, 33473.
3. If the problem persists, contact Technical Support.

This message indicates that a port level command was entered for the IONMM but the command is only valid for the other types of slide-in modules.

1. Use the **go** command to change location of where the command operates. The **go** command format is:
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
2. Retry the operation.
3. If the problem persists, contact Technical Support.

Cannot get port security on this port!

This message indicates that a port level command was entered for the IONMM but the command is only valid for the other types of slide-in modules.

1. Use the **go** command to change location of where the command operates. The **go** command format is:
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
2. Retry the operation. For a complete list of the available commands, see the ION System CLI Reference Manual, 33473.
3. If the problem persists, contact Technical Support.

Command incomplete

This message indicates that not all of the required fields were entered for the CLI command.

1. Verify the command syntax.
2. Retry the operation. For a complete list of the available commands, see the ION System CLI Reference Manual, 33473.
3. If the problem persists, contact Technical Support.

Could not open connection to the host on port 23. Connection failed.

This message indicates that the Telnet server and client are configured for different ports. For Telnet operations the default port is 23.

1. Ensure that the Telnet port is set to 23 for both the server and the client. This will require someone with administrative rights in order to make a change.
2. Add the port number to the Telnet command. For example:

```
Telnet <ipaddr> <port#>
```

3. If the problem persists, contact Technical Support.

Error: this command should be executed on a device

This message indicates that the CLI command was entered for a port and it is only applicable for a device.

1. Use the **go** command to change location of where the command operates. The **go** command format is:
`go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)`
2. Retry the operation.
3. If the problem persists, contact Technical Support.

Error: this command should be executed on a port

This message indicates that the CLI command was entered for a card and it is only applicable for a port.

1. Use the **go** command to change location of where the command operates. The **go** command format is:
`go [c=CHASSIS] [s= SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)`
2. Retry the operation.
3. For a complete list of the available commands, see [Appendix A](#).
4. If the problem persists, contact Technical Support.

Fail to get MAC address!

This message indicates that communications to the module can not be established.

1. Verify that the correct hierarchy has been specified in the command (see [“Managing Slide-In and Remote Modules Using CLI Commands”](#)).
2. For all modules (slide-in and remote) check the following:
 - module is properly seated/connected
 - module is powered up
3. Wait 60 seconds, then retry the operation.
4. Cycle power for the module in question. **Note:** for slide-in modules pull the module out so it is no longer connected to the backplane, then slide the module back in, ensuring that it is firmly seated.
5. Retry the operation.
6. If the problem persists, contact Technical Support.

Fail to get port type!

This message indicates that a port level command was entered for the IONMM but the command is only valid for the other types of slide-in modules.

1. Use the **go** command to change location of where the command operates.
2. Retry the operation.
3. If the problem persists, contact Technical Support.

Incomplete location command!

This message indicates that one or more parameters for the **go** command are missing. The **go** command was entered to set location parameters, but the module, slot and/or port value(s) were not included in the command string.

The **go** command can operate on a local or remote card/port, and you must give the last parameter to specify the target is a port or device. For example, the input **go c=1 s=14** does not include the port parameter, so the CLI module displays “Incomplete location parameters”.

1. Verify the command syntax.
2. Re-enter the **go** command and be sure to include all of the location parameters:

```
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
```

3. If the problem persists, contact Technical Support.

Invalid location parameters, cannot find the physical entity!

This message indicates that the system can not detect the presence of the device or port specified in the **go** command.

1. Verify that the correct hierarchy has been specified in the command (see [“Managing Slide-In and Remote Modules Using CLI Commands”](#)).
2. For all modules (slide-in and remote) check the following:
 - module is properly seated/connected
 - module is powered up
3. Wait 60 seconds then retry the operation.
4. Cycle power for the module in question. **Note:** for slide-in modules pull the module out so it is no longer connected to the backplane, then slide the module back in, ensuring that it is firmly seated.
5. Retry the operation.
6. If the problem persists, contact Technical Support.

Invalid user!

This message indicates that the specified user is not valid.

1. Verify the user.
2. Retry the operation.
3. If the problem persists, contact Technical Support.

Login incorrect

This message indicates that either the login or password entered while trying to establish a USB or Telnet connection is incorrect.

1. Verify the login/password.

Note: the login and password are case sensitive. The default login is **ION** and the default password is **private**.

2. Retry the operation.
3. If the problem persists, contact Technical Support.

No DMI support on this port!

This message indicates that you entered a DMI command for a port that does not support DMI.

