TL1 Command Guide for Cisco NCS 4000 Series

Product and Documentation Release 6.5.28

October 2019

Cisco Systems, Inc.

www.cisco.com

Cisco has more than 200 offices worldwide.

Addresses, phone numbers, and fax numbers

are listed on the Cisco website at

www.cisco.com/go/offices.

Table of Content

Chapter1. TL1 Overview

1.1　What is TL1

Transaction Language 1 (TL1) is a set of ASCII (156American Standard Code for Information Interchange)-based instructions, or messages, that an operations support system (OSS) uses to manage a network element (NE) and its resources. TL1 provides a standard set of messages that can be used for communication between operating systems and NEs, and personnel and NEs.

1.2.　What are TL1 Message Types and Example

There are two main types of standard-defined TL1 messages: command/responses and autonomous messages.

1. Command/Responses—These are initiated by a user and provide two parts: a request to the NE to set or get information, and a response from the NE containing completion or status codes and requested information. Request, or input messages are used to issue the request portions of command messages to the NE. Command messages are often referred to as command/response messages, where the request portion is an input message (OSS to NE) and the response portion is an output message (NE to OSS). Command/Responses can be further classified as follows:

a) **Set information**—The simplest type of messages are those that set information or instruct the NE to perform an action and return only a result with no data in the response.

   Example: ENT-CRS-<ODU_TYPE> to create ODU cross-connection

b) **Get information**—Some TL1 commands get information or request information to be returned from the NE.

   Example: RTRV-ALM-ALL to show the current status of all active alarm conditions

c) **Response message**—The response portion of a command message correlates to a particular request message. If a command is successful, the NE sends a response message containing the COMPLD code. Example:

   SV192-DATA-461 2003-08-05 10:35:17

   M 123 COMPLD

   ;

   If a command fails, the NE sends an error response which includes the DENY code and may or may not contain an error message.

   Example:

   sv192-DATA-461 2003-08-05 10:35:17

   M 123 DENY;

   The following list shows standard responses:

   COMPLD—Completed

   DENY—TL1 command failed

   PRTL— Partially successful response. The requested action can be completed for some of the specified AIDs but not

for all of them.

RTRV— The response is successful but is lengthy and is being returned in multiple parts. Each part has a RTRV response code, but the final response has a COMPLD response code.

d) **Response acknowledgment—**Responses may also include intermediate acknowledgment messages. Brief messages that update the user about the status of a given commands, are called acknowledgments. When a command has been sent to the NE and the NE takes longer than two seconds to respond, the NE sends an acknowledgment message that needs to be followed later by the full response.

2. **Autonomous events**— These messages are used to report alarms, configuration changes or condition changes. Many of these messages, such as those are related to alarm conditions, are spontaneously triggered by the NE itself without intervention. Other messages, such as those are related to the reporting of periodic condition states or performance data values, are scheduled by the NE user through other commands. Autonomous messages are not issued to the NE and hence they do not include input formats or input examples.
Example: REPT ALM

1.3. Connect to TL1

The first step in using TL1 is to connect to TL1 session. You only have to connect to TL1 one time per session. A session is a related set of communication transactions between two or more network devices. There are three ways to connect to TL1: via CTC, telnet, and craft interface. Perform one of the following procedures to connect to TL1.

1.3.1 Launch CTC and Open a TL1 Session

Step 1   From the PC connected to the start Internet Explorer.
            Step 2   Enter the IP address of the node you want to communicate with in the browser's web address (URL) field.
Step 3   Log into the CTC. The IP address at the title bar should match the IP address of the node you entered in Step 2.

Step 4   Once logged into the CTC, there are two ways to open a TL1 session:
- Click Tools > Open TL1 Connection, or
- Click on the **Open TL1 Connection** button on the toolbar.
Step 5   From the Select Node dialog box choose the node to communicate.
Step 6   Click **OK**.

A TL1 interface window opens. There are three sub-windows in the TL1 interface window: Request History, Message Log/Summary Log, and TL1 request. Type commands in the TL1 request window. You will see responses in the Message log window. The Request History window allows you to recall previous commands by double-clicking on them.

Step 7   Verify that the Connect button is selected (grayed out).
Step 8   You are ready to log into TL1

1.3.2 Telnet to Open a TL1 Session

To communicate with the NCS network element (NE) using TL1 commands through a Telnet session over a craft interface or a LAN connection, you can choose either of the following two ports:

- Port number 3083 is a Telnet port that uses the Telnet protocol and associated Telnet escape sequences.

- Port number 2361 is supported for backward compatibility with earlier releases and has the same behavior as Port 3083 (Telnet port). Use the following procedure with PCs running Windows operating systems.

Note: Port number 3082 is a raw TCP/IP port; it is not an interactive port and is not recommended for use as an alternate telnet port.

Step 1   At the Unix command prompt, Type:
TELNET <NODE IP ADDRESS OR NODE NAME> <PORT NUMBER> and press Enter.

The Node IP address or Node Name refers to the IP address or Node Name of the node you want to communicate with. Port number is the port (2361 or 3083) where TL1 commands are understood. If the connection is successful, a screen opens with a prompt.

Step 2   You are ready to log into TL1.

1.3.3 Use a Craft Interface to Open a TL1 Session

The craft interface on ECU is used accessing the Cisco NCS 4000 Series. With one RJ-45 LAN connection you can access the system using a standard browser interface. In the browser interface, you can perform local and remote Operations, Administration, Maintenance, and Provisioning (OAM&P) functions and open a VT100 emulation window to enter TL1 commands. If a browser is not available, you can access the system using a nine -pin EIA/TIA-232 port. The EIA/TIA-232 port supports VT100 emulation which allows TL1 commands to be entered directly without a browser.

Step 1   Connect to the craft interface of the ECU unit.
Step 2   Configure the terminal emulation software (Hyperterminal):
   a)   Terminal emulation = vt100

   b)   Bits per second = 9600

   c)   Parity = None

   d)   Stop BITS = 1
Step 3   Flow control = None Press **Enter**. An angle bracket prompt (>) appears.
Step 4   You are ready to log into TL1.

1.3.4 Log Into TL1

Once you have connected to TL1, now you can log into TL1 in order to issue commands. Login into TL1 is to be done once per session.

Step 1   Issue the ACT-USER command:
Input Format:

ACT-USER:[<TID>]:<UID>:<CTAG>[::<PID>];

- TID is the name of the node you want to access. If you only want to query the node you connected to, leave the TID blank.

- UID is your user ID. UID can be up to 10 characters.

- CTAG is any non-blank character series that does not have to be unique.

- PID is your password. PID can be up to 10 characters. PIDs are encrypted and are displayed as asterisks (*).

Input Example:

ACT-USER:PETALUMA:DXT:100::MYPASSWD;

Step 2   Confirm you receive a COMPLD response to indicate the command was completed successfully.

Response Example:

TID-000 1998-06-20 14:30:00

M 001 COMPLD

DXT:2003-01-02 14-04-49,0;

1.4.   Command Action and Categories

When you have connected and logged into a TL1 session, you are ready to begin issuing TL1 commands and autonomous messages. TL1 commands and autonomous messages can be used to accomplish a variety of actions. Determining the correct command or autonomous message you need begins with identifying what action you want to perform. The first part of every command and autonomous message helps identify the action that command or autonomous message performs.

Table 1-1 TL1 Command and Autonomous message Action

Command or Autonomous Message That Begin With	Generally Do This	Example
ACT	Activate	ACT-USER
ALW	Allow	ALW-MSG-ALL
CANC (autonomous message)	Report	CANC (reports a cancelled session)
CANC	Cancel	CANC-USER
DLT	Delete	DLT-TADRMAP
ED	Edit/Change	ED-NE-GEN
ENT	Enter/Create	ENT-CRS
INH	Inhibit	INH-MSG-ALL
INIT	Initialize	INIT-SYS
REPT (autonomous message)	Report	REPT EVT-<MOD2>
RLS	Release	RLS-PROTNSW-<MOD2>
RMV	Remove	RMV-<MOD2>
RST	Restore	RST-<MOD2>
RTRV	Retrieve	RTRV-TRC-<MOD2>
SCHED	Schedule	SCHED-PMREPT-<MOD2>
SET	Set	SET-ATTR-SECUDFLT

The following table shows some examples of actions, categories, and commands that apply to the Cisco NCS 4000 series.

Table 1-2 Some TL1 Category Examples

If You Want To	Look In This Category	Applicable Command or Autonomous Message
Regen Configuration	Equipment	ED-EQPT
Change the time/date on the NE	System	SET-TOD
See the alarms on an ODU	Synchronization	REPT ALM ODU
Delete a cross-connection on an ODU path	Cross Connections	DLT-CRS-<PATH>
Perform Linear Protection Switch on ODU Path	Protection	OPR-PROTNSW-<PATH>
Release Linear Protection Switch on ODU Path	Protection	RLS-PROTNSW-<PATH>

1.5. Basic Commands

This section lists the basic commands to help you get started. You must be connected and logged into aTL1 session. After you issue a command, confirm you receive a COMPLD response to indicate the command was completed successfully.

Note: If you receive a DENY response, first check the syntax you entered for accuracy.

- To retrieve configuration information about an E1 port, see RTRV-<STM_TYPE>.
- To retrieve all alarms on a specific OTN port, see RTRV-ALM-<MOD2ALM>.
- To retrieve all conditions on a specific OTN port, see RTRV-COND-<MOD2ALM>.
- To retrieve all alarms on a system, see RTRV-ALM-ALL.
- To retrieve all conditions on a system, see RTRV-COND-ALL.
- To retrieve all data, state, and shelf parameters on an associated equipment unit, see RTRV-EQPT.
- To retrieve all general attributes on a system, see RTRV-NE-GEN.
- To retrieve actual PM values on an OTN port, see RTRV-PM-<MOD2>.
- To retrieve the thresholds in place for an OTN port, see RTRV-TH-<MOD2>.
- To create a loopback, see OPR-LPBK-<MOD2>.
- To release a loopback, see RLS-LPBK-<MOD2NCSPAYLOAD>.

1.6. TL1 Commands Overview

1.6.1 TL1 Command Syntax

TL1 commands conform to the following syntax:

a:b:c:d:e: ... z;

where:

"a" is the command code.

"b" is the target identifier (TID).

"c" is the access identifier (AID) or the user identifier (UID).

"d" is the correlation tag (CTAG).

"e: ... z;" are other positions required for various commands.

The TID, AID, and CTAG route and control the TL1 command. Other parameters provide additional information required to complete the action requested by the command. TL1 command codes, parameter names, and parameter values are not case sensitive, unless specifically noted in the command description.

The TID is a unique name given to each system when it is installed. The name identifies the particular NE, to which each command is directed. The value of TID can be any TL1 identifier or text string, but it is limited to 20 characters. An identifier contains any number of letters or digits, but must start with a letter. A text string is any alphanumeric or punctuation characters enclosed in double quotes. The presence of the TID is required in all input commands, but its value can be null (represented by two successive colons). The TID can be null when the operating system directly communicates with the target NE. The recommended value for the TID, when it is used, is the target's common language location identifier (CLLI) code. To establish the TID for a node, use the Provisioning > General tab in Cisco Transport Controller (CTC).

The AID is an access code used to identify and address specific objects within the NE. These objects include individual pieces of equipment, transport spans, access tributaries, and other objects.

