CHAPTER 1

The Set Command

Use the **set** command to set the value of a specified MIB object within a LightStream 2020 (LS2020) node, or to set the state of the CLI program. The syntax of the command is as follows:

`set` *`type [ID] parameter1`* [*`parameter2`*]

The **set** commands are described according to their *type* argument in the following sections:

set card	Card Attributes
set chassis	Chassis Attributes
set cli	CLI Display and Logging Attributes
set collection	Collections of Statistical Counts
set config	The Configuration Lock Attribute
set modem	Modem Attributes
set pid	Process Attributes
set port	Port Attributes (including traffic filters, traffic profiles, and multicast groups)
set snmp	SNMP Attributes
set stb	Spanning-Tree Bridge Attributes
set tcs	Test and Control System Attributes
set trap	Traps

Note The **set** command requires protected mode for the **set modem**, **set tcs**, **set trap**, and **set port** *c.p* **np-deliver** commands only. See the **protected** command in the chapter entitled "CLI Control Commands."

Note The **set** command requires that the read/write community name be set first to a name that has been assigned the value `write` in the mma.communities file (unless *parameter1* is **cli**, **modem**, or **snmp**). Because the default community name "public" is read only, the **set** command fails if the read/write community name has not been set first. For information on setting the read/write community, see the description of the command **set snmp community** in this chapter and in the chapter on administrative tasks in the *LightStream 2020 Network Operations Guide*.

The following sections describe the additional arguments that may be used with each *type* argument.

Card Attributes

Use the **set card** command family to set the administrative state of the card to active, inactive, or testing. Use it also to set the peak cell rate on a CLC card configured for 4-port T3/E3 trunk or 1-port OC-3 trunk operation.

The **set card** commands require a card number (in the range 1-10) as an argument.

set card card# active

Use the **set card** *card#* **active** command to set the administrative state of the specified card to `active`.

Note When the card is set active from some other state, card parameters are set to defaults, then overwritten from on-board memory (if temporary changes were made) and from the configuration database, in that order. The result can be a combination of defaults, "temporary" changes, and database settings, depending upon which parameters were set in EEPROM and in the configuration database.

Note After a power reset or reboot of the node, the operational status of a card may be `down` while its administrative status and configuration register value are both `up`. To bring the card up in these circumstances, set it to **inactive** and then to **active**.

set card card# inactive

Use the **set card** *card#* **inactive** command to set the administrative state of the specified card to **inactive**.

Note Do not use the Verify function of the configurator when a card is set to **inactive.** The Verify function copies attribute values from run-time memory. When a card is inactive (or down for any reason), the Verify function can access only the card's type, number, and administrative status. If you choose to write values to the local database, it deletes all other configured attribute values stored there. See the *Lightstream 2020 Configuration Guide* for details about the Verify function.

set card card# testing

Use the **set card** *card#* **testing** command to set the administrative state of the specified card to **testing**. This is done during some troubleshooting procedures. This command is of interest primarily to support personnel and developers.

Note The **test** command is the preferred way to run diagnostics on cards from the CLI. It automatically sets the card state to testing.

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set card card# peak-cell-rate rate

Use the **set card** *card#* **peak-cell-rate** *rate* command to set the peak per-port cell rate (in cells per second) for a 4-port T3/E3 or single-port OC-3 trunk card. The value of *rate* must be in the range 0-446,000. Use this parameter to ensure that ATM traffic over a virtual path connection (VPC) does not exceed the maximum rate enforced in an ATM hub or network through which the VPC passes. This maximum cell rate applies to all ports on the card.

Chassis Attributes

Use the **set chassis** command family to set values of specified chassis attributes. For constraints among the various IP addresses and masks, refer to the *LightStream 2020 Network Operations Guide* and the *LightStream 2020 Configuration Guide*.

The arguments of the **set chassis** command are as follows:

set chassis activeip IPaddress

Use the **set chassis activeip** *IPaddress* command to set the IP address that designates the active NP, whichever NP is active in a given chassis. This address is known to both NPs and to all nodes in the LS2020 network. To connect to this address via a host or router outside the LS2020 network, the address must be included in the static routing table on that host or router.

set chassis secondaryip IPaddress

Use the **set chassis secondaryip** *IPaddress* command to set the IP address that designates the backup NP. This address is known to both NPs and to all nodes in the LS2020 network. To connect to this address via a host or router outside the LS2020 network, the address must be included in the static routing table on that host or router.

set chassis congestion

Use the **set chassis congestion** command to set three time values used to control congestion avoidance operations.

set chassis maxpermitinterval microseconds

Use the **set chassis maxpermitinterval** *microseconds* command to set the maximum (minimum) interval, in microseconds, at which trunk cards and outgoing edge cards may report permit limits.

set chassis minpermitinterval microseconds

Use the **set chassis minpermitinterval** *microseconds* command to set the maximum (minimum) interval, in microseconds, at which trunk cards and outgoing edge cards may report permit limits.

set chassis mincainfointerval microseconds

Use the **set chassis mincainfointerval** *microseconds* command to set the minimum interval, in microseconds, at which congestion avoidance processes may distribute aggregated CA updates to input edge cards.

set chassis consoletraplevel

Use the **set chassis consoletraplevel** *level* command to set the level of traps that are reported by this node to the console. This is independent of what is reported to the NMS (see **set chassis traplevel** and **set cli traplevel**). The trap levels are as follows:

- **off**
- **oper**
- **info**
- **trace**
- **debug**

Each trap level is progressively more inclusive: the info level includes oper traps, the trace level includes info and oper traps, and the debug level includes all traps. See the *LightStream 2020 Traps Reference Manual* for information about trap levels.

Note There must be a compelling reason to use any arguments other than **off** or **oper**. Use the **set trap** command for individual traps instead, to avoid flooding the node with traps, which could degrade performance.

---

set chassis defrouter IPaddress

Use the **set chassis defrouter** *IPaddress* command to set the default router address for network management traffic originating at the local NP. This address is used in the absence of any other routing information for such traffic.

set chassis ethernetaddr OBLANaddr

Use the **set chassis ethernetaddr** *OBLANaddress* command to set the Ethernet address for the NP's on-board ethernet LAN interface. It is used by whichever NP is active. Not all LS2020 nodes need have an Ethernet connection.

set chassis ethernetmask mask

Use the **set chassis ethernetmask** *mask* command to set the subnet mask for the NP's on-board ethernet LAN interface.

set chassis name chassis_name

Use the **set chassis name** *chassis_name* command to set the chassis name (node name). The name may be any alphanumeric string up to 39 characters long.

set chassis netmask mask

Use the **set chassis netmask** *mask* command to set the subnet mask for the active and secondary IP addresses.

set chassis primaryswitch

Use the **set chassis primaryswitch** {**sa**|**sb**} command to establish the specified switch card (SA or SB) as the primary or active switch. The other switch card becomes the inactive redundant backup switch. (With Release 1 switch cards, the chassis reboots.)

set chassis traplevel

Use the **set chassis traplevel** *level* command to set the level of traps that are reported for this node. This is independent of what is reported to the console (see **set chassis consoletraplevel**) and what is reported to the CLI or NMS (see **set cli traplevel**). The trap levels are as follows:

- **oper**
- **info**
- **trace**
- **debug**

Each trap level is progressively more inclusive: the info level includes oper traps, the trace level includes info and oper traps, and the debug level includes all traps. See the *LightStream 2020 Traps Reference Manual* for information about trap levels.

Note There must be a compelling reason to use any argument other than **oper**. Use the **set trap** command for individual traps instead to avoid flooding the node with traps, which could degrade performance.

---

set chassis traplog

Use the **set chassis traplog** {**on**|**off**} command to control the logging of traps in the file mma.traplog. The default state, when node software is started, is to log traps.

CLI Display and Logging Attributes

Use the **set cli** command family to set values of specified CLI attributes.

set cli debug

Use the **set chassis traplog** {**on**|**off**} command to set the debug flag. If the debug flag is on, additional information about the course of command execution is displayed, including the names of MIB variables as they are queried or set, and each trap message becomes quite verbose. This command is of interest only to developers and support personnel.

set cli echosource

Use the **set chassis echosource** {**on**|**off**} command to turn the echoing of sourced commands on or off. The default is to display shell commands as they are executed under the **source** command Chapter 4.

set cli lineedit

Use the **set chassis lineedit** {**on**|**off**} command to turn line editing capability on or off. When this function is turned on, CLI command lines may be edited with control keys (see the *LightStream 2020 Network Operations Guide*).

set cli log

Use the **set cli log "***logfile***"** command to record a copy of all user input and CLI output that is displayed on the screen in the current CLI session.