1. Verify that the port supports DMI.
2. Retry the operation.
3. If the problem persists, contact Technical Support.

There is no matched command

This message indicates that there is no such command available on this system.

1. Verify the command syntax.
2. Retry the operation.
3. If the problem persists, contact Technical Support.

Unable to open xx. Please check your port settings.

This message indicates that HyperTerminal no longer recognizes which COM port to use for its connection.

1. Check that the USB cable is connected to the management station and the IONMM.
2. Check that the COM port is listed for the device manager on the management station (PC).
 - a) On the desktop, right-click on **My Computer**.
 - b) Select **Manage**.
 - c) Click **Device Manager**.
 - d) In the right panel, expand the list for **COM & LPT**.
3. Is the COM port in the list?

Yes	No
Continue with step 4 .	Restart the management station.

4. In the HyperTerminal window, select **File>Properties**.
5. Check that the correct port is listed in the **Connect using** field.
6. Restart the management station.
7. Reboot the IONMM.
8. If the problem persists, contact Technical Support.

Error, you should first give full location parameters

The location value is incomplete; it is missing the module, slot and/or port value(s). This message can display when a device-level command is entered (e.g., **show lpt config**).

When you change a bigger container, the value of smaller object is cleared. For example, originally the operated object is Chassis=1, slot=4, L1AP=1 L2AP=2 L3D, and then when the command chassis 3 is entered. This automatically sets the value of module, slot and port to 0.

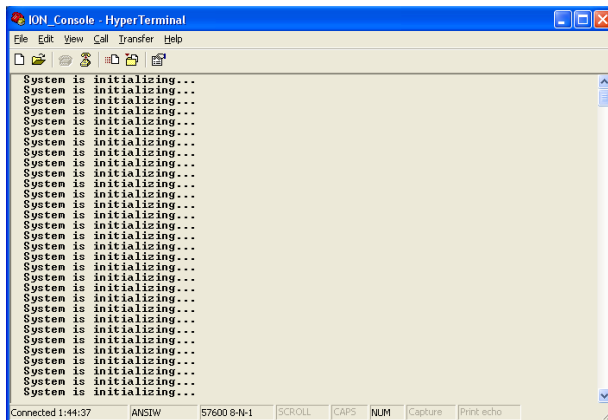
If the value of module, slot and port are not set in later commands, and then you run a device-level command (e.g., **show lpt config**), this error message displays.

Enter the **go** command and be sure to include all of the location parameters.

```
go [c=CHASSIS] [s=SLOT] [l1ap=L1APORT] [l2ap=L2APORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
```

System is initializing...

CLI is receiving continuous error message "system is initializing..."



1. Wait for a few minutes for the message to clear.
2. Cycle power to the IONMM.
3. Retry the operation.
4. If the problem persists, contact Technical Support. See [Contact Us](#) on page 40.

Start HTTPS certificate failed.

1. Verify the HTTPS parameters (HTTPS is enabled, the certificate type is defined, certificate file defined, private key file defined, password defined).
2. Verify that the HTTPS server is operational.
3. Retry the operation (i.e., type **start https certificate** and press **Enter**).
4. If the problem persists, contact Technical Support.

This command is only available on <x323x> card!

The command you entered is not supported on the card from which it was entered (e.g., you entered **set soam ma**, **set soam meg**, or **set soam mep** from a x4110 card, which does not support SOAM).

1. Verify the command entered is the one you want.
2. Verify that the device for the command entered can support the function of the command.
3. Retry the operation.
4. If the problem persists, contact Technical Support.

Error: this command should be executed on a port!

1. Verify the command entered is the one you want.
2. Change to the desired port; enter the **go** command with all of the location parameters (chassis / slot / port).
3. Retry the operation from the port (i.e., type **show fwd portlist** and press **Enter**).

Unknown command!

The command you entered is not supported, or you entered the wrong command format / syntax.

1. Verify the CLI command syntax.
2. Retry the operation.
3. For a complete list of the available commands, see Appendix A.
4. If the problem persists, contact Technical Support.

There is no matched command.

The command you entered is not supported, or you entered the wrong command format / syntax.

1. Verify the CLI command syntax.
2. Retry the operation.
3. For a complete list of the available commands, see Appendix A.
4. If the problem persists, contact Technical Support.

Error location parameter number!

The go command you entered had an invalid or missing parameter.