The CTAG is a unique identifier given to each input command by the user. When the NE responds to a specific command, it includes the command's CTAG in the reply. Including the CTAG eliminates discrepancies about which response corresponds to which command. Valid CTAG values include strings of up to six characters composed of identifiers (alphanumeric, beginning with a letter) or decimal numerals (a string of decimal digits with an optional non trailing period).

The following specification characters are used throughout this document as vehicles for defining the syntax: Angle brackets (< >) enclose a symbol specifier, for example <CTAG>. Square brackets ([ ]) enclose an optional symbol, for example [<TID>]. Quotation marks (" ") enclose a literal character, as shown in the following output example:

"FAC-5-3-1-1,OTU1:MN,HI-RXPOWER,NSA,08-18,12-56-40,NEND,RCV:\"Facility High Rx power\","

1.6.2 Parameter Types

This section provides a description of all message parameter types defined for the TL1 messages used in the Cisco NCS 4000 series. Individual parameters are listed within each command description.

1.6.2.1 ATAG Description

The autonomous message tag (ATAG) is used for message sequencing. There are four streams of autonomous messages and each stream corresponds to a sequence. The sequence numbers increment by one for each autonomous message within that stream. The format and range of ATAG differs for each stream. The four streams are:

1. Alarmed events: These include REPT ALM and REPT EVT (except REPT EVT SESSION) messages as well as the REPT SW autonomous message.
      The ATAG format is x.y, where:
      - x is the sequence number of this alarmed event. This is an integer in the range of 0 to 9999.
      - y is the sequence number of the previous alarmed event that is related to this alarmed event. This is an integer in the range of 0 to 9999.
      If there is no such previous related event, then y will be the same as x. For example, the first t ime an alarm is raised, you will receive the autonomous message:

```
node1 1970-12-22 20:04:53
*  0066.0066 REPT ALM Optics
   "FAC-0-8-0-2:MN,IMPROPRMVL,NSA,12-22,20-04-51,NEND,:\"Improper Removal\",Optics"
;
```

When this alarmed event/condition is cleared, you will receive the autonomous message:

```
node1 1970-12-22 20:05:11
A  0068.0066 REPT ALM Optics
   "FAC-0-8-0-2:CL,IMPROPRMVL,NSA,12-22,20-04-51,NEND,:\"Improper Removal\",Optics"
;
```

2. Database change messages: The REPT DBCHG message falls into this category.

The ATAG format is x, where x is the sequence number of the database change update message. This is an integer in the range of 0 to 9999. For example:

```
node1 1970-12-22 18:19:03
A 43 REPT DBCHG
    "TIME=18-19-2,DATE=1970-12-22,SOURCE=1,USERID=root,DBCHGSEQ=14:ENT-ODU0:ODU-0-
8-0-10-20:::"
;
```

3. PM reports: The REPT PM messages fall into this category.
The ATAG format is x, where x is the sequence number of the PM report. This is an integer in the range of 0 to 9999.

For example:

```
10.78.161.183 1970-12-03 22:16:26

A  54 REPT PM ODU2

   "ODU-0-7-0-7,ODU2:UAS-PM,87,COMPLD,NEND,,15-MIN,12-3,22-16"

;
```

This sequence number is global across all existing PM schedules.

4. Autonomous messages specific to a TL1 session: These messages are usually related to the security aspect of the TL1 session. Only the autonomous messages REPT EVT SESSION and CANC fall under this category. This is an integer in the range 0 to 9999. For example:

```
node1 1970-12-22 18:30:31
A  1 CANC
   "root"
;
```

1.6.2.2 CTAG Description

The CTAG is included in each command by the user and is repeated by the NE in the response to allow the user to associate the command and response messages. The valid values for a CTAG are strings of up to 6 characters composed of identifiers (alphanumeric, beginning with a letter) or nonzero decimal numbers (a string of decimal digits with an optional nontrailing period).

A zero in the response field is valid when indicating an error; for example, issuing a semicolon by itself results in:

> ;

   No Input For Parsing.

>

1.6.2.3   TID Description

The TID is the name of the NE where the command is addressed. TID is the Telcordia name for the system.

1.6.2.4   Parameter Notes

The following list contains general notes that apply to parameters:

- If a parameter is set to a value that is inconsistent with something already in the database and that value is not changed to a consistent value, then the command is denied.
- If a parameter is set to a value that is consistent with what is already in the database, but another parameter in the same command is incompatible, then the command is denied.
- The correct way to issue a command where parameters might be in conflict is to:
  - Issue that command and change all relevant parameters to compatible values.
  - Issue the command again to change the target values.
- The default values for command attributes can be seen using the RTRV commands, provided they are not altered by a provisioning command.
- The default for an optional field of an ED command is either the provisioned default value or the last provisioned value in the previous ED command.

1.7   Autonomous Message Syntax

Autonomous messages are used to report alarms, configuration changes, and condition changes. Many of these messages, such as those relating to alarm conditions, are spontaneously triggered by the NE itself without intervention. Other messages, such as those relating to the reporting of periodic condition states or performance data values, are scheduled by the NE user through other commands. Because you do not issue autonomous messages to the NE, they do not include input formats or input examples.

The following figure shows the autonomous message format. The autonomous message tag (ATAG) is used for message sequencing. The number is incremented by one for each autonomous message sent by the NE. Cisco NEs use whole numbers 0000 to 9999.

Note: Some autonomous messages (REPT DBCHG and REPT EVT SESSION, for example) differ slightly from the format shown in the third line of the following figure.

Figure 1-1 Autonomous Message Format

Figure 1-1 Autonomous Message Format
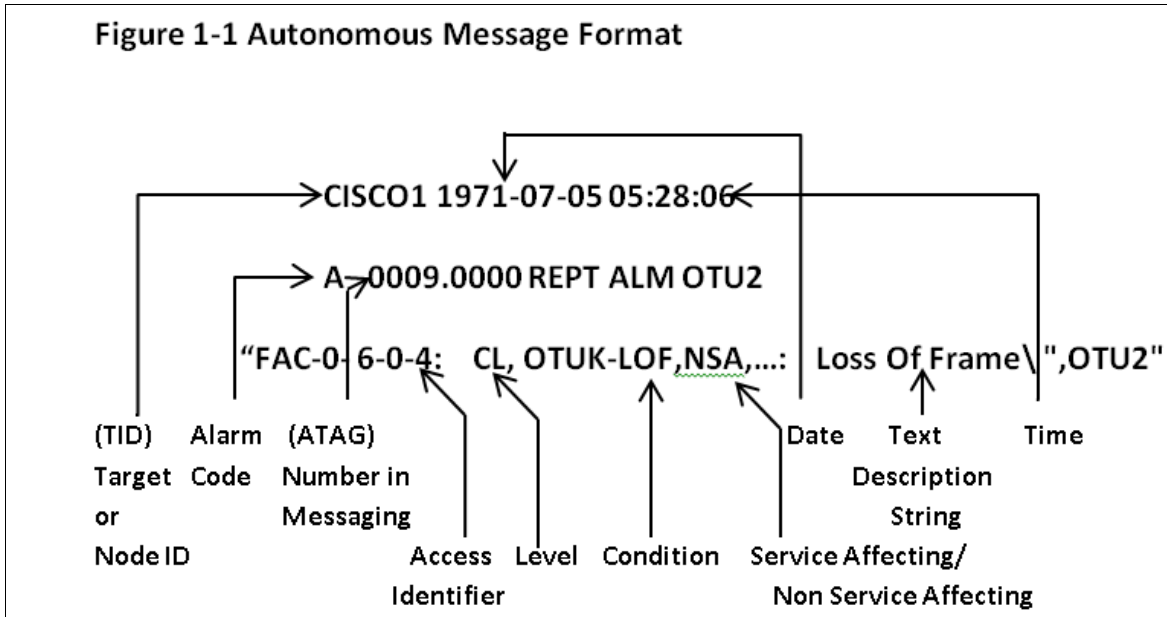
The alarm code indicates the severity of the autonomous message. Valid values for alarm codes in decreasing order of severity are as follows:

- *C—Critical alarm
- **—Major alarm
- *$^{\wedge}$—Minor alarm
- A$^{\wedge}$ —Nonalarmed message

Critical, Major, and Minor correspond to the reporting of alarmed events. The Non-alarmed message designation is used when the NE is reporting non-alarmed events, periodic measurements, or results of previously scheduled diagnostics or audits. If multiple alarms are reported in the same message, the alarm code represents the highest severity of those being reported.

The following is an example of an output message that includes the Critical alarm code:

CISCO1 1971-07-06 06:04:31

*C 0244.0244 REPT ALM EQPT

   "LC-0-3:CR,LINE CARD IMPROPER REMOVAL NOTIFICATION,SA,07-06,06-04-31,,:\"LINE CARD IMPROPER REMOVAL\",EQPT"

;

1.8 Command Completion Behavior

When you enter a TL1 command, one of three completion codes will be returned. The completion codes are: completed (COMPLD), partial (PRTL), and deny (DENY). You can specify an explicit, implicit, or explicit with implicit list as explained in the following sections.

1.8.1 General Rules

1.8.1.1 Explicit List of AIDs-No Wildcards

If a set of AIDs is explicitly listed, including a set of just one AID, then each AID must complete successfully to return a COMPLD message. If more than one AID is in the set and at least one AID succeeds but all do not, then a PRTL with errors for each failed AID is returned. If all AIDs in the set fail, a DENY with errors for each failed AID is returned.

1.8.1.2 Implicit List of AIDs-Single AID with Wildcard

If a set of AIDs is implied by the use of the ALL modifier on a single AID, then follow the same rules as in the Section Explicit List of AIDs—No Wildcards. The caveat is that the implicit list only includes AIDs that apply to the command. For example, assume SLOT-3 contains an NCS4K-24LR-O-S card and only VC-0-1-0-4 and VC-0-1-0-7 are of path-width VC464c.

Apply the following rules to the set:
1. If all valid AIDs match, COMPLD is returned with a matching list of cross-connections.
2. If some valid AIDs match but not all, FAC-*-* is returned with a matching list of cross-connections. For other scenarios, PRTL is returned.
3. If all valid AIDs fail to match, DENY is returned.

1.8.1.3 Explicit List Grouped with Implicit List

If the set of AIDs is composed of two subsets, one set including explicitly stated AIDs and the other set implied by one or more AID(s) with the ALL modifier, then follow the rules in the "Explicit List of AIDs—No Wildcards" and "Implicit List of AIDs—Single AID With Wildcard" sections respectively. Apply the logic in the following table to the results from the two subsets:

Table 1-2 Explicit List, implicit List and Combined List logic

Explicit List returns	Implicit List returns	Combined List returns
COMPLD	COMPLD	COMPLD plus matching list
COMPLD	DENY	PRTL with errors plus matching list
PRTL	COMPLD	PRTL with errors plus matching list
PRTL	DENY	PRTL with errors plus matching list
COMPLD	PRTL	PRTL with errors plus matching list
DENY	PRTL	PRTL with errors plus matching list
DENY	COMPLD	PRTL with errors plus matching list
PRTL	PRTL	PRTL with errors plus matching list
DENY	DENY	DENY with errors

1.8.2 Command Completion Behavior For Retrieval of Cross Connections

When you enter a RTRV-CRS command, one of three completion codes will be returned. The completion codes are: COMPLD, PRTL, and DENY. You can specify an explicit, implicit, or explicit with implicit list as explained in the following sections.