Note Always surround the file name or pathname of *logfile* with quotation marks, as in the following example:

```
cli> set cli log ”cli.log.9502”
```

If you fail to do so, the CLI reports a syntax error.

This command turns the CLI logging function on and directs its output to the specified file *logfile*. If *logfile* is not in the current working directory (usually the same directory as the user account you are using), you must enter the full pathname of the file. All user input and output of the current CLI session is copied to *logfile* until you turn the logging function off with **set cli log off** or exit the CLI. (The log file cannot be displayed until the logging function has been turned off.) If you re-open the same log file, output from the new session is appended to the previously logged session output.

set cli term termtype

Use the **set cli term** *termtype* command to set the terminal type to *termtype*. See the file /etc/termcap for acceptable values.

set cli timeout

Use the **set cli timeout** *seconds* command to specify an SNMP timeout value. The value of *seconds* is in the range 6-200 seconds. The CLI waits this long before timing out on an SNMP request to a target that doesn't respond right away.

set cli timer

Use the **set cli timer** command to reinitialize the timer that normally indicates time elapsed since the current CLI session was started.

set cli timestamp

Use the **set cli timestamp** command to control the appearance of a timestamp after each CLI prompt. It requires an argument, **on** or **off**. When this parameter is set **on**, a time stamp appears after each prompt, as an aid to tracking and reporting operational problems.

set cli traplevel level

Use the **set traplevel** *level* command to set the level of traps that are reported to the CLI and to an NMS. This is independent of what is reported to the console (see **set chassis consoletraplevel**) and what is reported by the chassis (see **set chassis traplevel**). The trap levels are as follows:

- **off**
- **oper**
- **info**
- **trace**
- **debug**

Each trap level is progressively more inclusive: the info level includes oper traps, the trace level includes info and oper traps, and the debug level includes all traps. See the *LightStream 2020 Traps Reference Manual* for information about trap levels.

Note There must be a compelling reason to use any arguments other than **off** or **oper**. Use the **set trap** command for individual traps instead, to avoid flooding the node with traps, which could degrade performance.

Collections of Statistical Counts

Use the **set collection** command family to create, configure, or control a specified collection process. A collection process collects statistical counts of specified traffic or events as recorded in specified MIB objects. See the *LightStream 2020 Network Operations Guide* for information about data collections and how to use them and monitor them.

set collection # addvar MIB_object

Use the **set collection# addvar** *MIB_object* command to add *MIB_object* to the MIB objects whose values are included in the specified collection. The specified object must be a counter (see the chapter entitled "LightStream 2020 MIB Reference"), and the collection must first have been created with the **set collection# create** command.

Note A very large collection may affect system response time.

set collection # create

Use the **set collection# create** command to create the specified collection. Other parameters of this command cannot be specified for a given collection until the collection has been created.

set collection # del

Use the **set collection# del** command to remove the specified collection from the system.

set collection # delvar MIB_object

Use the **set collection# delvar** *MIB_object* command to remove *MIB_object* from the set of objects whose values are included in the specified collection.

set collection # halt

Use the **set collection# halt** command to suspend the specified collection. It may be started again any time before the time specified by **endtime**.

set collection # start

Use the **set collection# start** command to invoke the specified collection. It may be halted and started any number of times in the time range specified by **begintime** and **endtime**.

set collection # begintime

Use the **set collection# begintime** [[[[*yy***:**]*mm*:]*dd***:**]*hh***:***mm***:***ss*] command to set the time at which the specified collection is available to be started with the **start** argument. The default beginning time is the current time. Here, *yy* is the year, *mm* is the month, *dd* is the day, and *hh***:***mm***:***ss* is the time of day.

set collection # endtime

Use the **set collection# endtime** [[[[*yy***:**]*mm*:]*dd***:**]*hh***:***mm***:***ss*] command to set the time at which the specified collection is no longer available to be started with the **start** argument. Here, *yy* is the year, *mm* is the month, *dd* is the day, and *hh***:***mm***:***ss* is the time of day. The default ending time is 23:59:59 on December 31, 2037.

set collection # filesize

Use the **set collection# filesize** [*Kbytes*] [**:** *begintime* [**:** *endtime*]]] command to set the maximum size of the collection file in kilobytes, the time at which the specified collection begins, and the time at which the specified collection ends. The optional times *begintime* and *endtime* are in [[[*yy*:]*mm*:]*dd*:]*hh*:*mm*:*ss* format. The collection file is a circular file: when the collection data attains the configured file size limit, the process begins overwriting the data in the file from the beginning. The default file size is 100 Kbytes. For the other defaults, see **begintime** and **endtime**.

set collection # frequency

Use the **set collection# frequency** [*ss*] [**:** *begintime* [**:** *endtime*]]] command to set the frequency (specified as *ss* seconds) at which collection is to be done, the time at which the specified collection begins, and the time at which the specified collection ends. The times *begintime* and *endtime*, in [[[*yy*:]*mm*:]*dd*:]*hh*:*mm*:*ss* format, are optional. The default frequency *ss* is 60 seconds. For the other defaults, see **begintime** and **endtime**.

Note Making the frequency of collection too frequent (too small) may affect system response time.

The Configuration Lock Attribute

Use the **set config** command family to control write access to the MMA configuration database on the node.

Note The **set config** commands require CLI protected mode. (See the **protected** command in the chapter entitled “CLI Control Commands.“)

---

set config lock

Use the **set config lock** command to lock the configuration database for changes made with CLI commands. All changes to configuration parameters are written to the disk, and other concurrent users are prevented from making configuration changes with CLI commands. The CLI issues a periodic reminder that the chassis is locked. The lock times out automatically two minutes after the termination of the CLI session in which the lock was issued.

This command is equivalent to the **setsnmp mmaSetLock.0 3** command.

The command **setsnmp mmaSetLock.0 2** locks the chassis to other users, but does not write changes to disk. This is useful for making experimental changes without interference. When **setsnmp** is used to set the mmaSetLock object to 2 or 3, the lock automatically times out after two minutes of no input from the user. However, with these commands, in contrast with the **set config lock** command, the CLI does not issue a periodic reminder that the chassis is locked.

If other users of the CLI attempt to use CLI set commands while the MMA is locked, they see the following generic SNMP error message:

```
SNMP error
```

Limitations of SNMP preclude making this message more informative.

Note After you make configuration changes and write them to the disk, as described above, the local database is out of synch with the global database. As soon as possible, use the verify function in the configuration tool on the network management station to copy configuration changes from the local configuration database on the LS2020 node to the global configuration database on the network management station. The verify function retrieves the local settings and allows you to write them over the global values.

set config unlock

Use the **set config unlock** command to unlock the configuration database for changes made with CLI commands. Multiple users can concurrently make configuration changes with CLI commands, none of which are written to disk, and the CLI affects configuration parameters in run-time memory only. This is the default.

This command is equivalent to the **setsnmp mmaSetLock.0 1** command.

Note Use the **set config lock** command before changing between **trunk** and any edge protocol with the **set characteristics protocol** command. The reason is that the card resets and the value is read back from the local configuration database during the card restart process.

Modem Attributes

Use the set modem command family to set the modem initialization string and modem password for the specified switch card.

Syntax

```
set modem {sa|sb} {initstring "init_string"|password password}
```

set modem switch initstring modem_commands

Use the **set modem** *switch* **initstring** "*modem_commands*" command to set the modem initialization string to *modem_commands* for the specified switch card. The *switch* argument must be either **sa** or **sb**, to specify that the initialization string is to be configured for switch card A or switch card B. The modem initialization string *modem_commands* must be placed in quotation marks.

The modem initialization string is a sequence of modem commands specifying the state that a modem must assume in order to make a connection. The default string is in Hayes modem command format, as follows:

```
AT&F&D2&C1S0=1S2=128S7=30S36=7S95=44
```

Hayes-Format Commands in the Modem String

AT	The attention command.
&F	Restore the factory configuration (set register values to Hayes defaults).
&D2	DTR option: Following loss of the data terminal ready (DTR) signal, the modem disconnects, sends the OK result code, and disables auto answer while DTR is OFF.
&C1	DCD option: The received line signal detected (RLSD) follows the state of the data carrier from the remote modem.
S0=1	The number of rings until auto-answer = 1.
S2=128	The escape process is disabled (the escape character is assigned to a value higher than ASCII 127).
S7=30	The local modem waits 30 seconds for a carrier signal from the remote modem before hanging up.
S36=7	If the attempted error correction link fails, an MNP connection is attempted. If it fails, a normal mode connection is established.
S95=44	Extended result code bit map (binary equivalent 101100).
S95=44	Bit 2 Enable the carrier result codes.
S95=44	Bit 3 Enable the protocol result codes.
S95=44	Bit 5 Enable the compression result codes.