1. Enter the **go** command with all of the location parameters (chassis / slot / port) in the format:

```
go [c=CHASSIS] [s=SLOT] [l1ap=PORT] [l2ap=PORT] (l1p=PORT|l2p=PORT|l3p=PORT|l1d|l2d|l3d)
```

Fail to set link pass through state!

You tried to set the LPT state to an unacceptable state. For example, you typed:

```
C1|S3|L1D>set lpt state=enable
```

1. Verify the CLI command syntax.
2. Check the **set lpt monitor-port** and **set selective lpt state** command settings.
3. Enter the **show lpt config** command and in the Link Pass Through configuration, check if the Link pass through state is set to **notSupported** or if the **Remote fault detect state** is set to **notSupported**.

If either is set to **notSupported**, change the setting to enable (e.g., type **set rfd state enable** and press **Enter**).

4. Retry the operation.
5. If the problem persists, contact Technical Support.

TFTP transfer failed!

The attempted firmware upgrade via the **tftp upgrade** command was unsuccessful.

1. Verify the CLI command syntax.
2. Verify the firmware version.
3. Be sure the TFTP server is configured and running.
4. Check that the remotefile is in the proper location (e.g., the file *x323x.bin.0.5.4* is at *C:\TFTP-Root*).
5. Retry the operation. See the **tftp upgrade** command.
6. If the problem persists, contact Technical Support.

Fail to transfer the file!

tftp get: set address type failed.

tftp put failed.

The file transfer attempt failed. The command you entered to do a tftp file transfer was unsuccessful (e.g., tftp get or tftp put or tftp transfer). For example:

```
C1|S4|L1D>tftp get iptype ipv4 ipaddr 192.168.1.30 remotefile xxxx
tftp get: set address type failed.
C1|S4|L1D>tftp put iptype ipv4 ipaddr 192.168.1.30 localfile xxxx
tftp put failed.
C1|S4|L1D>tftp upgrade iptype ipv4 ipaddr 192.168.1.30 remotefile xxxx
tftp get: set address type failed.
```

1. Check the command syntax. See IONMM User Guide manual.
2. Make sure the TFTP server is configured and running.
3. Verify the filename to be transferred, its location, and the IP address of the TFTP server.
4. If the problem persists, contact Technical Support.

The attempted show dot1bridge aging-time command failed to complete.

1. Verify the **dot1bridge aging-time** command syntax. See the IONMM User Guide manual.
2. Retry the operation. See the **dot1bridge aging-time** command
3. If the problem persists, contact Technical Support.

Redundancy is not supported on this card!

The attempt to set or show fiber redundancy failed. For example, you entered the command: **show redundancy info**, but the device does not support fiber redundancy.

1. Verify that the card you entered the command on supports this function (must have at least 2 fiber ports) .
2. Retry the operation on a card that supports this function.
3. If the problem persists, contact Technical Support.

Invalid user!**Fail to set SSH server state!**

You entered the command **show ssh public-key user admin**, but the x4110 does not support SSH.

1. Use the **go** command to switch to a device that supports SSH.
2. If the problem persists, contact Technical Support. US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

Upgrade is only supported on IONMM card!

You entered a firmware *upgrade* or firmware *update* command from a device other than the IONMM. For example:

```
C1|S3|L1D>show firmware upgrade result
C1|S3|L1D>show firmware-db update result
C1|S3|L1D>show upgrade firmware file
C1|S3|L1D>update firmware-db file cert
C1|S3|L1D>upgrade module
```

1. Make sure of the command you want to enter. See the IONMM User Guide manual.
2. Use the **home** command to go to the IONMM device.
3. Re-enter the firmware upgrade command from the IONMM.
4. If the problem persists, contact Technical Support.

DMI is only supported on FIBER port!

You entered the command **show dmi info** on a card that does not support it. For example:

```
C1|S7|L1P1>show dmi info
DMI is only supported on FIBER port!
```

1. Verify if the card supports DMI.
2. Use the **go** command to switch to a different card port supporting Fiber.
3. Verify the command entry. See “[DMI Commands](#)” section above.
4. If the problem persists, contact Technical Support.