1.8.2.1 Explicit List of AIDs-No Wildcards

For an explicit list of AID on a RTRV-CRS command, an error code will be returned for each AID that fails validation (for example, the user specifies ODU-0-0-0-ALL when SLOT 0 only contains an ODU 1) or for each AID where no matching cross-connection is found. To determine the completion code, follow the rules from the Explicit list of AIDs-No Wildcards

If the result is either PRTL or COMPLD, then a list of matching cross -connections will accompany the response.

1.8.2.2 Implicit List of AIDs-Single AID With Wildcard

If a set of AIDs is implied by the use of the all modifiers on a single AID, then follow the same AID expansion rule as defined in the example from the implicit list of AIDs-Single AID With Wildcard.

Apply the following rules to the set:

- If all valid AIDs match, COMPLD is returned with a matching list of cross-connections.
- If some valid AIDs match but not all, COMPLD is returned with a matching list of cross-connections.
- If all valid AIDs fail to match, DENY is returned.

For example, consider the command **RTRV-CRS-ODU0:[<TID>]: ODU-0-0-0-0,ODG-1:<CTAG>;**

In this example, the set is traversed and returns only the ODU cross-connections that exist using endpoints in that set. If no cross-connections are retrieved, COMPLD is returned.

1.8.2.3 Explicit List Grouped With Implicit List

When you have determined the implicit list, apply the rules in the implicit List of AIDs-Single AID with Wildcard to the implicit list and the rules from the Explicit List of AIDs-no Wildcards to the explicit list. Apply the logic in Explicit List, Implicit List, and Combined List Logic to the results from the two subsets.

1.9 Keyboard Shortcuts

TL1 has the ability to store previously issued commands so that they can be recalled for future use. A maximum of 20 commands are stored. All types of commands are stored, including invalid commands. If the session is a GNE session, it will store commands sent to both the gateway network element (GNE) and the end network element (ENE).

- Pressing Ctrl-R recalls the last command issued. Each time Ctrl-R is pressed, a previously issued command is displayed.
- Pressing Ctrl-F recalls commands in the forward direction.

When a command has been recalled, you can use the Backspace key to edit the command as necessary. Cursor keys (for example, left and right arrows) are not permitted for editing.

Note: Command recall keys are only available when using a serial port session or an interactive Telnet session (for example, **telnet <hostname> 3083**).

1.10 Default Values

1.10.1 Performance

Performance Default Values lists the default performance values that are applied by the system when they are not explicitly specified during performance provisioning.

Table 1-3 Performance Default Values

Commands	Parameter Default
INHMODE	ALW
TMPER	15-min
MONLEV	1-UP
REPTINVL	15-min

1.10.2 Protection

Protection Default Values lists the default protection values that are applied by the system when they are not explicitly specified during protection provisioning.

Table 1-4 Protection Default Values

Commands	Parameter Default
RVRTV	N
RVTM	5
RECRT	N
CONMODE	SNC-N

1.10.3 Ports

Ports Default Values lists the default port values that are applied by the system when they are not explicitly specified during port provisioning.

Table 1-5 Ports Default Values

Commands	Parameter Default
STM Line	PJMON defaults to 0.
	SFBER defaults to 1E-4.
	SDBER defaults to 1E-7.
	MODE defaults to SDH.
	PST defaults to IS,NR

1.10.4 VC Paths

VC Paths Default Values lists the default VC path values that are applied by the system when they are not explicitly specified during VC path provisioning.

Table 1-6 VC Paths Default Values

VC Path	Parameter Default
VC Path	SFBER, SDBER
	SFBER defaults to 1E-4.
	SDBER defaults to 1E-6.
	EXPTRC defaults to a copy of the provisioned string or NULL when TRCMODE is OFF mode.
	EXPTRC defaults to the user entered string when the TRCMODE is MANUAL mode.
	EXPTRC defaults to a copy of the acquired received string or NULL if the string has not been acquired when the TRCMODE is AUTO mode.

1.10.5 Equipment

Equipment Default Values lists the default equipment values that are applied by the system when they are not explicitly specified during equipment provisioning.

Table 1-7 Equipment Default Values

Commands	Parameter Default
CARDMODE	TXP

1.10.6 Cross-Connections

Cross-Connection supports 2 WAY connection type.

1.10.7 Testing

Testing Default Values lists the default testing values that are applied by the system when they are not explicitly specified during testing provisioning.

Table 1-8 Testing Default Values

Commands	Parameter Default
OPR-LPBK	LPBKTYPE defaults to FACILITY.
RLS-LPBK	LPBKTYPE defaults to the current existing loopback type.

1.11 Log Out of TL1

When you have finished using TL1, you must log out of the session. Logging out of TL1 only has to be done once per session.

Step 1   If you logged into TL1 via Cisco Transport Controller (CTC), you must log out by pressing the Disconnect button or by issuing the CANC-USER command as shown in the following steps.

If you logged into TL1 via Telnet or craft interface, you must log out by issuing the CANC-USER command.

Input Format:

CANC-USER:[<TID>]:<USERID>:<CTAG>;

- TID is the name of the node you want to access. If you only want to query the node you connected to, leave the TID blank.
- USERID is the user ID. Maximum 10 alphanumeric characters.
- CTAG is any non-blank character series that does not have to be unique.

Input Example:

CANC-USER:PETALUMA:DXT:100;

Step 2   Confirm you receive a COMPLD response to indicate the command was completed successfully.

Response Example:

TID001 03-07-22 02:45:12

M 100 COMPLD;

Chapter2. Session and Authentication Management

This chapter provides Session and Authentication Management commands for the Cisco NCS 4000 Series.

2.1 ACT - USER

The Activate User (ACT-USER) command opens a session with the network element (NE).

Usage Guidelines

- ACT-USER:[TID]:[STRING]:CTAG::[STRING]

- Invalid syntax for both the user ID and password is permitted, but the user can only log in if the User ID/password matches what is in the database.

- The command permits set up of a session with the NE. Until a successful login, the TL1 manager is not able to receive alarm or command responses from the NE. If a session is not established, issuing commands should generate a DENY as a command response, with no other information and a PLNA (Login Not Active) error code should be implemented for other commands.

Category
Security

Security
N/A

Input Format
ACT-USER:[<TID>]:<UID>:<CTAG>::<PID>;

Input Example
ACT-USER:PETALUMA:TERRI:100::MYPASSWD;

Input Parameters

<UID>	The user identifier (user ID) of the person logged in. UID can be any valid TL1 identifier or text string but limited to 10 characters. If any non-identified character is to be used(not made up of only letters and digits), the text string form must be used (i.e. enclosed in double quotes). It must not be null.
<PID>	The user password. PID can consist of alphanumeric or special characters but limited to 10 characters. Special characters like semicolon, colon, double quotes, equal sign, comma are not accepted. White spaces are also ignored in password. Passwords are encrypted for security reasons and will appear as asterisks (*). PID is a string. It must not be null.

Output Format
SID DATE TIME
M CTAG COMPLD

"<UID>:<LASTLOGINTIME>,<*LAST2LASTLOGINTIME*>,<UNSUCCESSFULLOGINS>";

Output Example
10.78.161.238 1970-01-06 17:55:22
M   1 COMPLD

"root:1970-01-06 16:52:10,1970-01-05 00:41:33,0";

Output Parameters

<UID>	The user identifier (user ID) of the person logged in. UID can be any valid TL1 identifier or text string but limited to 10 characters. If any non-identified character is to be used (not made up of only letters and digits), the text string form must be used(i.e. enclosed in double quotes). It must not be null.
<LASTLOG INTIME>	The date and time of the last successful connection to the NE (not including current login). LASTLOGINTIME is a string.
<LAST2LA STLOGINT IME>	The date and time of the previous to last successful connection to the NE (not including current login). LASTLOGINTIME is a string.
<UNSUCC ESSFULLO GINS>	The number of unsuccessful login attempts since the last successful login. UNSUCCESSFULLOGINS is an integer.

2.2 CANC – USER

The Cancel User (CANC-USER) command logs a user out of an active session with the NE.

Usage Guideline
None

Category
Security

Security
Retrieve

Input Format

CANC-USER:[<TID>]:<USERID>:<CTAG>;

Input Example

CANC-USER:PETALUMA:TERRI:101;

Input Parameters

	<USERID>	The user identifier (user ID) of the person logged in. UID can be any valid TL1 identifier or text string. If any non-identified character is to be used (not made up of only letters and digits), the text string form must be used(i.e. enclosed in double quotes). It must not be null.

2.3 CANC

The Cancel (CANC) message reports the occurrence of a session timeout event.

Usage Guidelines

• CANC is an autonomous message transmitted by the NE to a user when a session established by that user is terminated because no messages were exchanged for a long period of time (a timeout) or the session times out. When a timeout occurs, the corresponding port drops the session and the next session initiation at that port requires the regular login procedure. The CANC message is only used to indicate that a session has been terminated because of a timeout. If a session is terminated for a different reason (for example, forced logout or loss of communication), the REPT EVT SESSION message is used.

Category

Security

Security

Retrieve

Output Format

SID DATE TIME

A ATAG CANC

"<UID>";

Output Example

TID-000 1998-06-20 14:30:00

A 100 CANC

"ABCD";

Output Parameters

<UID>	The user identifier (user ID) of the person logged in. Refers to the user ID of a user whose session is terminated due to timeout. UID is a string.

2.4 ALW-MSG-ALL

The Allow Message All (ALW-MSG-ALL) command instructs the NE to enter a mode where all the REPT ALM and REPT EVT autonomous messages are transmitted. Use the INH-MSG-ALL command to inhibit these autonomous messages. When a TL1 session starts, the REPT ALM and REPT EVT messages are allowed by default.

Usage Guidelines

If this command is issued twice in the same session, the SAAL (Status, Already Allowed) error message will be returned.

Category

System

Security

Retrieve

Input Format

ALW-MSG-ALL:[<TID>]::<CTAG>[::,,];

Input Example

ALW-MSG-ALL:PETALUMA::549;

Input Parameter

None

2.5 ALW-MSG-DBCHG

The Allow Database Change Message (ALW-MSG-DBCHG) command enables REPT DBCHG. When a TL1 session starts, the REPT DBCHG messages are not allowed by default.

Usage Guideline
None

Category
Log

Security
Retrieve

Input Format
ALW-MSG-DBCHG:[<TID>]::<CTAG>[::,,];

Input Example
ALW-MSG-DBCHG:CISCO::123;

Input Parameter
None

2.6 ALW-PMREPT-ALL

The Allow Performance Report All (ALW-PMREPT-ALL) command resumes the processing of all the PM reports that are inhibited. The allowance of the PM reporting is session-based, which means the command is only effective to the TL1 session that issues this command.

Usage Guideline
None

Category
Performance

Security
Retrieve

Input Format
ALW-PMREPT-ALL:[<TID>]::<CTAG>;

Input Example
ALW-PMREPT-ALL:CISCONODE::123;

Input Parameter
None

2.7 INH-MSG-ALL

The Inhibit Message All (INH-MSG-ALL) command inhibits all REPT ALM and REPT EVT autonomous messages from being transmitted. See the ALW-MSG-ALL to resume these autonomous messages.

Usage Guidelines
If this command is used twice in the same session, the SAIN (Already Inhibited) error message is reported.

Category
System

Security
Retrieve

Input Format
INH-MSG-ALL:[<TID>]::<CTAG>[::,,];

Input Example
INH-MSG-ALL:PETALUMA::550;

Input Parameter
None

2.8 INH-MSG-DBCHG

The Inhibit Database Change Message (INH-MSG-DGCHG) command disables REPT DBCHG autonomous message).