If commands are issued to a different type of modem requiring a different format, they must put the modem in an equivalent state.

set modem switch password password

Use the **set** *switch* **modem password** *password* command to set the modem password to *password* for the specified switch card. The *switch* argument must be either **sa** or **sb**, to specify that the password is to be configured for switch card A or switch card B. When a connection is made to the node's modem port, a password prompt is issued and this password is required.

Note This command affects *only* the node on which the CLI is running when you execute it, regardless of a target set with the command **set snmp hostname** *name*.

Note The **set modem** command requires CLI protected mode. (See the **protected** command in the chapter entitled "CLI Control Commands.")

Process Attributes

Use the **set pid** command family to set the trap level or administrative status of a process.

set pid PID adminstatus

- **adminstatus {active|inactive}**

Use the **set pid** *PID* **adminstatus** command to set the administrative status (that is, the administratively preferred state) of process number *PID* to active or inactive. When the operational status of process number *PID* changes, the system restores it to this preferred state as soon as it can.

set pid PID traplevel level

Use the **set pid** *PID* **traplevel** *level* command to set the level of traps that are reported for process number *PID*. This is independent of what is reported to the console (see **set chassis consoletraplevel**) and what is reported by the chassis (see **set chassis traplevel**). The trap levels are as follows:

- **oper**
- **info**
- **trace**
- **debug**

Each trap level is progressively more inclusive: the info level includes oper traps, the trace level includes info and oper traps, and the debug level includes all traps. See the *LightStream 2020 Network Administration Guide* for information about the relationships between traps, PIDs, and processes. See the *LightStream 2020 Traps Reference Manual* for information about trap levels.

Note There must be a compelling reason to use any arguments other than **oper**. Use the **set trap** command for individual traps instead, to avoid flooding the node with traps, which could degrade performance.

Port Attributes

Use the **set port** command family to configure a port, to assign a traffic filter or traffic profile to a port, to create a multicast flow through a port, or to configure virtual LAN internetworking (VLI) workgroups.

These commands require a port number in dot-separated format *c.p*,where *c* is the number of a card and *p* is the number of a port on that card. Use the **show chassis cards** command to see card numbers; use the **show card** *card#* **ports** command to see port numbers on card *card#*.

Many port attributes can be set only for an appropriate port type. Table 1-1 correlates each such port type with its MIB2 type assignment and its protocol. The Port Attribute column shows the **set port** command arguments that are restricted to certain card types. Use the **show chassis cards** command to display card types; use the **show card** *card#* command to display the protocol of a card. See the *LightStream 2020 Configuration Guide* for information about the differences in hardware that correspond to these different card types.

Table 1-1 Port Attributes that are Restricted to Certain Card Types

Port Type	Protocol	Card Type	Command Descriptions	Notes
Frame Relay and Frame Forwarding Ports	Frame Relay, Frame Forwarding	LS Edge	Frame Relay Ports set port c.p framerelay set port c.p dlci Frame Forwarding Ports set port c.p frameforwarding Port Characteristics set port c.p characteristics dce-dte-type set port c.p characteristics dce-bitrate set port c.p characteristics dte-bitrate set port c.p characteristics executechange set port c.p characteristics protocol	
Trunk Ports	T1 Trunk	LS Trunk	Port Characteristics set port c.p characteristics dce-dte-type set port c.p characteristics dce-bitrate set port c.p characteristics dte-bitrate set port c.p characteristics executechange set port c.p characteristics protocol	
	MS Trunk CLC Trunk	MS Trunk T3 Trunk E3 Trunk OC3 Trunk	Port Characteristics set port c.p characteristics cable len set port c.p characteristics cell-scrambling set port c.p characteristics executechange set port c.p characteristics oc3-type set port c.p characteristics protocol set port c.p characteristics vpi	not OC3 OC3 only not MS
ATM UNI Ports	ATM-UNI	MS Edge T3 Edge E3 Edge OC3 Edge	Port Characteristics set port c.p characteristics cable len set port c.p characteristics cell-scrambling set port c.p characteristics executechange set port c.p characteristics oc3-type set port c.p characteristics protocol ATM VCI Ports set port c.p vci	not OC3 OC3 only not MS
Inter-networking Ports	FDDI ETHERNET	FDDI Ethernet	FDDI Ports Spanning Tree Bridge Ports Virtual LAN Internetworking (VLI) Traffic Filters, Profiles, and Multicast Groups	FDDI only
Constant Bit-Rate Ports	T1 Circuit Emulation E1 Circuit Emulation	Cemac	Port Characteristics set port c.p characteristics clkmode set port c.p characteristics cable len set port c.p characteristics cable db set port c.p characteristics linecoding set port c.p characteristics circuit-id Constant Bit-Rate PVCs set port c.p cbrpvc	

The **set port** commands are described under the following headings:

- Port Characteristics
- Port States
- ATM VCI Ports
- Spanning Tree Bridge Ports
- Constant Bit-Rate PVCs
- FDDI Ports
- Frame Forwarding Ports
- Frame Relay Ports
- Traffic Filters, Profiles, and Multicast Groups
- Virtual LAN Internetworking (VLI)

Port States

Use the **set port** command to configure or modify the state of a port. The arguments are: **active**, **inactive**, **testing**, **loop**, and **unloop**. Except as noted for the **loop** argument, these commands apply to every port type.

set port c.p active

Set the administrative state of the specified port to active when it has been in the inactive state or the testing state. When the operational state of the card is active, the card is powered up and able to handle traffic.

The command in the following example makes port 5 on card 8 active:

```
cli> set port 8.5 active
```

set port c.p inactive

Set the administrative state of the specified port to inactive. When the operational state is inactive, the card is powered down. It can be accessed by TCS commands (or CLI **set tcs** commands) to power it back up.

set port c.p testing

Set the administrative state of the specified port to the testing state. When the operational state of the card is testing, the card is powered up but prevented from handling traffic, in the expectation that it will run diagnostics. The **test** command is the preferred way to set the port to the testing state.

set port c.p loop internal

Loop the specified port internally.

Note Ethernet and FDDI ports cannot be looped.

Note Internal looping of a Frame Relay UNI interface provides no useful diagnostic information because the UNI protocol is asymmetric. To loop such a port, first convert it to an NNI interface, then use the **set port** *c.p* **framerelay netinterfacetype nni** command to set the frame relay net interface type to NNI. LightStream supports internal looping of such a port by first converting it to an NNI interface. A successful loop sets the administrative state of the port to testing and the operational state to up. Afterward, use the **set port** *c.p* **framerelay netinterfacetype uni** command to set the frame relay net interface type to UNI again.

set port c.p loop remote

Loop the specified port externally.

Note Ethernet and FDDI ports cannot be looped.

set port c.p unloop

Unloop the specified port.

Port Characteristics

Use the **set port** *c.p* **characteristics** commands to configure or modify port characteristics. Some characteristics are limited to certain port types, as indicated in the descriptions of the individual commands.

set port c.p characteristics cell-scrambling

Use the **set port** *c.p* **characteristics cell-scrambling {enable|disable}** command to enable or disable cell payload scrambling on a medium-speed port or a T3/E3 edge or trunk port (on an 8-port card). This attribute must be set the same at both ends of a connection. For OC-3, it cannot be disabled; for DS-3, it can be in either state.

set port c.p characteristics cable len

For constant bit-rate (CBR) circuits, and for T3 and E3 ports, use the **set port** *c.p* **characteristics cable len** *feet* command to set the signal attenuation factor (line buildout) due to cabling. (For a CBR circuit the **set port** *c.p* **characteristics cable db** command is an alternative.)