Cannot clear loopback counters on this card!
Cannot set administrate state on this port!
Cannot set advertisement capability on this port!
Cannot set autocross on this card!
Cannot set auto negotiation state on this port!
Cannot set Ethernet port speed for this card!
Cannot set Ether port duplex mode on this card!
Cannot set far end fault on this card!
Cannot set filter unknown dest unicast frames on this port!
Cannot set pause on this port!
Cannot set source address lock action on this port!
Cannot set USB port state on this card!
Cannot get port security configuration on this port!
Cannot show forwarding port list on this card!
Cannot show USB port state on this card!
Cannot show port QoS configuration in this card!
Cannot set tag type for priority in this card!
Cannot set default priority in this card!
Cannot set IEEE tag for priority in this card!
Cannot get VLAN database configuration on this card!
Cannot get LOAM configuration on this port!
Cannot set remote fault detect state on this card!
Cannot set service vid for tag on this card!
Fail to set management VLAN id!
Fail to set management VLAN state!
Cannot set bandwidth alloc type on this card!
Cannot set ingress and egress rate on this card!
Cannot show system information on this card!
Cannot set ingress and egress rate on this card!
IP management is not supported on this card!
Link OAM is not supported on this card!
No tdm loopback supported on this card!
No Time-domain reflectometer support on this card!
Syslog is not supported on this card!
TAOS status setting is not supported on this card!
TNDP is not supported on this card!

You entered a command for a function not supported on the card. For example:

```
C1|S7|L1P1>clear ether all counters
Cannot clear loopback counters on this card!
C1|S7|L1P1>show qos config
Cannot show port QoS configuration in this card!

C1|S7|L1P1>show qos priority remapping
Cannot show port QoS priority remapping in this card!
```

1. Verify if the card supports the desired function.
2. Use the **go** command to switch to a different card port supporting loopback.
3. Verify the command entry.

Cannot set slot power on this card!

You entered a **set slot power=** command on a device that does not support it. For example:

```
C1|S16|L1P1>set slot 16 power on
Cannot set slot power on this card!
```

1. Verify this is the command you want.
2. Verify the command parameter; make sure you are not trying to power up a slot that already has power.
3. Use the **go** command to switch to the slot you want.
4. If the problem persists, contact Technical Support.

Error: this command should be executed on a power sensor or fan!

You entered a **set sensor** command on a device that does not support it. For example:

```
C1|S16|L1P1>set sensor stid 1 notif true
Error: this command should be executed on a power sensor or fan!
```

1. Verify this is the command you want.
2. Use the **stat** command to show the chassis configuration. For example:

```
[ 22] IONPS-A
      Temperature Sensor
      Volatage Sensor
      Power Sensor
      Fan-1
      Fan-2
```

3. Use the **go** command to switch to the power sensor or fan.
4. If the problem persists, contact Technical Support.

Invalid forward port list!

You entered an invalid parameter in response to a prompt (e.g., for a module number for firmware upgrade). For example:

```
C1|S7|L1D>upgrade module
Available modules:
index      module                                     loc
-----
1          ION219                                    c=1 s=0 11d
2          C3230-1040                               c=1 s=3 11d
3          C3230-1040                               c=1 s=5 11d
4          S3230-1040                               c=1 s=5 11ap=2 12d
5          IONMM                                     c=1 s=7 11d
6          C3231-1040                               c=1 s=10 11d
7          C2220-1014                               c=1 s=16 11d
8          C3220-1040                               c=1 s=18 11d
9          IONPS-A                                  c=1 s=22 11d

Choose the module you want to upgrade: (eg. 1,3,16; at most 8 modules
to upgrade, press 'q' to exit upgrade)
show card info

Invalid forward port list!
```

1. Re-enter the command, wait for the prompt, and then enter a response in the correct syntax.
2. See the related command / function section of this manual.
3. If the problem persists, contact Technical Support.

L2CP is not supported on this card!

You tried to perform an L2CP function but the device does not support L2CP.

1. Make sure this is the command / function that you wanted.
2. Use the **go** command to switch to a device that supports L2CP.
3. Try entering another command.
4. If the problem persists, contact Technical Support.

Can not set speed on this port!

You entered the CLI command to define the x4110 port's operating speed, but the command failed.

For example:

```
C1|S5|L1P2>set ether speed 100M
Can not set speed on this port!
C1|S5|L1P2>
```

1. Verify the x4110 supports this speed.
2. Verify the command syntax.
3. Re-enter the **set ether speed=** command with a speed supported by the card.
4. If the problem persists, contact Technical Support.

Cannot remove vlan on this card!

You entered a command to delete one or all VLANs from the x4110, but the action cannot be performed. For example:

```
C1|S7|L1D>remove vlan all
Cannot remove vlan on this card!
C1|S7|L1D>remove vlan vid=3
Cannot remove vlan on this card!
C1|S7|L1D>
```

1. Make sure this is the function that you want.
2. Use the **go** command to switch to a x4110 that supports the VLAN database.
3. Use the **add vlan-db** command to add a VLAN VID if needed.
4. If the problem persists, contact Technical Support.