Usage Guideline
None

Category
Log

Security
Retrieve

Input Format
INH-MSG-DBCHG:[<TID>]::<CTAG>[::,,,];

Input Example
INH-MSG-DBCHG:CISCO::123;

Input Parameter
None

2.9 INH-PMREPT-ALL

The Inhibit Performance Report All (INH-PMREPT-ALL) command inhibits all scheduled performance monitoring (PM) reporting. Inhibiting PM reporting is session-based, which means the command is only effective to the TL1 session that issues this command. By default, the scheduled PM reporting is inhibited by a TL1 session.

Usage Guidelines
None

Category
Performance

Security
Retrieve

Input Format
INH-PMREPT-ALL:[<TID>]::<CTAG>;

Input Example
INH-PMREPT-ALL:NE-NAME::123;

Input Parameter
None

2.10 REPT EVT SESSION

The Report Event Session (REPT EVT SESSION) message reports a non-alarmed event related to establishing a session with the NE.

Usage Guideline
None

Category
Security

Security
Retrieve

Output Format
SID DATE TIME
A ATAG REPT EVT SESSION
"<SID>:<EXP>"
"<WARN>"
;

Output Example
CISCO1 1971-07-07 02:24:37

A   1 REPT EVT SESSION

  "CISCO1:NO,"

  /* TL1 Agent Copyright (c) 2012-2014 By Cisco Systems, Inc.

;

Output Parameters

<AID>	Access identifier. Identifies the NE with which a session is established. AID is a string.	

<EXP>	Indicates whether the password is alive (for example, no password updating is required at the moment), expired, or is about to expire. For now, This parameter value will always be 'NO'.	
	• No	
<WARN>	Free format text containing additional information about the security event. WARN is a string.	

Chapter3. Security Management

This chapter provides security Management commands for the Cisco NCS 4000 Series.

3.1. SET-ATTR-SECUDFLT

The Set Attribute Security Default (SET-ATTR-SECUDFLT) command sets the system-wide default values associated with several security parameters.

Usage Guideline
Security

Category
Security

Security
N/A

Input Format
SET-ATTR-SECUDFLT:[<TID>]::<CTAG>:::[MXINV=<MXINV>],[LOGINTMOUT=<LOGINTMOUT>],[SESSTMOUT=<SESSTMOUT>];

Input Example
SET-ATTR-SECUDFLT:CISCO::123:::MXINV=5,LOGINTMOUT=0,SESSTMOUT=0;

Input Parameters

<MXINV >	Maximum number of consecutive and invalid session setup attempts allowed to occur before an intrusion attempt is suspected. 0 indicates the policy is turned off. Default is 3. MXINV ranges from 0 to 10. MXINV is an integer.
<LOGINTMOUT >	The valid values are from 0 to 600.
<SESSTMOUT >	Interval (in minutes) after which a session is terminated if no messages are exchanged between the user and the NE. 0 indicates that the session will not timeout. SESSTMOUT ranges from 0 minutes to 999 minutes. Defaults are 15 mins. SESSTMOUT is an integer.

Chapter4. Provisioning Procedures

4.1 Provisioning Procedure

4.1.1. TL1 controller and cross-connect provisioning

This section provides TL1 commands for creating and deleting OTN controllers and channelizing or cross-connecting them for establishing OTN circuits. The OTU physical interfaces shall be used to aggregate OTN based services as well as to build the OTN network infrastructure that carries all the aggregated services into the OTN Network to be transported from one point to another point of the Network of NCS 4000 based nodes.

An OTN circuit carries multiple data streams from various sources. It also carries non-OTN data streams (GIGE/SONET) coming at any rate. These multiple data streams from various sources are combined and transmitted over a single data stream and this is done through multiplexers.

During multiplexing, various weak data streams are converted into a single strong data stream and then a De-multiplexer is used to transmit the data in their respective formats to the destination. This entire process is called OTN aggregation.

4.1.1.1 Creating Client Controllers

To configure OTN circuits carrying OTN traffic, OTU controllers is to be created using the following ENT-<Client-Type> TL1 command:

Input Format:

ENT-<CLIENT_TYPE>:[<TID>]:<AID>:<CTAG>::[<RATE>],[<MAPPING>],[<FRAMING>];

Input Example:

ENT-OTU4:ROUTER8:FAC-0-0-0-0-0:1::,,Opu4;

Table 4-1 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IEAE	Input Entity To Be Created Already Exists	Already Exist
IENE	Does Not Exist	Corresponding Optics controller doesn't exist.

Further, on successful creation of OTUk controllers, child ODUk controller is created with the same R/S/I/P.

4.1.1.2 Configuring ODU Controllers

This ODUk controller can be provisioned to configure its thresholds like SDBER and SFBER, its loopback mode, its secondary admin state as In-Service or Out Of Service and its TTI and TSG values using ED-<ODU-TYPE> TL1 command.

Input Format:

ED-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[GCC1=<GCC1>],[SDBER=<SDBER>],

[SFBER=<SFBER>],[PMTCA=<PMTCA>],[PM=<PM>],[TSG=<TSG>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]
];

Input Example:

ED-ODU1::ODU-0-2-0-1:1:::SDBER=1e-7,SFBER=1E-9:IS;

Table 4-2 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IIAC	Invalid Access Identifier	AID doesn't Exist
IIDT	CMDMDE Must Be FRCD	CMDMDE should be forced to shutdown ODU controller

4.1.1.3 Configuring OTU Controllers

OTUk controller can be provisioned to configure its thresholds like SDBER and SFBER, FEC, loopback mode, its secondary admin state as In-Service or Out Of Service, its TTI and SRLG sets.

Input Format:

ED-<OTU_TYPE>:[<TID>]:<AID>:<CTAG>:::[GCC0=<GCC0>],[SDBER=<SDBER>],[OSPF=<OSPF>],[NNI=<NNI>],[RSVP=<RSVP>],

[SFBER=<SFBER>],[SMTCA=<SMTCA>],[FEC=<FEC>],[TRIGTH=<TRIGTH>],[TRIGWINDOW=<TRIGWINDOW>],[RVRTTH=<RVRTTH>],[RVRTWINDOW=<RVRTWINDOW>],[PM<PM>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]]";

Input Example:

ED-OTU1::FAC-0-0-0-2:1:::SDBER=1e-6,SFBER=1e-9,PM=Y;

Table 4-3 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IIAC	Invalid Access Identifier	AID doesn't Exist

IIDT	CMDMDE Must Be FRCD	CMDMDE should be forced to shutdown OTU controller

4.1.1.4 Channelizing ODU Controllers

De-multiplexing a higher order ODUk into granular hierarchy can be achieved by channelizing these higher order ODUk controllers into multiple different low rate ODUj controllers. TL1 command used to channelize an ODUk controller is:

Input Format:

ENT-<ODU_TYPE>:<TID>:<AID>:<CTAG>::<PARENTNM>,<TS>;

Input Example:

ENT-ODU2::ODU-0-0-0-1-22:1::ODU4,1&&4;

Table 4-4 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IIAC	Invalid Access Identifier(AID)	AID doesn't Exist
ISPC	Invalid Syntax or Punctuation	Invalid characters given
ISPC	Invalid Mod1	Child odu not matching ODU type

4.1.1.5 Configuring Cross Connect

Cross-connect provisioning OTN RP VM process allocates all the resources needed by the specific cross connection with the purpose of allocating, reserving and enabling all the HW resources of the system, in terms of Line Card FPGA/Framer and Fabric Card identifiers. Currently 2-WAY cross-connects are supported. TL1 command to provision cross connect between 2 ODUk is:

Input Format:

ENT-CRS-<ODU_TYPE>:[<TID>]:<FROM>,<TO>:<CTAG>:::[CKTID=<CKTID>][:]

Input Example:

ENT-CRS-ODU1::ODU-0-0-0-1,ODU-0-0-0-2:1:::CKTID=ODU1-XC;

Table 4-5 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IIAC	Invalid Access Identifier	AID doesn't Exist
SROF	Maximum Xconnects Already Created	No more cross connects can be created on the NE.

To provision a cross-connect, 2 ODUk controllers should be of the same bandwidth.

4.1.1.6 Retrieving Cross Connect

The state of Cross Connect ODUk controllers to be cross-connected should not have loopback mode enabled and should not be part of any virtual ODU group. The state of the cross connects, can be reviewed using the following RTRV-CRS commands:

Input Format:

RTRV-CRS-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[CKTID=<CKTID>][:];

Input Example:

RTRV-CRS-ODU0::ODU-0-0-0-0:1;

Output Example:

Node1 1998-06-20 14:30:00

M 001 COMPLD

"ODU-0-0-0-0,ODU-0-0-0-1:2WAY,ODU1:CKTID=11:IS-NR"

;

4.1.1.7 Deleting a Cross Connect

To delete a cross-connect, following TL1 command is used:

Input Format:

DLT-CRS-<ODU_TYPE>:[<TID>]:<FROM>,<TO>:<CTAG>:::[CKTID=<CKTID>][:];

Input Example:

DLT-CRS-ODU1::ODU-0-0-0-1,ODU-0-0-0-2:1::;

Table 4-6 Error Messages:

	Description	Scenario When the Error Message is Sent

Error Code		
SNCC	Not Cross Connected	No cross connects present.
IENE	Does Not Exist	Given cross connect doesn't exist
IACC	Invalid AID And CKTID Combination	AIDis cross connected but with different CKTID.

4.1.1.8 Retrieving ODU Controllers

All provisioned ODUk controllers can be retrieved using the following TL1 commands:

Input Format:

RTRV-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>;

Input Example:

RTRV-ODU1::ODU-0-0-0-1:1;

Output Example

M   1 COMPLD

"ODU-0-0-0-1:,,,ACT:GCC1=N,SDBER=1E-6,SFBER=1E-3,
PM=N,OWNER=ALL,RESST=ODU-RESOURCE-FREE,TSG=1G25:OOS:DSBLD"

;

4.1.1.9 Retrieving OTU Controllers

All provisioned OTUk controllers can be retrieved using the following TL1 commands:

Input Format

RTRV-<OTU_TYPE>:[<TID>]:<AID>:<CTAG>;

Input Example

RTRV-OTU1::FAC-0-0-0-1:1;

Output Example:

10.78.161.238 1971-07-13 13:20:51

M   1 COMPLD

"FAC-0-6-0-0::GCC0=N,SDBER=1E-7,SFBER=1E-5,PM=Y,FEC=STD,TRIGTH=1E-4,RVRTTH=1E-4,TRIGWINDOW=10,R
VRTWINDOW=2000,OSPF=N,RSVP=N:OOS-MA,DSBLD"

;

4.1.2. Protection Provisioning

The NCS4K-20T-O-S, NCS4K-2H-O-Kand NCS4K-24LR-O-S Line Cards are able to support traffic protection mechanism at circuit level.

The ODUk level of the OTN protocol is able to provide different kinds of protection mechanism that are following:

- 1+1 unidirectional SNC/N, SNC/I and SNC/S protection without an APS protocol
- 1+1 unidirectional SNC/N, SNC/I and SNC/S protection with an APS protocol
- 1+1 bidirectional SNC/N, SNC/I and SNC/S protection with an APS protocol
- 1+1+R bidirectional SNC/N, SNC/I and SNC/S protection with an APS protocol

Protection attributes can be configured for Odu-Group-Mp from TL1 using the below command:

ENT-ODG-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>::<SIGNAL>,[<TS>]:[WRCTRID=<WRCTRID>],[PRTCTRID=<PRTCTRID>],[CONMODE=<CONMODE>],[TCMID=<TCMID>**],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[RVTM=<RVTM>],[PRTHOTM=<PRTHOTM>];**

Working and protecting controllers need to be configured in the odu-group on which protection switch is to be performed. Controllers that are already part of other odu-group or any cross-connect cannot be added in the odu-group.