With the **len** argument, provide for a cable within the appropriate range for the value of *feet*, depending on the card type as follows:

Cable Length Ranges for CBR Line Buildout

Card Type	Feet of Cable
T3	0—900
E3	0—1900
CEMAC	0—655

set port c.p characteristics cable db

For a CEMAC card, you may use the **set port** *c.p* **characteristics cable db***value* command (as an alternative to the **set port** *c.p* **characteristics cable len** *feet* command) to set the signal attenuation factor (line buildout) due to cabling. The significance of the *value* argument is as follows:

Decibel Values for Line Buildout of CEMAC Card

dB Value	Attenuation
0	0.0 dB (no attenuation)
1	- 7.5 dB
2	-15.0 dB

set port c.p characteristics clkmode

Use the **set port** *c.p* **characteristics clkmode** *type* command to set the clock mode type for constant bit-rate (CBR) circuit emulation. Currently, *type* must be **adaptive**, and the *type* values **srts** and **synchronous** are not supported.

set port c.p characteristics circuit-id

For constant bit-rate circuits, use the **set port** *c.p* **characteristics circuit-id** *string* command to set the transmission vendor's circuit identifier, a string of up to 64 characters. This command sets the value of the dsx1CircuitIdentifier object in the DS1 standard MIB.

set port c.p characteristics csu

Use the **set port** *c.p* **characteristics csu** {**none**|**larse**} command to set the CSU type of a port on a low-speed card to **larse** or specify that no CSU is present. The **set port** *c.p* **characteristics executechange** command is required to make this change operational.

set port c.p characteristics dce-bitrate

Use the **set port** *c.p* **characteristics dce-bitrate** *Kbits* command to set the DCE bit rate for the specified port on a low-speed card configured as a DCE with the **set port** *c.p* **characteristics dce-dte-type**. The value of *Kbits* for the DCE bit rate may be 56, 64, 128, 192, 256, 384, 448, 512, 768, 896, 1344, 1536, 1792, 2688, or 3584. (The values 4000 and 5376 are available but are not supported; they may work for large packet sizes.) The **set port** *c.p* **characteristics executechange** command is required to make this change operational.

The DCE bitrate is used when a port is being driven using internal clocking.

set port c.p characteristics dte-bitrate

Use the **set port** *c.p* **characteristics dte-bitrate** *bits* command to set the DTE bit rate for the specified port on a low-speed card configured as a DTE with the **set port** *c.p* **characteristics dce-dte-type** command. The value of *bits* for the DTE bit rate is unrestricted in the range of decimal integers 9,000 — 3,840,000. (Values up to 6,000,000 are available but not supported; they may work for large packet sizes.) The **set port** *c.p* **characteristics executechange** command is required to make this change operational.

The DTE bit rate setting is used when a port is being driven using external clock on a serial line. If the value is incorrect, and differs from the bit rate actually received from the DCE, the incorrect value either limits the data on the port too much, or causes the allocation of excess bandwidth that cannot be used. If the bit rate of the DCE varies, the line card issues traps.

set port c.p characteristics dce-dte-type

Use the **set port** *c.p* **characteristics dce-dte-type {dce|dte|dce-internal}** command to set the specified port on a low-speed card to be a DCE, DTE, or internal DCE. The **dce** setting connects the receive clock to the TT interface signal. The **dce-internal** setting connects the receive clock to a locally generated clock. A DCE internal port is able to interface with DTE devices that cannot return the TT signal. This value is interdependent with the **dce-bitrate** or **dte-bitrate** value described above. The **set port** *c.p* **characteristics executechange** command is required to make this change operational.

set port c.p characteristics executechange

Use the **set port** *c.p* **characteristic executechange** command to make certain previously set administrative values operational for the specified port. The distinction between administrative and operational values applies only to the following port characteristics: **csu**, **protocol**, and the DCE and DTE attributes.

set port c.p characteristics framing-type

Use the **set port** *c.p* **characteristics framing-type {plcp|t3-hec|g-804}** command to set the framing type of a T3 port to PLCP or T3 HEC, or set the framing type of an E3 port to PLCP or G.804.

set port c.p characteristics linecoding

For constant bit-rate circuits, use the **set port** *c.p* **characteristics linecoding {ami|b8zs|hdb3}** command to set the type of line coding (zero code suppression) used on the link. For E1 circuit emulation, the default is HDB3, and for T1 circuit emulation the default is B8ZS. In either case, the line type may be set to AMI. This command sets the value of the dsx1LineCoding object in the DS1 standard MIB.

- With B8ZS and with HDB3, a specified pattern of normal bits and bipolar violations replaces a sequence of zero bits of specified length (eight bits for B8ZS).
- With AMI, the line encoding does not use zero code suppression. Instead, the higher layer must provide data which meets or exceeds the pulse density requirements, for example by inverting HDLC data.

set port c.p characteristics oc3-type

Use the **set port** *c.p* **characteristics oc3-type {sonet|sdh}** command to configure an OC-3 trunk or edge port to support SONET (STS-3c) or SDH (STM-1).

set port c.p characteristics protocol

Use the **set port** *c.p* **characteristics protocol {atm-uni|frameforward|framerelay|trunk}** command to configure an edgeprotocol (ATM-UNI, frameforwarding, or frame relay) or the trunk protocol on the specified port. The following special considerations apply when changing between **trunk** and an edge protocol:

- Use the **set config lock** command before changing between **trunk** and an edge protocol. The reason is that the card resets and the value is read back from the local configuration database.
- Because trunk and edge protocols cannot be intermixed on a single card, this command affects all ports on the card. It should only be used for port *card#***.0** (but the lowest configured port number is accepted).
- Only half the ports on an 8-port T3/E3 card or a 2-port OC3 card are available when configured as trunk ports.

The **set port** *c.p* **characteristics executechange** command is required to make this change operational.

set port c.p characteristics vpi

Use the **set port** *c.p* **characteristics vpi** *VPI#* command to configure this port as a virtual path connection (VPC) trunk port with virtual path identifier (VPI) number *VPI#*. This may be done only on an 8-port or 4-port T3/E3 card or on an OC-3 card. The port must be configured as a trunk port with the **set port** *c.p* **characteristics protocol trunk** command. Use the **show port** *c.p* **vpi** command to display the VPI number.

ATM VCI Ports

Use the **set port** *c.p* **vci** *vci#* commands to configure and control an ATM VCI on the specified port. The VCI number must be in the range 1-32399. (This range may be further restricted depending upon the type of line card. For the restrictions on the sequences in which these commands may be applied, refer to the *LightStream 2020 Administration Guide*.) The VCI must be activated with the **activate** argument after setting VCI parameters.

set port c.p vci vci# activate

Use the **set port** *c.p* **vci***vci#* **activate** command to enable the specified VCI on the specified port after setting its parameters.

set port c.p vci vci# deactivate

Use the **set port** *c.p* **vci***vci#* **deactivate** command to deactivate the specified VCI without deleting it, for example, keeping it as a backup circuit.

set port c.p vci vci# del

Use the **set port** *c.p* **vci***vci#* **del** command to deactivate and delete VCI *vci#* from the specified port.

set port c.p vci vci# destnode

Use the **set port** *c.p* **vci***vci#* **destnode** {**chassisID**|**chassisname**|**IPaddress**} command to set the destination node for ATM VCI on the specified port to a node identified by its chassis number, its IP address, or its chassis name (if previously set with **set chassis name**).

set port c.p vci vci# destport

Use the **set port** *c.p* **vci***vci#* **destport** *c.p* command to set the destination port to *c.p* for the specified VCI.

set port c.p vci vci# destvci

Use the **set port** *c.p* **vci***vci#* **destvci** *destvci#* command to set the destination VCI to *destvci#* for the specified VCI. The VCI numbers *vci#* and *destvci#* must both be in the range 1-32399 inclusive.

set port c.p vci vci# insured-rate

Use the **set port** *c.p* **vci***vci#* **insured-rate** *cells/sec* command to set the insured rate to *cells/sec* for the specified VCI. This is the upper bound on the non-sharable bandwidth that the connection may use in a sustained way. The range is 0—100,000,000 bits per second.

set port c.p vci vci# insured-burst

Use the **set port** *c.p* **vci***vci#* **insured-burst** *cells* command to set the insured burst rate to *cells* for the specified VCI. The default is 128 cells. The insured burst is the upper bound on the non-sharable bandwidth that the connection may use in bursts, that is, the amount by which it may exceed the insured rate (see **insured-rate**). The range is 0—64,000.

set port c.p vci vci# max-rate

Use the **set port** *c.p* **vci***vci#* **max-rate** *cells/sec* command to set the maximum rate to *cells/sec* for the specified VCI. The default rate is the line rate for a low-speed card (LSC) and a medium-speed card (MSC), but 218 cells/sec for a cell line card (CLC). The maximum rate is the upper bound on the rate of all traffic (insured and non-insured) allowed to enter the LightStream 2020 network, congestion permitting.

set port c.p vci vci# max-burst

Use the **set port** *c.p* **vci***vci#* **max-burst** *cells* command to set the maximum burst rate to *cells* for the specified VCI. The default is 128 cells.

set port c.p vci vci# principal-service-type

Use the **set port** *c.p* **vci***vci#* **principal-service-type** **{guaranteed|insured}** command to set the bandwidth type (cell-drop priority) on the primary portion of the specified VCI to guaranteed or insured. The default is insured.

set port c.p vci vci# transmit-priority

Use the **set port** *c.p* **vci***vci#* **transmit-priority** **{0|1}** command to set the transmit priority of the specified VCI. This priority is used at each LS2020 node in the VCI across the network.