Cannot remove forward database rows on this card!

You entered a command to delete a VLAN forward database VID (forward database row) from the x4110, but the action cannot be performed. For example:

```
C1|S7|L1D>remove vlan-db vid 3
Cannot remove forward database rows on this card!
C1|S7|L1D>
```

1. Make sure this is the function that you want.
2. Use the **go** command to switch to a NID that supports the VLAN FDB.
3. If the problem persists, contact Technical Support.

Error symbol period window low is out of range, its range is 125000000 - 268435455!

Error frame period window is out of range, its range is 174762 - 104057560!

Error frame period threshold is out of range, its range is 0 - 268435455!

Error frame window is out of range, its range is 10 - 600!

Error frame threshold is out of range, its range is 0 - 268435455!

Error frame seconds summary window is out of range, its range is 100 - 9000!

Error frame seconds summary threshold is out of range, its range is 0 - 268435455!

A parameter entered in the "Event Configuration" has exceeded the range limitation.

1. Enter a parameter within the valid range displayed.
2. If the problem persists, contact Technical Support.

ERROR: Current user is not authorized to do this operation!
% There is no matched command.

You tried to enter a CLI command but the entry failed.

An Admin user has full rights to read/write all configurations through Web/CLI. An Admin user can create new users and delete any users other than itself and ION.

A Read-Write user can read/write all configurations except for Upgrade and Backup/Restore via the Web or CLI. A read-write user can also change its own login password. When a read-write user logs in via the Web, the “UPGRADE” tab and the “BACKUP/RESTORE” tab are disabled. When a read-write user logs in via the CLI, all set commands except for upgrade and backup/restore can be executed.

A Read-Only user can read all configurations except for Upgrade and Backup/Restore through the Web/CLI.

1. Try another command on the x4110.
2. Check with the Admin if the command should be supported.
3. If the problem persists, contact Technical Support.

Error: This card is in hardware mode and no setting allowed!

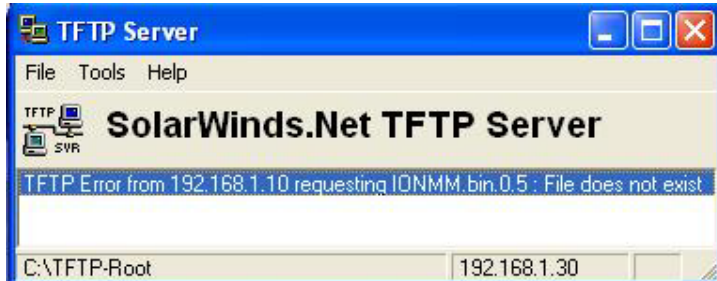
You tried to enter a CLI command with the x4110 in Hardware mode.

1. Change the x4110 to Software mode. See the x4110 Install Guide manual for information.

TFTP Server Messages

Messages like the ones below may display during TFTP Server operation, depending on the TFTP Server package that you use.

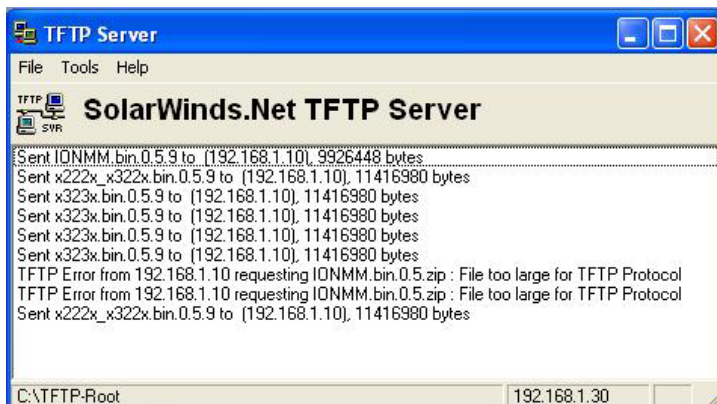
Message: *File does not exist*



Meaning: A TFTP Server error - the TFTP Server Address that you specified does not contain the Firmware File Name specified.

Recovery: 1) Verify the TFTP server's correct file location (e.g., local disk at *C:\TFTP-Root*). 2) Make sure of the filename / extension. 3) Check the TFTP Server's online helps for suggestions.

Message: *File too large for TFTP Protocol*



Meaning: A TFTP Server error - you tried to upload a file e.g., (IONMM.bin.0.5 – 50Mb) but the TFTP server failed. The file you tried to upload via the TFTP server exceeded the file size capability.