Input example:

ENT-ODG-ODU2::ODG-111:1::OTN:WRCTRID=ODU-0-7-0-6,PRTCTRID=ODU-0-7-0-7,CONMODE=SNC-S,TCMID=2,PROTTYPE=APSBIDI,RVRTV=Y,PRTHOTM=200,RVTM=8;

Table 4-7 Error messages:

Error Code	Description	Scenario When the Error Message is Sent
IDRG	Invalid Data Range Error	Invalid value for RVTM parameter
IIPG	For TCMID Conmode should be SNC-S	TCMID is given without snc-s given for commode.

Protection management is supported by the following TL1 commands:

4.1.2.1 Operate Protection Switching

Command for operating protection switch i.e. to support lockout of protection , forced switch to protection or manual switch to protection:

Input Format:

OPR-PROTNSW-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>::<COMMAND>,<RESOURCE>[::];

<RESOURCE> is the odu-group-mp or odu-group-te on which protection switching is to be performed.

<COMMAND> specifies the type of switching to be performed i.e, LOCKOUT, FRCD or MAN.

Input Example:

OPR-PROTNSW-ODU2::ODU-0-0-0-10:1::LOCKOUT,ODG-11;

4.1.2.2 Exercise Protection Switching

Command for exercise of APS protocol:

Input Format:

EX-SW-ODG:[<TID>]:<AID>:<CTAG>[::::];

Input Example:

EX-SW-ODG::odg-11:1;

4.1.2.3 Clear Protection Switching

Command for clearing the protection switch request:

Input Format:

RLS-PROTNSW-<MOD2>:[<TID>]:<SRC>:<CTAG>[::];

Input Example:

RLS-PROTNSW-ODG:CISCO:ODG-1:1;

4.1.2.4 Retrieve Protection Switching Status

Command to display the protection switch configured on the system:

Input Format:

RTRV-PROTNSW-ODG:[<TID>]:<AID>:<CTAG>[::::];

Input Example:

RTRV-PROTNSW-ODG:CISCO:ODG-13:7;

Output Example:

10.78.161.183 1971-01-26 16:14:12

M   1 COMPLD

   "ODG-10:APS-CLEAR,"

;

4.1.3   Remote Monitoring-Managed PMs

This section describes the retrieval, threshold setting, threshold crossing alerts (TCAs), and scheduled PM reporting for all remote monitoring PM data.

The cards that support PMs include:

- NCS4K-24LR-O-S

- NCS4K-20T-O-S

- NCS4K-2H-O-K

- NCS4K-2H-W

The PM types for these cards include Ethernet, OTN, Sonet statistic types. When provisioning a PM threshold, following threshold parameters are need to be specified.

- TMPER
- MONTYPE
- THRESHOLD LEVEL
- LOCATION

  Note: There can be more than one threshold defined for each PM statistic type.

The current bucket shows the instant data for PM Montype specified by the user such as 15-MIN or 1-DAY. The history data shows the data accumulated over the time duration specified by the user.

4.1.3.1 RTRV-PM-<MOD2>

The Retrieve Performance for GIGE, 10GIGE, 40GIGE, 100GIGE, OC48, OC192,   STM16,STM64, STS48c, STS192c,VC416c,VC464c, OTUk, ODUk (where k={0-4,1e,2e,3e1,3e2,1f,2f,flex}) command retrieves the values of PM parameters for a specified card type.

If there are no errors to report, the response will be COMPLD. If an unsupported MONTYPE is specified, an error message is returned. Currently there is no support of DIRN (direction) for PM statistics.

Input Format

RTRV-PM-<MOD2>:[<TID>]:<AID>:<CTAG>::[<MONTYPE>],[<MONLEV>],[<LOCN>],

[<DIRECTION>],[<TMPER>],[<DATE>],[<TIME>];

Input Example

RTRV-PM-OTU1:TID:OTU1-0-0-0-0:123::;

Output Format

SID DATE TIME
M CTAG COMPLD

"<AID>,[<AIDTYPE>]:<MONTYPE>,<MONVAL>,[VALIDITY],[<LOCN>],[DIRECTION],[<TMPER>],[<MONDAT>],[<MONTM>]"

;

Output Example

sc1 2014-08-24 00:21:45

M 1 COMPLD

"FAC-0-8-0-0,OC48:ESL,0,PRTL,NEND,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:SESL,0,PRTL,NEND,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:UASL,105,PRTL,NEND,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:CVL,0,PRTL,NEND,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:FCL,1,PRTL,NEND,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:ESS,105,PRTL,,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:SESS,105,PRTL,,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:SEFSS,0,PRTL,,,15-MIN,8-24,0-21"

"FAC-0-8-0-0,OC48:CVS,0,PRTL,,,15-MIN,8-24,0-21"

;

4.1.3.1.1 Error Messages

Error Messages for RTRV-PM-<MOD2> shows the error messages associated with the RTRV-PM-<MOD2> command.

Table 4-8 Error Messages

Error Code	Description	Scenario When the Error Message is Sent
IDNV	Invalid Date and time	Date/time entered for history data retrieval is incorrect
IDNV	Invalid Montype	Montype is not valid for given interface

IIFM	MONLEV Invalid Data Format	MONLEV format is not valid
SDBE	PM Is Not Enabled	Performance monitoring has been disabled for given controller
IPNV	No History Data Available	Time period for history data collection has not expired till now

4.1.3.2   REPT EVT <MOD2ALM> for Threshold Crossing Events

The Report Event for REPT EVT <MOD2ALM> message reports the occurrence of a non-alarmed event.

Output Format

SID DATE TIME
** ATAG REPT EVT <MOD2ALM>
"<AID>:<NTFCNCDE>,<CONDTYPE>,[<OCRDAT>],
[<OCRTM>]:[DESC>],[<AIDDET>]"

;

Output Example

10.78.161.183 1971-04-08 10:35:36
A   0021.0000 REPT ALM OTU1
  "FAC-0-7-0-0:CL,LOS-P,NSA,04-06,10-33-00,NEND,RCV:\"Loss Of Signal-Payload\",OTU1"
;

4.1.3.3   INIT-REG-<MOD2>

This command initializes the PM registers. This command applies to GIGE, 10GIGE, 40GIGE, 100GIGE, OC48, OC192, STM16,STM64,STS48c,STS192c,VC416c,VC464c,OTUk, ODUk (where k= {0-4, 1e,2e,3e1,3e2,1f,2f,flex})

Input Format

INIT-REG-<MOD2>:[<TID>]:<AID>:<CTAG>::,,,,[<tmper>::];

Input Example

INIT-REG-OTU1:CISCO:FAC-0-0-0-1:;

4.1.3.4   SCHED-PMREPT-<MOD2>

The Schedule Performance Monitoring Report for GIGE, 10GIGE, 40GIGE, 100GIGE, OC48, OC192,   STM16, STM64, STS48c, STS192c, VC416c, VC464c, OTUk, ODUk where k={0-4} (SCHED-PMREPT-<MOD2>) command schedules/reschedules the network element (NE) to report the performance monitoring (PM) data for a line facility path periodically, using the automatic REPT PM message. This command can also remove the previously created schedule.

Input Format:

SCHED-PMREPT-<MOD2>:[<TID>]:<SRC>:<CTAG>::[<REPTINVL>],[<REPTSTATM>],
[<NUMREPT>],,[<MONLEV>],[<LOCN>],,[<TMPER>],[<TMOFST>];

Input Example:

SCHED-PMREPT-OTU1:NE-NAME:FAC-3-1-1-1:123::15-MIN,15-30,100,,1-UP,NEND,,15-MIN,0-0-15;

4.1.3.5 RTRV-PMSCHED-<MOD2>

This command retrieves the RMON statistics reporting schedule that was set for the NE by the
SCHED-PMREPT-<MOD2>command.

The LOCN parameter is optional in the output of RTRV-PMSCHED-<MOD2>.REPT PM <MOD2>

This message reports autonomous monitoring statistics as a result of the schedule created by SCHED-PMREPT-<MOD2>.

The LOCN parameter is optional in the output of REPT PM <MOD2> message.

Input Format:

RTRV-PMSCHED-<MOD2>:[<TID>]:<AID>:<CTAG>;

Input Example:

RTRV-PMSCHED-OTU1::FAC-13-5-7-1:777;

4.1.3.6 Supported MONTYPE

Please refer to the section "5.13 "below for supported MONTYPE.

4.1.3.7 Enumerated Types

TMPER

TMPER Type shows the possible TMPER values.

Table 4-9 TMPER Types

	Value	Description
Y	1-DA	Performance Parameter Accumulation Interval Length - Every 24 Hours.
N	15-MI	Performance Parameter Accumulation Interval Length - Every 15 Minutes. 32 days of history data are available.

4.1.3.8 Notes for Card Types

The PM for the client port and/or Trunk port are supported for the following cards:

- NCS4K-24LR-O-S
- NCS4K-20T-O-S
- NCS4K-2H-O-K
- NCS4K-2H-W

4.1.4 Scheduled PM Report

Scheduled performance monitoring (PM) reporting is a feature that extends the capability of PM reporting for the Cisco NCS 4000 Series. With scheduled PM reports, the system automatically and periodically generates the PM report of any specified facility or cross-connection.

The following rules apply to the creation of scheduled PM reports:

- The current maximum number of schedules allowed to be created for an NE is 1000. If you try to create more schedules in the NE when the maximum number of schedules has been created, an error message "Reached MAX Limit of allowed PM Schedules" is returned.

- Identical schedules are not allowed for one NE. Two schedules are considered identical if they have the same AID,

MOD2 type, performance monitor type, performance monitor level, location, direction, and time period.

- The error message "Input Entity To Be Created Already Exists" is returned if you create a schedule that is a duplicate of an existing schedule. However, if the existing schedule expires (with the parameter <NUMINVL> equal to zero when retrieved by the RTRV-PMSCHED command, which means that there is no more performance monitoring report to be sent), then the new schedule with the identical parameter will replace the existing schedule.

- When you create a PM schedule, the minimum report interval should not be less than five minutes.

- The scheduled PM will be removed once user is logged out.

Use the following commands to schedule and manage PM reports:

• SCHED-PMREPT-<MOD2>

• ALW-PMREPT-ALL

• RTRV-PMSCHED-<MOD2>

• RTRV-PMSCHED-ALL

• INH-PMREPT-ALL

• REPT PM <MOD2>

4.1.4.1 Create a PM Schedule and Receive an Autonomous PM Report

Issue the SCHED-PMREPT-<MOD2> command to create a PM schedule.

Input Format:

SCHED-PMREPT-<MOD2>:[<TID>]:<SRC>:<CTAG>::[<REPTINVL>],[<REPTSTATM>],

[<NUMREPT>],,[<MONLEV>],[<LOCN>],,[<TMPER>],[<TMOFST>];

Input Example:

sched-pmrept-odu2::odu-0-7-0-7:1::5-min,,,,1-up;

  10.78.161.183 1970-12-03 22:13:48

M   1 COMPLD

;

Output Example:

10.78.161.183 1970-12-03 22:16:26

A   54 REPT PM ODU2

    "ODU-0-7-0-7,ODU2:UAS-PM,87,COMPLD,NEND,,15-MIN,12-3,22-16"

;

Note The minimum interval for the PM schedule cannot be set to less than five minutes.