Spanning Tree Bridge Ports

Use the **stb** argument of the **set port** command to set spanning-tree bridge parameters for the specified LAN port (see also the **set stb** command).

Note These attributes are not affected when the card is reset.

---

set port c.p stb priority

Use the **set port** *c.p* **stb priority** # command to set the priority of the specified port for a path using STP. The range is 0-255, and the default (if it is not explicitly set) is 128.

set port c.p stb enable

Use the **set port** *c.p* **stb enable** command to enable bridge forwarding on the specified port. Ports are enabled when they come up, but the spanning tree protocol may disable ports to prevent loops if the topology of the bridged networks connected to this port changes.

set port c.p stb disable

Use the **set port** *c.p* **stb disable** command to disable bridge forwarding on the specified port.

set port c.p stb pathcost

Use the **set port** *c.p* **stb pathcost** # command to set the cost of a path for the specified port (the contribution of this port to the path cost of those paths toward the root bridge that include it). The range is 1-65535, and the default value is calculated as 1000 divided by the speed of the network connection in Mbits/sec. Thus, Ethernet has a default cost of 100, FDDI has a default cost of 10.

Constant Bit-Rate PVCs

Use the command **set port** *c.p* **cbrpvc** *PVC#* commands to configure constant bit-rate PVCs.

set port c.p cbrpvc PVC# destination

Use the **set port** *c.p* **cbrpvc** *PVC#* **destination** *chassis*:*c.p*:*PVC2* command to create the constant bit-rate PVC *PVC#* between local port *c.p* and remote port *chassis*:*c.p*, connecting to remote PVC number *PVC2*, where *chassis* is either the chassis ID number or the alias of an LS2020 node in the network. For the CEMAC card, *PVC#* is always **1**.

set port c.p cbrpvc PVC# {targetdepth|maxdepth}

Use the **set port** *c.p* **cbrpvc** *PVC#* {**targetdepth**|**maxdepth**} *bytes* command to control the reassembly buffer at the point at which input cells are converted back into a constant bit-rate stream. An adaptive control loop maintains data in the buffer close to the level specified by **targetdepth** *bytes*. Data in excess of **maxdepth** *bytes* is discarded. We recommend not changing the default values.

If the target depth is set too high, or if the maximum depth is set too far above the target, end-to-end delay for the entire circuit increases. In the case of voice, for example, such delay can cause annoying echo. If the target depth is set too low, or if the maximum depth is set too close to the target depth, random cell delay variation (CDV) may cause it to overflow or underflow sporadically, causing data errors and reframe events for equipment downstream. For some applications, such as video and phone, it may be preferable to set these two parameters closer together, so as to maintain constant bit-rate at the cost of discarding overflow data.

set port c.p cbrpvc PVC# activate

Use the **set port** *c.p* **cbrpvc** *PVC#* **activate** command to activate the specified constant bit-rate PVC.

set port c.p cbrpvc PVC# deactivate

Use the **set port** *c.p* **cbrpvc** *PVC#* **deactivate** command to deactivate the specified constant bit-rate PVC.

set port c.p cbrpvc PVC# del

Use the **set port** *c.p* **cbrpvc** *PVC#* **del** command to delete the specified constant bit-rate PVC.

set port c.p cbrpvc PVC# datarate

Use the **set port** *c.p* **cbrpvc** *PVC#* **datarate** {**bps** *bits/sec*|**cps** *cells/sec*|**slots** *slots*} command to set the data rate used by this fractional CBR circuit. The value of *bits/sec* is in multiples of 64,000. The value of *slots* is either a list or a range of time slots. This parameter applies to ports on FCEMAC cards only.

FDDI Ports

Use the **set port** c.p **fddi** {**aport**|**bport**} commands to set FDDI port and station management (SMT) parameters of FDDI port A or port B, as follows:

set port c.p fddi {aport|bport} action enable

Use the **set port** *c.p* **fddi** {**aport**|**bport**} **action enable** command to enable the specified FDDI port.

set port c.p fddi {aport|bport} action disable

Use the **set port** *c.p* **fddi {aport|bport} action disable** command to disable the specified FDDI port.

set port c.p fddi {aport|bport} action start

Use the **set port** *c.p* **fddi {aport|bport} action start** command to start the specified FDDI port.

set port c.p fddi {aport|bport} action stop

Use the **set port** *c.p* **fddi {aport|bport} action stop** command to stop the specified FDDI port.

set port c.p fddi {aport|bport} connectpolicy

Use the **set port** *c.p* **fddi {aport|bport} connectpolicy {none|lct|loop|both}** command to specify the FDDI connection policy for this port. Use the **lct** argument for a MAC link competence test with the remote station (remote loop). Use the **loop** argument for an internal loop at the MAC. Enter **none** for neither internal nor external loop, or enter **both** for both.

set port c.p fddi {aport|bport} lercutoff

Use the **set port** *c.p* **fddi {aport|bport} lercutoff** *error-rate* command to set the link error rate estimate at which an FDDI link connection on this port is broken. The range is 4-15 and the default is 7, meaning 10^{-7} errors per second. ♦ **Note:** In the unlikely event that this rate needs adjustment, it should be changed only by someone very knowledgeable about FDDI.

set port c.p fddi smt t-notify

Use the **set port** *c.p* **fddi smt t-notify** *sec* command to set the timer used in the Neighbor Notification protocol. The range is 2-30 seconds, and the default is 30 seconds.

Note In the unlikely event that this timer needs adjustment, it should be changed only by someone very knowledgeable about FDDI.

---

set port c.p fddi smt stat-report

Use the **set port** *c.p* **fddi smt stat-report {yes|no}** command to control whether Status Reporting Frames for FDDI events and conditions are sent to the SMT management software. The value **yes** is the default. Depending on your network management system, SMT may pass some of these messages on to higher levels, where they become visible to the operator as SNMP traps.

set port c.p fddi smt station connect

Use the **set port** *c.p* **fddi smt station connect** command to begin an FDDI connection sequence, controlling the port as an FDDI station.

set port c.p fddi smt station disconnect

Use the **set port** *c.p* **fddi smt station {connect|disconnect}** command to break an FDDI connection, controlling the port as an FDDI station.

set port c.p fddi smt station path-test

Use the **set port** *c.p* **fddi smt station path-test** command to test the viability of the FLDSUP path, controlling the port as an FDDI station. This is not supported in the current release.

set port c.p fddi smt station {disable-a|disable-b}

Controlling the port as an FDDI station, use the **set port** *c.p* **fddi smt station** {**disable-a** | **disable-b**} command to disable the FDDI circuit on the A port or B port, respectively, if the other end of the link is not master (i.e. if the port mode is peer).