Recovery: 1) Check if some extra files ended up in the zip folder – some repeated – 6 FW files total.
2) Remove some of the files from the zip folder and try the upload again. 3) Send the remaining files in a separate file. 4) Check the TFTP Server's online helps for suggestions.

Appendix B: Linux Commands

ION supports certain standard Linux file system commands such as **cat**, **cd**, **ls**, **more**, **pwd**, and **rm**. These commands are restricted to the user directories; internal Linux file systems are not accessible.

The ION standard Linux file system commands are based on BSD 4; refer to the related documentation for more information.

cat Command

Command: cat

Description: Show the content of the FILES. Concatenate files and print on the standard output.

Example: C1|S7|L1D>cat [OPTION]

Options: Refer to the BSD 4 documentation for options and Interactive commands for the **more** command.

cd Command

Command: cd

Description: Change to another directory.

Example:

Options: Refer to the BSD 4 documentation for options and Interactive commands for the **more** command.

ls Command

Command: ls

Description: Unix and Unix-like operating systems maintain the concept of a current working directory, (i.e., where you are currently positioned in the hierarchy of directories).

When invoked without any arguments, **ls** lists the files in the current working directory. This command is restricted to the IONMM user directories; internal Linux file systems are not accessible.

The IONMM card stores all configuration backup files, HTTPS certification file, SSH key file, and Sys-log file. For example, the HTTPS certificate is stored in `'/agent3/conf/lighttpd'`. For SSH, the host keys (RSA and DSA) are stored in `'/agent3/conf/dropbear'`. For the SSH user key, there is a 'root' user and the user key for 'root' is stored in `'/root/.ssh'`.

Example:

```
C1 | S7 | L1D>ls
agent3
app
bin
dev
etc
lib
linuxrc
mnt
proc
root
sbin
sys
tftpboot
tmp
usr
var
www
C1 | S7 | L1D>
```

Options:

Without options, **ls** displays files in a bare format. This bare format however makes it difficult to establish the type, permissions, and size of the files. The most common options to reveal this information or change the list of files are:

-l long format, displaying Unix file types, permissions, number of hard links, owner, group, size, date, and filename

-F appends a character revealing the nature of a file, for example, * for an executable, or / for a directory. Regular files have no suffix.

-a lists all files in the given directory, including those whose names start with "." (which are hidden files in Unix). By default, these files are excluded from the list.

-R recursively lists subdirectories. The command `ls -R /` would therefore list all files.

-d shows information about a symbolic link or directory, rather than about the link's target or listing the contents of a directory.

-t sort the list of files by modification time.

-h print sizes in human readable format. (e.g., 1K, 234M, 2G, etc.)

Example:

```
C1|S3|L1D>ls etc
```

```
TZ
VERSION
dropbear
factory
fstab
group
gshadow
host.conf
hostname
hosts
init.d
inittab
lighttpd
lighttpd.conf
motd
openssl
passwd
profile
protocols
radius
rcS.d
resolv.conf
rpc
script
services
shadow
snmpd.conf
sysconfig
terminfo
```

```
C1|S3|L1D>
```

Refer to the BSD 4 documentation for additional options and Interactive commands for the **more** command.

more Command

Command: more

Description: A filter for paging through text one screenful at a time.

Example: C1|S7|L1D>more [OPTION]

Options: Refer to the BSD 4 documentation for options and Interactive commands for the **more** command.

pwd Command

Command: pwd

Description: Show current directory.

Example:

```
C1|S7|L1D>pwd
/
C1|S7|L1D>
```

Options: Refer to the BSD 4 documentation for options and Interactive commands for the **pwd** command.

Appendix C: Warranty and Compliance Information

For Warranty, Returns, Electrical Safety Warnings, and Compliance Information see the related Install Guide.

Appendix D: SNMP MIBs and Traps Support

See the IONMM SNMP User Guide for information on SNMP traps supported, supported MIBs, private MIB objects tree example, Downloading, Compiling and Integrating MIBs, Trap service and functions, the Trap Server Log, and an example of ION SNMP operation.

For Additional SNMP MIB Trap Information

For information on Network Management for Microsoft Networks Using SNMP, see <http://technet.microsoft.com/en-us/library/cc723469.aspx> or the MSDN Library.

The notification MIB is described in section 4.2 and section 7.2 of RFC 2573, available from the IETF web site at <http://www.ietf.org/rfc/rfc2573.txt>.

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