Issue the ALW-PMREPT-ALL command to allow the current TL1 session to be able to receive the autonomous PM report.

4.1.4.2 Manage PM Schedules

Use the following commands to manage PM schedules:

• Create a PM schedule by issuing the SCHED-PMREPT-<MOD2> command.

• Delete a PM schedule by issuing the SCHED-PMREPT-<MOD2> command with the <NUMREPT> parameter equal to zero.

Note The PM schedules created on a facility or a cross-connect will be automatically deleted if the card or the cross-connect are unprovisioned.

• Retrieve all the PM schedules created on the node by issuing the RTRV-PMSCHED-ALL command. Retrieve a particular MOD2 type of PM schedule by issuing the RTRV-PMSCHED-<MOD2> command.

Note The system will not automatically delete the schedules that are expired. For example, assume that a schedule is created to report PM ten times. After ten PM reports are sent, the schedule is expired. The expired schedule can be identified by its <NUMINVL> field (equal to zero) in the response of the RTRV-PMSCHED command.

4.1.4.3 Enable or Disable a TL1 Session to Receive Autonomous PM Reports

Enable a TL1 session to receive a scheduled PM report by issuing the ALW-PMREPT-ALL command.

Input Format:

ALW-PMREPT-ALL:[<TID>]::<CTAG>;

Input Example:

> alw-pmrept-all:::1;

   10.76.113.125 1971-07-27 14:58:56
   M   1 COMPLD
   ;

4.1.5 GMPLS Circuit Provisioning

Generalized Multi-Protocol Label Switching (GMPLS) allows defining and viewing fiber and alien wavelength parameters to be used during GMPLS circuit creation. It ranges the packet-based data on MPLS protocol to allow for creation and maintenance of channels across networks. It contains non-packet switching devices.

The following protocols are associated with GMPLS:

• OSPF

• OSPF-TE

• RSVP-TE

MPLS-TE is based on Multiprotocol Label Switching (MPLS) that integrates a label swapping framework with network layer routing. MPLS-TE is used for label switching to improve the performance of the traffic.

It is a process that allows bandwidth to adjust allocation according to the traffic. It also ensures that enough bandwidth is left for high priority traffic.

4.1.5.1 Configuring an OTN circuit

1. Configure MPLS-TE on an OTN Controller and add Path Protection Profile

TE links can be configured using TL1 on NCS4000 router. NNI Tunnel along with its protection parameters can be configured with the following command.

The destination controller and signaled bandwidth are mandatory to be configured. Protection attributes for ODU-GROUP-TE consisting of protection type, protection mode and protection timers can also be configured with the same command.

Input Format:

ENT-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::<DST>:[SIGRATE=<SIGRATE>],[FLBR=<FLBR>],[FLFRM=<FLFRM>],[CKTID=<CKTID>],[SHUTWRKLSP=<SHUTWRKLSP>],[SHUTPROTLSP=<SHUTPROTLSP>],[SHUTRESTLSP=<SHUTRESTLSP>],[SHUTTNL=<SHUTTNL>], [RECRT=<RECRT>], [PATHPROTPROF=<PATHPROTPROF>],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[CONMODE=<CONMODE>],[TCMID=<TCMID>],[RVTM=<RVTM>],[PRTHOTM=<PRTHOTM>][:];

Input Example:

ENT-NNI-TNL::TNL-101:1::"10.78.161.183":SIGRATE=ODU2,ATTRIBUTENAME=new-profile1,RVRTV=Y,RVTM=6,PROTTYPE=APSUNI,PRTHOTM=100, CONMODE=SNC-N;

Table 4-11 Error messages:

Error Code	Description	Scenario When the Error Message is Sent
IDRG	Invalid Data Range Error	Invalid value for RVTM parameter
IIAC	Invalid Access Identifier	When tunnel ID is out of range.
IIPG	For TCMID Conmode Should Be SNC-S	TCMID is given without snc-s given for commode.

2. **Retrieve Tunnel Configuration**

Tunnel configuration can be retrieved using RTRV-NNI-TNL TL1 command:

Input Format:

RTRV-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::[<DST>];

Input Example:

RTRV-NNI-TNL::tnl-1324:1;

Output Example:

10.78.161.183 1970-12-03 22:20:33

M   1 COMPLD

"TNL-1324::DST=4.6.5.2,REQBW=10037273,SIGRATE=ODU2,CKTID=ios-otn1324,RECRT=N,PATHPROTPROF=abcd,PROTTYPE=APSBIDI,RVRTV=N,CONMODE=SNC-N,RVTM=5.0,PRTHOTM=0:OOS-MA,DSBLD"

;

3. **Establishing OSPF/RSVP signaling**

Controllers need to be configured for ospf/rsvp topology and NNI type for OTU controller in OSPF technology can be configured with ED-<OTU:_TYPE> command-

Input Format:

ED-<OTU_TYPE>:[<TID>]:<AID>:<CTAG>:::[GCC0=<GCC0>],[SDBER=<SDBER**>],[OSPF=<OSPF>],[NNI=<N NI>],[RSVP=<RSVP>]**,

[SFBER=<SFBER>],[SMTCA=<SMTCA>],[FEC=<FEC>],[TRIGTH=<TRIGTH>],[TRIGWINDOW=<TRIGWINDO W>],[RVRTTH=<RVRTTH>],[RVRTWINDOW=<RVRTWINDOW>],[PM<PM>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST >]]";

Input Example:

ED-OTU1::FAC-0-0-0-1:1:::OSPF=Y,RSVP=Y:IS;

4. Creating a GMPLS UNI Circuit

UNI end points for a NNI tunnel can be configured using below command:

Input Format:

ENT-UNI-<mod2fac>:[<TID>]:<TNLID>:<CTAG>::<UNIIN_CT>,<UNIOUT_IFINX>;

Input Example:

ENT-UNI-ODU2::TNL-1:1::ODU-0-5-0-2,67;

Note: LMP GMPLS configuration is currently not supported from TL1 interface.

5. Creating an Explicit Path

Explicit paths to be used in the TE link are configured using below command:

Input Format:

ENT-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::PTHIDX:NXTADD=<NXTADD>,NXTADDT=<NXTADDT>,ST RINFIN=<STRINFIN>,UNNUMD=<UNNUMD>[:];

Input Example:

ENT-NNI-EXTPTH::NCS4K:1::10:NXTADD="10.78.161.184",NXTADDT=STRICT,STRINFIN=20,UNNUMD=UNN UMBERED;

6. Retrieving Explicit paths:

All configured explicit paths can be retrieved using the following command.

Input Format:

RTRV-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::<PTHIDX>[::];

Input Example:

RTRV-NNI-EXTPTH::NAME1:1::10;

Output Example:

   10.78.161.183 1971-04-26 13:20:59
M   1 COMPLD
   "name1:PTHIDX=10,NXTADD=1.2.3.4,NXTADDT=STRICT,STRINFIN=20,UNNUMD=UNNUMBERED"

;

7. **Deleting Explicit paths:**

    To delete an explicit path, following command is to be used.

    Input Format:

    DLT-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::[<PTHIDX>][::];

    Input Example:

    DLT-NNI-EXTPTH::QWER:1:;

8. **Creating Path Options for Signaling**

    Working LSP, protect LSP and restore LSP can now be associated with MPLS tunnel using path-option configuration TL1 command as:

    Input Format:

    ENT-NNI-POPT:[<TID>]:<TNLID>:<CTAG>:::WRKPTH=<WRKPTH>,[WRKLCKDN=<WRKLCKDN>],[PRTPTH=<PRTPTH>],[PRTLCKDN=<PRTLCKDN>],[PRTRSTPTH=<PRTRSTPTH>],[PRTRSTLCKDN=<PRTRSTLCKDN>],[RSTPTH=<RSTPTH>],[RSTLCKDN=<RSTLCKDN>][:];

    Input Example:

    ENT-NNI-POPT::TNL-5:1:::WRKPTH=DYNAMIC,WRKLCKDN=Y,PRTPTH=DYNAMIC;

9. **Deleting Path options:**

    To delete a path option associated with ODU-Group-Mp, use the following command
    Input Format:
    DLT-NNI-POPT:[<TID>]:<TNLID>:<CTAG>[::::];
    Input Example:

    DLT-NNI-POPT::TNL-5:1;

10. **Retrieving Path options:**

    To retrieve all configured path options for an Odu-Group-Mp, use the following command
    Input Format:
    RTRV-NNI-POPT:[<TID>]:<TNLID>:<CTAG>[:::::];

Input Example:

RTRV-NNI-POPT::ALL:1;

Output Example:

   Chassis1 2015-02-24 07:11:03

M   1 COMPLD

   "TNL-2::WRKPTH=test,WRKLCKDN=Y"

   "TNL-5::WRKPTH=DYNAMIC,WRKLCKDN=Y,PRTPTH=test1,PRTLCKDN=Y,RSTPTH=test2,RSTLCKDN=Y"

   "TNL-10::WRKPTH=DYNAMIC,WRKLCKDN=Y"

   "TNL-11::"

;

Table 4-12 Error Messages:

Error Code	Description	Scenario When the Error Message is Sent
IPNV	WRKPTH Does Not Exist	When tunnel ID is not configured.
IIPG	Invalid PRTPTH And PRTRSTPTH Combination	When PRTRSTPTH is given and PRTPTH is not configured.

4.1.6 East-West Connectivity

4.1.6.1 Backplane Configuration

Figure 4-1 Backplane Configuration
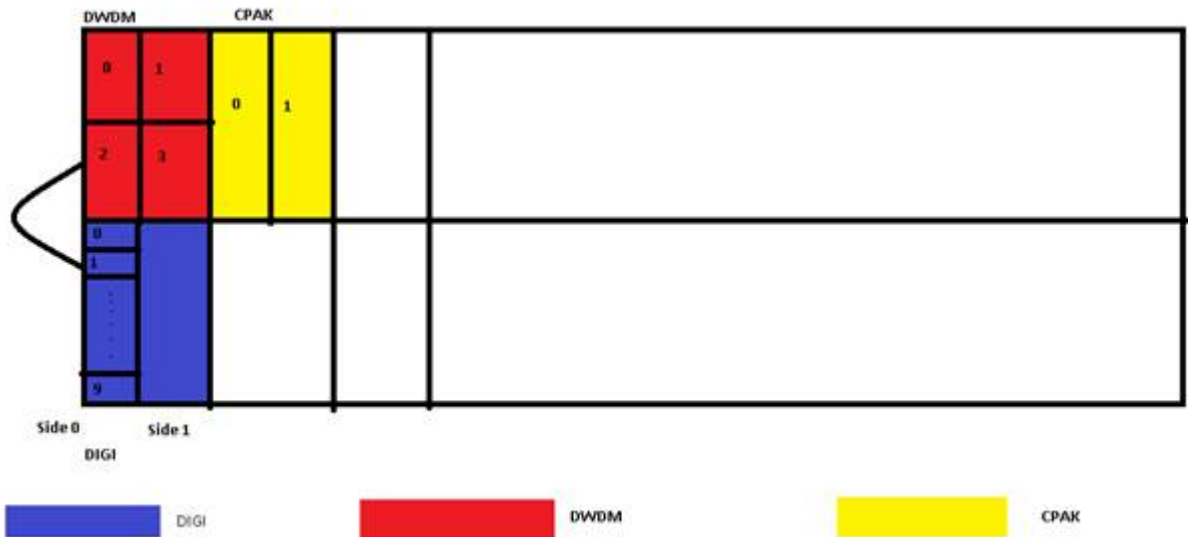
4.1.6.2 Provisioning Rules for Backplane Configuration

1. No Controller should be created on the ports of Side used in Backplane of NCS4K-20T-O-S/ NCS4K-2H-O-K (Side 0 in above case).