Frame Forwarding Ports

Use the **set port** *c.p* **frameforwarding** commands to configure and control a frame forwarding port.

set port c.p frameforwarding activate

Use the **set port** *c.p* **frameforwarding activate** command to enable a frame-forwarding circuit on the specified port.

set port c.p frameforwarding deactivate

Use the **set port** *c.p* **frameforwarding deactivate** command to disable the frame-forwarding circuit on the specified port.

set port c.p frameforwarding destnode

Use the **set port** *c.p* **frameforwarding destnode** {*chassisID* | *chassisname*} command to set the destination node for frame forwarding on the specified port to a node identified by its chassis ID or its chassis name (if previously set with **set chassis name**).

set port c.p frameforwarding destport

Use the **set port** *c.p* **frameforwarding destport** *c2.p2* command to set the destination port to *c2.p2* on the remote node for the frame forwarding circuit configured on port *c.p* on the local node.

set port c.p frameforwarding insured-rate

Use the **set port** *c.p* **frameforwarding insured-rate** *bits/sec* command to set the insured rate for the specified frame forwarding port to the bit rate*bits/sec*. This is the upper bound on the non-sharable bandwidth that the connection may use in a sustained way. The range is 0—100,000,000 bits per second.

set port c.p frameforwarding insured-burst

Use the **set port** *c.p* **frameforwarding insured-burst** *bytes* command to set the insured burst rate for the specified frame forwarding port to *bytes*. This is the upper bound on the non-sharable bandwidth that the connection may use in bursts, that is, the amount by which it may exceed the insured rate (see **insured-rate**). The range is 0—64,000.

set port c.p frameforwarding max-rate

Use the **set port** *c.p* **frameforwarding max-rate** *bits/sec* command to set the maximum rate for the specified frame forwarding port to the bit rate *bits/sec*. The maximum rate is the upper bound on the rate of all traffic (insured and non-insured) allowed to enter the LightStream 2020 network, congestion permitting. The range is 64,000—100,000,000 *bits/sec*.

set port c.p frameforwarding max-burst

Use the **set port** *c.p* **frameforwarding max-burst** *bytes* command to set the maximum burst rate for the specified frame forwarding port to *bytes*.

Frame Relay Ports

Use the **set port** *c.p* **framerelay** commands to configure and control a frame relay port, or each DLCI on a frame relay port.

set port c.p framerelay lmiconfig

Use the **set port** *c.p* **framerelay lmiconfig {none|frif|ansi_t1_617d|q933a}** command to set the LMI configuration type to FRIF, ANSI T1 617D, or Q933A, or to specify that there is no LMI for the specified port.

set port c.p framerelay netinterfacetype

Use the **set port** *c.p* **framerelay netinterfacetype {uni|nni}** command to set the frame relay net interface type to UNI or NNI for the specified port.

set port c.p dlci DLCI# activate

Use the **set port** *c.p* **dlci** *DLCI#* **activate** command to enable the circuit on the specified DLCI. The range of *DLCI#* is 16-991.

set port c.p dlci DLCI# deactivate

Use the **set port** *c.p* **dlci** *DLCI#* **deactivate** command to deactivate the circuit on the specified DLCI. The range of *DLCI#* is 16-991.

set port c.p dlci DLCI# del

Use the **set port** *c.p* **dlci** *DLCI#* **del** command to remove the specified DLCI from the system. The range of *DLCI#* is 16-991.

set port c.p dlci DLCI# destnode

Use the **set port** *c.p* **dlci** *DLCI#* **destnode** {*chassisID*|*IPaddress*|*chassisname*} command to set the destination node for the specified DLCI to a node identified by its chassis number, its IP address, or its chassis name (if previously set with **set chassis name**). The range of *DLCI#* is 16-991.

set port c.p dlci DLCI# destport

Use the **set port** *c.p* **dlci** *DLCI#* **destport** *c2.p2* command to set the destination port for the specified DLCI to port *c2.p2*. The range of *DLCI#* is 16-991.

set port c.p dlci DLCI# destdlci

Use the **set port** *c.p***dlci** *DLCI#* **destdlci** *destDLCI#* command to set the destination DLCI to *destDLCI#* for the DLCI specified as *DLCI#*. The range of *DLCI#* and of *destDLCI#* is 16-991.

set port c.p dlci DLCI# insured-rate

Use the **set port** *c.p* **dlci** *DLCI#* **insured-rate** *bits/sec* command to set the insured rate for the specified DLCI to the bit rate *bits/sec*. The range of *DLCI#* is 16-991. This is the upper bound on the non-sharable bandwidth that the connection may use in a sustained way. The range is 0—100,000,000 bits per second.

set port c.p dlci DLCI# insured-burst

Use the **set port** *c.p* **dlci** *DLCI#* **insured-burst** *bytes* command to set the insured burst rate for the specified DLCI to *bytes*. The range of *DLCI#* is 16-991. The insured burst is the upper bound on the non-sharable bandwidth that the connection may use in bursts, that is, the amount by which it may exceed the insured rate (see **insured-rate**). The range is 0—64,000.

set port c.p dlci DLCI# max-rate

Use the **set port** *c.p* **dlci** *DLCI#* **max-rate** *bits/sec* command to set the maximum rate for the specified DLCI to the bit rate *bits/sec*. The range of *DLCI#* is 16-991. The maximum rate is the upper bound on the rate of all traffic (insured and non-insured) allowed to enter the LightStream 2020 network, congestion permitting. The range is 64,000—100,000,000 *bits/sec*.

set port c.p dlci DLCI# max-burst

Use the **set port** *c.p* **dlci** *DLCI#* **max-burst** *bytes* command to set the maximum burst rate for the specified DLCI to *bytes*. The range of *DLCI#* is 16-991.

Traffic Filters, Profiles, and Multicast Groups

The following **set port** commands are used to filter traffic received over the specified port.

set port c.p bcast-limit discard-all

Use the **set port** *c.p* **bcast-limit discard-all** command to discard all broadcast packets sent to this port.

set port c.p bcast-limit forward-all

Use the **set port** *c.p* **bcast-limit forward-all** command to forward all broadcast packets sent to this port. This command restores the default broadcast limit.

set port c.p bcast-limit

Use the **set port** *c.p* **bcast-limit** *packets/sec* command to set the maximum number of broadcast packets per second to be forwarded through this port, in the range 1-127. Excess broadcast packets are dropped.

set port c.p bflt ID block

Use the **set port** *c.p* **bflt** *filterID* **block** *priority* commands to assign bridge filter number *filterID* to block traffic received over port *c.p*. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 bridge filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. Bridge filters are applied to incoming traffic before IP and IPX filters.

When an incoming packet on port *c.p* matches the blocking filter, the packet is passed to the NP, where it is discarded.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

set port c.p bflt ID forward

Use the **set port** *c.p* **bflt** *filterID* **forward** *priority* [**mcast** *mcastID*] [**tprof** *tprofID*] commands to assign bridge filter number *filterID* to forward traffic over a port. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 bridge filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. Bridge filters are applied to incoming traffic before IP and IPX filters.

When an incoming packet on port *c.p* matches the forwarding filter, a flow is generated (if it is not already established). For a point-to-point flow, the destination port is determined from information in the header of the incoming packet.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

The optional arguments are as follows:

mcast *mcastID*

Optionally associate the multicast group identified as number *mcastID* with the flow, making it a multicast (point-to-multipoint) flow. The multicast group must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Note For a multicast flow to be bidirectional, the same multicast group must be defined for and assigned to the remote endpoints.

Caution Multicast groups are network-wide constructs. Take care to define them consistently on all nodes of the network. If you fail to do so, it may be difficult to debug problems involving them. For administrative convenience, it is also advisable to define traffic profiles and filters consistently across the network or relevant portions of the network.

tprof *tprofID*

Optionally associate the traffic profile identified as number *tprofID* with the flow. A traffic profile is a set of type-of-service attributes. Traffic profile number *tprofID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Flows defined by different filters are multiplexed over the same connection under the following conditions:

- If the source ports match (the port number *c.p* specified with the **set port** command)
- If the destinations (output port or multicast ID) match
- If the traffic profile IDs are the same (or null)

To prevent multiplexing of a flow, define a second multicast group ID with the same list of ports, or a second traffic profile ID with the same values of traffic profile parameters, and associate this new ID with the filter that specifies the flow that you do not want multiplexed.

set port c.p bflt ID del

Use the **set port** *c.p* **bflt** *ID* **del** command to break the association between the specified bridge filter and the specified port. This must be done before the filter itself can be deleted with the **delete** command (see the chapter entitled "The Define and Delete Commands").

set port c.p bflt-def block

Use the **set port** *c.p* **bflt-def block** command to set the default bridge filter action for the specified port to **block**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p bflt-def forward

Use the **set port** *c.p* **bflt-def forward** command to set the default bridge filter action for the specified port to **forward**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p ipflt ID block

Use the **set port** *c.p* **ipflt** *filterID* **block** *priority* commands to assign filter number *filterID* to block traffic received over port *c.p*. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 IP filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. IP filters are applied to incoming traffic after bridge filters.

When an incoming packet on port *c.p* matches the blocking filter, the packet is passed to the NP, where it is discarded.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

set port c.p ipflt ID forward

Use the **set port** *c.p* **ipflt** *filterID* **forward** *priority* [**mcast** *mcastID*] [**tprof** *tprofID*] commands to assign IP filter number *filterID* to forward traffic over a port. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 IP filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. IP filters are applied to incoming traffic after bridge filters.