2. No Controller should be created on the Port Used in Backplane of NCS4K-2H-W (Port in above case).

3. No Controller should be created on the Clint Port of Port used (0 is the client port of port 2) of NCS4K-2H-W.

4. If Backplane is configured then controller cannot be created on the side used in backplane (this check is only for NCS4K-20T-O-S and NCS4K-2H-O-K, while creating controller).

4.1.6.3   Provisioning Rules for Standalone Backplane

1. All above rules are valid for standalone.

2. Cross Connect cannot be created for NCS4K-20T-O-S/ NCS4K-2H-O-K with any other card other than the NCS4K-2H-W used in Backplane

3. If Standalone Backplane is configured then, controllers can be created on the other side (which is not used in Backplane, side 1 in above case)

4.1.7 TL1 Gateway

This section describes the TL1 gateway and provides procedures and examples for implementing TL1 gateway on the Cisco NCS 4000 Series.

4.1.7.1 TL1 GNE/ENE Sessions

Each NE can support up to a maximum of 20 concurrent communication sessions (connections from an OS/NE to the GNE). The TL1 connections can be made through telnet sessions from the LAN or from the craft/serial port connection on the NE. All 20 sessions are used for TL1 sessions through the LAN (wire-wrap, active serial port, or GCC) or craft/Serial interfaces. Number of TL1 Sessions per Platform shows the number of serial port and LAN connections per platform.

Table 4-13 Number of TL1 Sessions per Platform

Platform	Maximum Number of GNE sessions
Cisco NCS 4000	20

4.1.7.2 Gateway Network Element Topology

You can issue TL1 commands to multiple nodes through a single connection through the TL1 gateway. Any node can serve as a Gateway Network Element (GNE), End Network Element (ENE), or Intermediate Network Element (INE). A node becomes a GNE when a TL1 user connects to it and enters a command destined for another node. An ENE is an end node because it processes a TL1 command that is passed to it from another node. An INE is an intermediate node because of topology; it has no special hardware, software, or provisioning.

To implement the TL1 gateway, use the desired ENE's TID in the ACT-USER command to initiate a session between the GNE and the ENE. After a session is established, you must enter the ENE's TID in all subsequent commands that are destined for the ENE. From the GNE, you can access several remote nodes, which become the ENEs. The ENEs are the message destinations or origins. The INE handles the data communications channel (DCC) TCP/IP packet exchange. However, if the ENE is directly connected through DCC to the GNE, the INE does not exist.

Figure 4-2 GNE Topology

OSS

Single connection

TLI Gateway node

Number of connections

Command/Response

Autonomous messages

Node 1   Node 2   Node 3
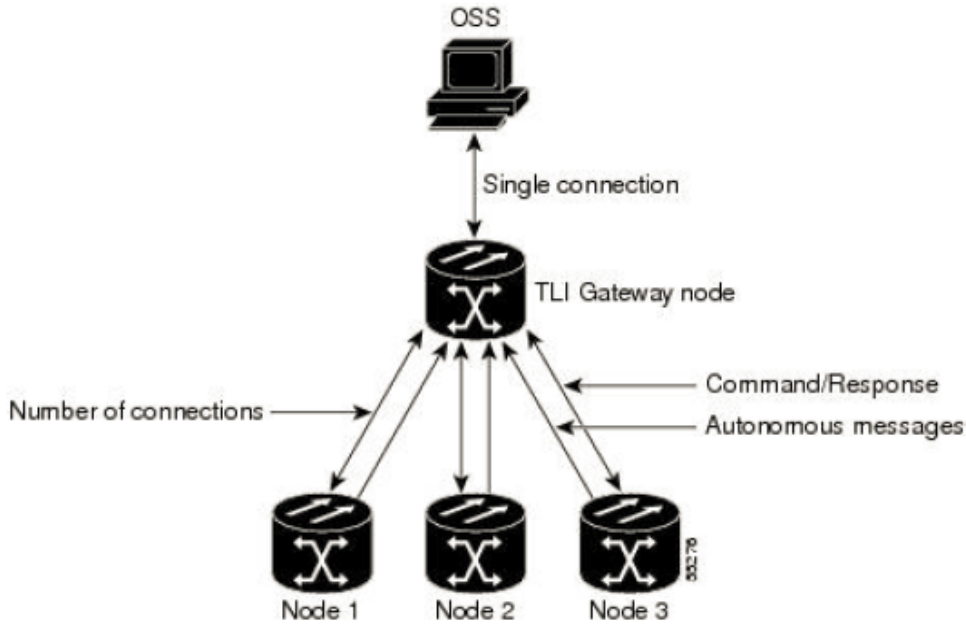
4.1.7.3 TL1 Gateway and ENE Sessions

Only a limited number of TL1 users logged into an NE at any given time can establish sessions to other ENEs. The active serial port sessions are reserved and can always become a GNE session. The number of ENE sessions is based on the number of gateway communications sessions (GNE sessions).

The maximum number of ENE sessions supported is 16 per GNE.

You can dynamically distribute the maximum number of ENE sessions to balance the number of concurrent gateway communication sessions. The GNE treats the concurrent gateway communication sessions and ENE/GNE limit as a resource pool. It continues to allocate resources until the pool is exhausted. When the pool is exhausted, the GNE returns an "All Gateways in Use" message or an "All ENE Connections in Use" message.

Note: The speed of the TL1 gateway and the maximum number of connections are limited by shared system resources, such as CTC, EPN-M, etc. The response time is slow as connections are increased and activity on these connections increases. Alarm storms, additional users, network latency, etc. also increase response time.

The gateway resource pools for each platform are shown in Gateway Resource Pool.

Table 4-14 Gateway Resource pool

Platform	Maximum Number of GNE Sessions	Maximum Number of ENEs per GNE	Maximum Number of ENE sessions

Cisco NCS 4000	20	16	320

1. Log into a Remote ENE

Step 1   Telnet or connect through any port to Node 0, which will become the GNE.

Step 2   To connect to the ENE 1 node, enter the TL1 login command using the following input example:

ACT-USER:NODE1:<USERNAME>:1234:<PASSWORD>;

The GNE forwards the login to ENE 1. After successful login, ENE 1 sends a COMPLD response.

2. Forward Commands by Specifying the ENE TID (Node 1)

To forward commands when you are logged into ENE 1 and ENE 3, enter a command and designate a specific TID, as shown in the following examples.

Enter the following command to retrieve the header of Node 1:

RTRV-HDR:NODE1::1;

Receive Autonomous Messages from the Remote ENE

To receive autonomous messages from the remote ENE, you must log into the remote ENE. When you are logged in, you will begin to receive autonomous messages. The source of the message is identified in the header of the message.

Log Out of a Remote ENE

To disconnect from a remote ENE, you must use the CANC-USER command. To disconnect ENE1, enter the following command:

CANC-USER:NODE1:<USERNAME>:1;

4.1.8 Provisioning Loopback

The following rules apply when provisioning loopbacks:

•   Loopbacks can be provisioned on the client and trunk ports.

•   Both terminal and facility loopback types can be provisioned.

•   For the protect TXP card, the following loopback rules apply to the trunk ports:

    –   Only one loopback is allowed to be provisioned at the trunk ports at any given time.

    –   Loopback is allowed only if the trunk port is in the OutOfService-Maintenance state.

    –   A loopback is denied on ODUk controller where this resource is used for the traffic i.e. it is involved in an open or cross connection.

Use the OPR-LPBK-ODU command to provision loopbacks.

4.1.8.1 Operating a Loopback

Input Format:

OPR-LPBK-<MOD2>:[<TID>]:<SRC>:<CTAG>::[LOCATION],,,[<LPBKTYPE>];

Input Example:

opr-lpbk-odu1::ODU-0-13-0-1:1::NEND;

4.1.8.2 Releasing a Loopback

Input Format:

RLS-LPBK-<MOD2>:[<TID>]:<SRC>:<CTAG>::[LOCATION],,,[<LPBKTYPE>];

Input Example:

rls-lpbk-odu1::ODU-0-13-0-1:1::NEND;

Chapter5. System Management

This chapter provides System Management commands for the Cisco NCS 4000 Series.

5.1 ENT-TADRMAP

The Enter Target Identifier Address Mapping (ENT-TADRMAP) command instructs a gateway NE (GNE) to create an entry in the SysDB to map the target identifiers (TIDs) of the subtending NEs to their addresses. The operating systems (OSs) will address the subtending NEs using the TID in TL1 messages and a GNE will address these NEs by mapping the TID to an IP address. The TADRMAP table, which resides in the GNE, correlates a TID and an address

Usage Guideline
The command requires that at least one IPADDR to be specified.

Cisco15454 platform also supports optional PORT and ENCODING parameters.

Category
System

Security
Provisioning

Input Format
ENT-TADRMAP:[<TID>]::<CTAG>:::TIDNAME=<TIDNAME>,[IPV4ADDR1=<IPV4ADDR1>],[IPV4ADDR2=<IPV4ADDR2>],[IPV4ADDR3=<IPV4ADDR3>],[IPV4ADDR4=<IPV4ADDR4>],[IPV4ADDR5=<IPV4ADDR5>],[IPV4ADDR6=<IPV4ADDR6>],[IPV4ADDR7=<IPV4ADDR7>],[IPV4ADDR8=<IPV4ADDR8>],[IPV6ADDR1=<IPV6ADDR1>],[IPV6ADDR2=<IPV6ADDR2>],[IPV6ADDR3=<IPV6ADDR3>],[IPV6ADDR4=<IPV6ADDR4>][:];

Input Example
ENT-TADRMAP:TID::CTAG:::TIDNAME=ENENODENAME,IPV4ADDR1="192.168.100.52";

Input Parameters

<TIDNAME>	TID of the new TID/address mapping. TIDNAME is a string.
<IPV4ADDR1>	IP address. IPV4ADDR1 is a string.
<IPV4ADDR2>	IP address. IPV4ADDR2 is a string.

<IPV4ADDR3>	IP address. IPV4ADDR3 is a string.
<IPV4ADDR4>	IP address. IPV4ADDR4 is a string.
<IPV4ADDR5>	IP address. IPV4ADDR5 is a string.
<IPV4ADDR6>	IP address. IPV4ADDR6 is a string.
<IPV4ADDR7>	IP address. IPV4ADDR7 is a string.
<IPV4ADDR8>	IP address. IPV4ADDR8 is a string.
<IPV6ADDR1>	IP address. IPV6ADDR1 is a string.
<IPV6ADDR2>	IP address. IPV6ADDR2 is a string.
<IPV6ADDR3>	IP address. IPV6ADDR3 is a string.
<IPV6ADDR4>	IP address. IPV6ADDR4 is a string.

5.2 DLT-TADRMAP

The Delete Target Identifier Address Mapping (DLT-TADRMAP) command instructs a gateway NE to delete an entry in the TADRMAP table.