When an incoming packet on port *c.p* matches the forwarding filter, a flow is generated (if it is not already established). For a point-to-point flow, the destination port is determined from information in the header of the incoming packet.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

The optional arguments are as follows:

mcast *mcastID*

Optionally associate the multicast group identified as number *mcastID* with the flow, making it a multicast (point-to-multipoint) flow. The multicast group must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Note For a multicast flow to be bidirectional, the same multicast group must be defined for and assigned to the remote endpoints.

Caution Multicast groups are network-wide constructs. Take care to define them consistently on all nodes of the network. If you fail to do so, it may be difficult to debug problems involving them. For administrative convenience, it is also advisable to define traffic profiles and filters consistently across the network or relevant portions of the network.

tprof *tprofID*

Optionally associate the traffic profile identified as number *tprofID* with the flow. A traffic profile is a set of type-of-service attributes. Traffic profile number *tprofID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Flows defined by different filters are multiplexed over the same connection under the following conditions:

- If the source ports match (the port number *c.p* specified with the **set port** command)
- If the destinations (output port or multicast ID) match
- If the traffic profile IDs are the same (or null)

To prevent multiplexing of a flow, define a second multicast group ID with the same list of ports, or a second traffic profile ID with the same values of traffic profile parameters, and associate this new ID with the filter that specifies the flow that you do not want multiplexed.

set port c.p ipflt ID del

Use the **set port** *c.p* **ipflt** *ID* **del** command to break the association between the specified IP filter and the specified port. This must be done before the filter itself can be deleted with the **delete** command (see the chapter entitled "The Define and Delete Commands").

set port c.p ipflt-def block

Use the **set port** *c.p* **ipflt-def block** command to set the default IP filter action for the specified port to **block**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p ipflt-def forward

Use the **set port** *c.p* **ipflt-def forward** command to set the default IP filter action for the specified port to **forward**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p ipxflt ID block

Use the **set port** *c.p* **ipxflt** *filterID* **block** *priority* commands to assign filter number *filterID* to block traffic received over port *c.p*. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 IPX filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. IPX filters are applied to incoming traffic after bridge filters.

When an incoming packet on port *c.p* matches the blocking filter, the packet is passed to the NP, where it is discarded.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

set port c.p ipxflt ID forward

Use the **set port** *c.p* **ipxflt** *filterID* **forward** *priority* [**mcast** *mcastID*] [**tprof** *tprofID*] commands to assign IPX filter number *filterID* to forward traffic over a port. Traffic filter *filterID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). Up to 32 IPX filters can be assigned to the same port, to a maximum of 1024 filters over all ports on an LS2020 node. A given filter can be associated with more than one port.

Note Resetting the card does not affect these attributes. IPX filters are applied to incoming traffic after bridge filters.

When an incoming packet on port *c.p* matches the forwarding filter, a flow is generated (if it is not already established). For a point-to-point flow, the destination port is determined from information in the header of the incoming packet.

The *priority* argument is a number that determines the sequence in which multiple filters are considered on this port. Each filter on a given port must have a unique priority number. The lowest number is considered first. We recommend assigning priority numbers by 10s (10, 20, 30, …), leaving gaps for possible future insertions into the sequence. If two filters can match the same packet, give the more specific filter a higher priority than the more general filter, so that it is considered first.

The optional arguments are as follows:

mcast *mcastID*

Optionally associate the multicast group identified as number *mcastID* with the flow, making it a multicast (point-to-multipoint) flow. The multicast group must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Note For a multicast flow to be bidirectional, the same multicast group must be defined for and assigned to the remote endpoints.

Caution Multicast groups are network-wide constructs. Take care to define them consistently on all nodes of the network. If you fail to do so, it may be difficult to debug problems involving them. For administrative convenience, it is also advisable to define traffic profiles and filters consistently across the network or relevant portions of the network.

tprof *tprofID*

Optionally associate the traffic profile identified as number *tprofID* with the flow. A traffic profile is a set of type-of-service attributes. Traffic profile number *tprofID* must previously have been created with the **define** command (see the chapter entitled "The Define and Delete Commands"). The action taken by the filter must be `forward`.

Flows defined by different filters are multiplexed over the same connection under the following conditions:

- If the source ports match (the port number *c.p* specified with the **set port** command)
- If the destinations (output port or multicast ID) match
- If the traffic profile IDs are the same (or null)

To prevent multiplexing of a flow, define a second multicast group ID with the same list of ports, or a second traffic profile ID with the same values of traffic profile parameters, and associate this new ID with the filter that specifies the flow that you do not want multiplexed.

set port c.p ipxflt ID del

Use the **set port** *c.p* **ipxflt** `ID` **del** command to break the association between the specified IPX filter and the specified port. This must be done before the filter itself can be deleted with the **delete** command (see the chapter entitled "The Define and Delete Commands").

set port c.p ipxflt-def block

Use the **set port** *c.p* **ipxflt-def block** command to set the default IPX filter action for the specified port to **block**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p ipxflt-def forward

Use the **set port** *c.p* **ipxflt-def forward** command to set the default IPX filter action for the specified port to **forward**. ♦ **Note:** These attributes are not affected when the card is reset.

set port c.p np-deliver block

Use the **set port** *c.p* **np-deliver block** command to prevent received frames from being delivered to any NP in the network. ♦ **Note:** This command requires protected mode. (See the **protected** command in the "CLI Control Commands" chapter.)

set port c.p np-deliver forward

Use the **set port** *c.p* **np-deliver forward** command to enable delivery of received frames to NPs in the network. ♦ **Note:** This command requires protected mode. (See the **protected** command in the "CLI Control Commands" chapter.)

Virtual LAN Internetworking (VLI)

Use the **set port** *c.p* **wgrp** commands to maintain the workgroup list for each port. There is one workgroup list per port. The port is either *included in* or *excluded from* all the listed workgroups (see the **include** and **exclude** arguments, below).

- The default is an include list that contains just workgroup 1 (the default workgroup).
- An empty include list is treated the same as this default case.
- An empty exclude list permits communication with every workgroup. This differs from the default if any workgroups have been defined in the network in addition to workgroup 1.

Note Run-time changes to the workgroup list are not affected when the card is reset.

Caution Workgroups are network-wide constructs. Take care to define them consistently on all nodes of the network. If you fail to do so, problems involving them may be difficult to debug.

set port *c.p* wgrp add

Use the **set port** *c.p* **wgrp add** *ID* [**,** *ID*…] command to add one or more workgroup IDs to the list for the specified port. There may be up to seven workgroup IDs per port (up to six in a list in the exclude sense), separated by commas. Use the **show port** *c.p* **wgrp** command (see the chapter entitled "The Show Command") to display the current list.

Note Adding a workgroup to the default list with the **set port** *c.p* **wgrp add** *ID* command does not delete the default workgroup automatically. The corresponding action with the configuration tool does delete the default workgroup automatically.

---

set port *c.p* wgrp include

Use the **set port** *c.p* **wgrp include** command to allow intercommunication with the workgroups in the list, but no others. An include list may name up to seven workgroups per port.

In practically all cases the workgroup list for a port should be defined in the **include** sense. The default is an include list that contains just workgroup 1 (the default workgroup). An empty include list is treated the same as this default case.

set port *c.p* wgrp exclude

Use the **set port** *c.p* **wgrp exclude** command to allow intercommunication with all workgroups in the range 1—65,535 *except* those listed. An exclude list may name up to six workgroups per port.

The most important use of an exclude list is to enable a port to communicate with all workgroups, where workgroups other than the default workgroup 1 are defined in the network. To do this, configure an empty list (delete all workgroup IDs, including workgroup 1) and change the sense to **exclude**.

Note The **set** command does not accept the mnemonic workgroup names (aliases) maintained by the configuration tool. If you use the **set port** *c.p* **wgrp** commands, you should maintain a list showing the correspondence of group IDs to mnemonic workgroup names as a reminder of what each ID means.

set port *c.p* wgrp del

Use the **set port** *c.p* **wgrp del** {*ID* | **all**} command to delete the specified workgroup, or all workgroups, from the list for the specified port. *ID* is a workgroup ID number in the range 1-65,535. An empty include list is equivalent to the default group 1. An empty exclude list permits communication with every workgroup.

SNMP Attributes

Use the **set snmp** commands to set the value of the read-write community name and of the target host name for the specified port.

Note The **set snmp** commands affect *only* the node on which the CLI is running when you execute them, regardless of a target set with the command **set snmp hostname** *name*.

set snmp community

Use the **set snmp community** *name* command to set the read-write community name to *name*. The **set** command requires that the read/write community name be set first to a name that is assigned the value `write` in the mma.communities file.

The command in the following example sets the target system to be the node whose alias is **boston5**:

```
cli> set snmp hostname boston5
```

set snmp hostname

Use the **set snmp hostname** {*name*|*IPaddress*} command to set the target host name to *name* or *IPaddress*. When the target is the node on which the CLI is running, *name* is the string **localhost**.

Spanning-Tree Bridge Attributes

Use the **set stb** commands to define the spanning-tree bridge parameters for the node. See also the **set port** *c.p* **stb** command, which is used to set per-port spanning-tree bridge parameters.

Note These attributes are not affected when the card is reset.

set stb maxage

Use the **set stb maxage** *age* command to set the maximum age that should be used to time out STP information. This value takes effect only when this node becomes the root bridge. The value is in hundredths of a second, truncated to seconds. For example, 400, 401, and 499 all signify 4 seconds. The range of *age* is 600-4000, and the default is 2000. The limits on this value are as follows (in seconds):

2 * (**hellotimer** +1) ≤ *maxage* ≤ **2** * (**forwdelay** -1)

set stb forwdelay

Use the **set stb forwdelay** *time* command to set the interval before changing to another state. This value takes effect only when this node becomes the root bridge. The value is in hundredths of a second, truncated to seconds. For example, 400, 401, and 499 all signify 4 seconds. The range of *time* is 400-3000, and the default is 1500 (15 seconds). The limits on this value are as follows (in seconds):

2 * (**hellotimer** +1) ≤ *maxage* ≤ **2** * (**forwdelay** -1)

set stb hellotimer

Use the **set stb hellotimer** *time* command to set the interval between BPDUs sent out by this port. This value takes effect only when this node becomes the root bridge. The value is in hundredths of a second, truncated to seconds. For example, 400, 401, and 499 all signify 4 seconds. The range of *time* is 100-400, and the default is 200 (2 seconds). The limits on this value are as follows (in seconds):

2 * (**hellotimer** +1) ≤ *maxage* ≤ **2** * (**forwdelay** -1)

set stb priority

Use the **set stb priority** *priority* command to set the priority for using this node vs. others for a path using the spanning tree protocol. The range of *prioritys* is 0-65535, and the default is 32768.

set stb static

Use the **set stb static** *MACaddr* **rcv {***c***.***p***|any} xmit** *c***.***p* [*c***.***p* …] command to enter a static entry into the bridge forwarding database. Use the **set stb static** *MACaddr* **rcv {***c***.***p***|any} status {invalid | deleteonreset | permanent}** command to delete a static entry from the bridge forwarding database or to prevent it from being deleted automatically when the bridge is reset. Each entry contains the following elements:

- You must specify the MAC address *MACaddr* to be used for forwarding, in the standard *xx***:***xx***:***xx***:***xx***:***xx***:***xx* format, a sequence of six colon-separated hex octets.
- You must use the **rcv** argument to assign this MAC to a receive port, either port *c***.***p* or the keyword **any**, a wildcard over all ports.
- Use the **xmit** argument to create an entry, specifying the transmit port or ports *c***.***p* [*c***.***p* …] to which received frames are to be forwarded. You cannot use the **status** argument in the same command. (The transmit ports can only be ports on the same node. To create a route to a port on another node, use the **define mcast** command.)
- Use the **status** argument modify a previously specified entry. You cannot use the **xmit** argument in the same command. The possible **status** values are as follows:

invalid	Delete the entry now.
deleteonreset	Delete the entry when the bridge is reset.
permanent	Do not delete the entry when the bridge is reset.

Test and Control System Attributes

Use the **set tcs** command family to access the test and control system (TCS) command interface from the CLI. You can only access a few basic functions of the TCS from the CLI. See the *Hardware Reference Manual* for additional information about the TCS commands.

Note The **set tcs** command requires CLI protected mode. (See the **protected** command in the "CLI Control Commands" chapter.)

Note This command affects *only* the node on which the CLI is running when you execute it, regardless of a target set with the command **set snmp hostname** *name*.

Note The **set tcs** commands do not work on a Sun workstation. When you start the CLI on a Sun, you see the message `Warning: No TCS available.`

---

set tcs card# midplane

Use the **set tcs** `card#` **midplane** *node_address* command to set the midplane address for the specified card to the node address *address*. ♦ **Note:** Switch A and switch B in a redundant system must have the same midplane address.

Caution All cards in a chassis must have the same midplane address.

set tcs card# power

Use the **set tcs** `card#` **power {on|off}** command to turn power on or off for the specified card. (Not supported on Release 2 switch cards.)

set tcs card# reset

Use the **set tcs** `card#` **reset** command to reset the specified card.

Traps

Use the **set trap** command family to control the display of specified traps. See the *LightStream 2020 Network Administration Guide* for additional information about the using LS2020 traps. See the *LightStream 2020 Traps Reference Manual* for information about individual traps.

The following default status should be in effect:

- Oper traps are displayed on the console and on network management systems.
- Info and Oper traps are logged in the mma.traplog file.
- Trace and debug traps are ignored.

Although we do not recommend it, these norms may be reset with any of the following commands:

- **set chassis consoletraplevel**
- **set chassis traplevel**
- **set cli traplevel**
- **set pid** *PID#* **traplevel**

The above commands change the ranges of traps affected by the **on**/**off** and **disable**/**enable** arguments. To avoid confusion, we recommend that you do not use these commands to change the default effect of the **set trap** commands.

Note The **set trap** commands require CLI protected mode. (See the **protected** command in the "CLI Control Commands" chapter.) These commands affect *only* the node on which the CLI is running when you execute them, regardless of a target set with the command **set snmp hostname** *name*.

---

trapspec

In the following command descriptions, *trapspec* stands for a trap name or a trap number. See the *Traps Reference Manual* for trap names and numbers. You may also specify a name for a group of traps previously defined in the cli.groups file. It is also possible to specify a range of trap numbers. This is not recommended, as you could easily disrupt the system by flooding it with traps.

The *trapspec* arguments are used to specify which traps to set, as follows:

trapname	The trap identified by its trap name (see the Traps Reference Manual.).
trapgroup	The set of traps identified by the definition of the name trapgroup in the cli.groups file.
trap#	The trap identified by trap#.
trap#-trap#	The set of traps identified the range of traps trap#-trap#.

set trap{disable|enable}

Use the **set trap{disable|enable}** *trapspec* command to disable specific traps that are being displayed on the console (normally, oper traps), or enable them again after they have been disabled. (This does not apply to traps that are being displayed only because they were turned on with the **set trap on** command.) The *trapspec* argument is a trap name or a trap number; see the *Traps Reference Manual* for trap names and numbers.

set trap[global] {on|off}

Use the **set trap{on|off}** *trapspec* command to turn on traps that are currently being ignored (normally, trace traps and debug traps), or turn them back off again after they have been turned on. The *trapspec* argument is a trap name or a trap number; see the *Traps Reference Manual* for trap names and numbers. (The **set trap on** *trapspec* command does not apply to traps that are being ignored because they were disabled with the **set trap disable** *trapspec* command.) The default is to apply this operation to all processes system-wide, but you may explicitly specify this behavior with the optional **global** argument. (Contrast the **set trap pid** {*PIDname*|*PID#*} **{on|off}** *trapspec* command.)

set trap pid

Use the **set trap pid** {*PIDname*|*PID#*} **{on|off}***trapspec* command to make the **on** or **off** switch apply to the process with alias *PIDname* or number *PID#* (instead of globally to all processes). The *trapspec* argument is a trap name or a trap number; see the *Traps Reference Manual* for trap names and numbers. This function is for debugging and support use only. Trace and debug traps include the PID and alias of the process in which the trap occurred. You may also display a list of process aliases with the **walksnmp lwmaTrapCliAlias** command.

Example

The following command sets the SNMP read/write community to write (a name to which the value `write` is assigned in the mma.communities file), so that you can use the **set trap** command:

```
cli> set snmp community write
```

The following command disables the oper trap LCC_1, which reports a high error rate:

```
cli> set trap disable lcc_16
```

After correcting the problem, you may re-enable the trap with the following command:

```
cli> set trap enable lcc_16
```