Usage Guideline
None

Category
System

Security
Provisioning

Input Format
DLT-TADRMAP:[<TID>]::<CTAG>:::HOSTTY=<HOSTTY>,TIDNAME=<TIDNAME>;

Input Example
DLT-TADRMAP:DXT::CTAG:::HOSTTY=ipv4,TIDNAME=ENENODENAME;

Input Parameters

<HOSTTY>	The values can be 'ipv4' or 'ipv6'or ipv4_and_ipv6.
<TIDNAME >	TID of the entity to be removed from the TADRMAP. TIDNAME is a string.

5.3 RTRV-TADRMAP

The Retrieve Target Identifier Address Mapping (RTRV-TADRMAP) command retrieves the contents of the TADRMAP table.

Usage Guideline
None

Category
System

Security
Retrieve

Input Format
RTRV-TADRMAP:[<TID>]::<CTAG>[:::MODE=<MODE>];

Input Example
RTRV-TADRMAP:CISCO::100:::MODE=PROV;

Input Parameters

<MODE>	(Optional) Must not be null. The parameter type is MODE, which determines the category of addresses to return.
	The valid Values are PROV,IPV4, IPV6 or DISC.

Output Format
SID DATE TIME
M CTAG COMPLD
"[TIDNAME=<TIDNAME>],[IPV4ADDR=<IPADDR>]";

"[TIDNAME=<TIDNAME>],[IPV6ADDR=<IPv6ADDR>],"
;

Output Example
10.78.161.235 2014-11-05 16:11:59

M   1 COMPLD

   "TIDNAME=NCS4k-FRODO,IPV4ADDR1=10.78.161.235"

   "TIDNAME=NCS4k-FRODO,IPV6ADDR1=2001:cdba::3257:9652"

Output Parameters

<TID>	(Optional) Target identifier. TID is a string.
<IPADDRESS>	(Optional) IP address. IPADDRESS is a string.

5.4 SET-ADDR

The SET Address (SET-ADDR) command edits the Node's Management IP address and other attributes of it.

Usage Guideline

None

Category

System

Security

Provisioning

Input Format

SET-ADDR:[<TID>]:AID:<CTAG>:::[IPADDR=<IPADDR>],

[IPMASK=<IPMASK>],[IPRTTAG=<IPRTTAG>],[IPV6ENABLE=<IPV6ENABLE>],

[IPV6ADDR=<IPV6ADDR>],[IPV6PREFLEN=<IPV6PREFLEN>],[IPV6ZONE=<IPV6ZONE>],[IPV6RTTAG=<IPV6RTTAG>][:];

Input Example

SET-ADDR:CISCO1:RP-0-1:1:::IPADDR=10.0.2.10,

IPMASK=255.255.255.0;

Input Parameters

<IPADDR>	Node's management IPv4 address. IPADDR is a string.
<IPMASK>	Node's management IPv4 mask. IPMASK is a string.
<IPRTTAG >	The valid range is from 1 to 4294967295.
<IPV6ENA BLE>	Specifies if the IPv6 enable mode for the NE is enabled or disabled.
• Y	Indicates that IPV6 mode is enabled.
• N	Indicates that IPV6 mode is disabled.

<IPV6ADDR>	Specifies the IPv6 address of the NE. IPV6ADDR is a string.
	Note IPV6ADDR parameter can be set only if IPV6ENABLE parameter is set to Y
<IPV6PREFLEN>	Specifies the prefix length for the IPv6 address of the NE. IPV6PREFLEN is an integer
<IPV6ZONE>	Specifies the zone for the IPv6 address of the NE. IPV6ZONE is a string.
<IPV6RTTAG>	Specifies the route tag for the IPv6 address of the NE. IPV6RTTAG is an integer.

5.5 RTRV-ADDR

The Retrieve Address (RTRV-ADDR) command retrieves the Management IP addresses of the NE.

Usage Guideline
None

Category
System

Security
Retrieve

Input Format
RTRV-ADDR:[<TID>]::<CTAG>[::::];

Input Example
RTRV-ADDR:CISCO::123;

Input Parameters

<IPADDR>	(Optional) Node's Management IPv4 address. IPADDR is a string.	
<IPMASK>	(Optional) Node's Management IPv4 mask. IPMASK is a string.	
IPV6ENABLE	Specifies the IPV6 mode for NE. Valid values:- • Y: IPv6 mode is enabled • N: IPv6 mode is disabled	
IPV6ADDR	Specifies the IPv6 address of the NE. Note: IPV6ADDR parameter can be set only when IPV6ENABLE parameter is set to Y	
IPV6PREFLEN	Specifies the prefix length for the IPv6 address of the NE. IPV6PREFLEN is an integer.	
LINKLOCALIPV6	It is an IPv6 unicast address that can be automatically configured on any interface using the link-local prefix FE80::/10 (1111 1110 10) and the interface identifier in the modified EUI-64 format.	

Output Format

SID DATE TIME
M CTAG COMPLD

"[IPADDR=<IPADDR>],[IPMASK=<IPMASK>],[NAME=<NAME>],[IPRTAG=<IPRTAG>],[IPV6ENABLE=<IPV6ENABLE>],[LINKLOCALIPV6ADDR=<LINKLOCALIPV6ADDR>],[LINKLOCALIPV6PREFLEN=< LINKLOCALIPV6PREFLEN>],[IPV6ADDR=<IPV6ADDR>],[IPV6PREFLEN=<IPV6PREFLEN>];

Output Example

chassis1 2014-03-04 05:11:28

M   1 COMPLD

"RP-0-1::IPADDR=10.78.161.117,IPMASK=24"

"RP-0-1::IPV6ENABLE=enabled,LINKLOCALIPV6ADDR="fe80::7234:5fff:fe83:ad05",LINKLOCALIPV6PREFLEN=128,IPV6ADDR="1234::",IPV6PREFLEN=16";

Output Parameter

None

5.6 ED-NE-GEN

The Edit Network Element General (ED-NE-GEN) command edits the node attributes of the NE.

Usage Guideline
None

Category
System

Security
Provisioning

Input Format
ED-NE-GEN:[<TID>]::<CTAG>:::[NAME=<NAME>],[IPADDR=<IPADDR>],[IPMASK=<IPMASK>],[DEFRTR=<DEFRTR>],[IPV6DEFRTR=<IPV6DEFRTR>][:];

Input Example
ED-NE-GEN:CISCO1::1:::
NAME="NCS4K-24",IPADDR="10.78.161.183",IPMASK="255.255.255.0",DEFRTR="10.78.1.10",IPV6DEFRTR="1000:cdba::3257:1947";

Input Parameters

<NAME>	Node name. NAME is a string. Defaults to NULL.
<IPADDR>	Node's virtual IP address. IPADDR is a string.
<IPMASK>	Node's virtual IP mask. IPMASK is a string.
<DEFRTR>	(Optional) Node default router. DEFRTR is a string.

<IPV6DEF RTR>	Specifies the IPv6 default router address for the NE. IPV6DEFRTR is a string

5.7 RTRV-NE-GEN

The Retrieve Network Element General (RTRV-NE-GEN) command retrieves the general NE attributes.

Usage Guideline
The command requires that at least one IPADDR to be specified.

Cisco15454 platform also supports optional PORT and ENCODING parameters. These parameters are not supported in NCS4k. The limitation being, one encoding and fixed set of TL1 ports shall be supported.

Category
System

Security
Retrieve

Input Format
RTRV-NE-GEN:[<TID>]::<CTAG>[::::];

Input Example
RTRV-NE-GEN:CISCO::123;

Input Parameter
None

Output Format
SID DATE TIME
M CTAG COMPLD

"[IPADDR=<IPADDR>],[IPMASK=<IPMASK>], [<DEFRTR>], [<IPV6DEFRTR>],[NAME=<NAME>],[MODE=<MODE>],[SWVER=<SWVER>],[LOAD=<LOAD>],[AUTOPM=<AUTOP M>];

Output Example
NCS4K-24 1970-11-02 16:43:28

M 1 COMPLD

"IPADDR=10.78.161.183,IPMASK=255.255.255.0,DEFRTR=10.78.1.10,IPV6DEFRTR=1000:cdba::3257:1947,NAME=NCS4K
-24,SWVER=5.2.3,LOAD=11C,MODE=MULTISHELF,AUTOPM=Y";

Output Parameters		
	<IPADDR>	(Optional) Node's virtual IP address. IPADDR is a string.
	<IPMASK>	(Optional) Node's virtual IP mask. IPMASK is a string.
	<NAME>	(Optional)Hostname of the node. NAME is a string.
	<SWVER>	(Optional) Software Version. SWVER is a string.
	<LOAD>	(Optional) Load is a string. Specifies the EFR version of the Software.
	<MODE>	(Optional) Indicates the AID mode to access shelf identifier objects. Defaults to MULTISHELF.
	MULTISHELF	The AID representation considers the shelf identifier for command requests/response and autonomous reports. This means the NE has more than one shelf configured or the user wants to use the new AID style.
	<AUTOPM>	(Optional) AUTOPM is a flag to indicate if autonomous PM reporting to TL1 clients is enabled or disabled.
	• Y	Auto PM reporting is enabled.
	• N	Auto PM reporting is disabled.

5.8 RTRV-NETYPE

The Retrieve Network Element Type (RTRV-NETYPE) command retrieves the NE's equipment-related information.

Usage Guideline
None

Category
System

Security
Retrieve

Input Format
RTRV-NETYPE:[<TID>]::<CTAG>[::::];

Input Example
RTRV-NETYPE:GAUR1::1;

Input Parameter
None

Output Format
SID DATE TIME
M CTAG COMPLD
"<VENDOR>,<MODEL>,<NETYPE>,<SW_ISSUE>"

;

Output Example
RTRV-NETYPE:CISCO1::1;

   CISCO1 1971-01-17 17:15:38

M   1 COMPLD

   "CISCO,NCS-4016,NCS,5.2.41"

;

Output Parameters

<VENDOR>	NE equipment vendor name. VENDOR is a string.
<MODEL>	NE equipment model. The parameter type is PRODUCT_TYPE, which is the product (NE) type.
<NETYPE>	NE Equipment Type
<SW_ISSUE>	The software release issue of the NE. SW_ISSUE is a string.

5.9 SET-TOD

The Set Time of Day (SET-TOD) command sets the system date and time for the NE. The year should be entered using four digits while the hour should be entered using a 24-hour time period (for example, military time).

Usage Guideline
None

Category
 System

Security
Provisioning

Input Format
SET-TOD:[<TID>]::<CTAG>::<YEAR>,<MONTH>,<DAY>,<HOUR>,<MIN>,<SEC>,[<DIFFERENCE>][:DST=<DST>];

Input Example
SET-TOD:CAZADERO::1::2014,OCTOBER,11,14,10,15,32:DST=Y;

Input Parameters

<YEAR>	The current calendar year. YEAR is an integer. The valid range is from 1993 to 2035.
<MONTH>	The month of the year. The valid values are january, february, march, april, may, june, july, august, september, october, November and december.
<DAY>	The day of the month. Ranges from 01 to 31. DAY is an integer.
<HOUR>	The hour of the day. Ranges from 00 to 23. HOUR is an integer.
<MIN>	The minute of the hour. Ranges from 00 to 59. MINUTE is an integer.
<SEC>	The second of the minute. Ranges from 00 to 59. SECOND is an integer.
<DIFFERENCE>	(Optional) The number of minutes off UTC. DIFFERENCE is an integer.
<ISDST>	Daylight savings time.
• N	Disable an attribute.
• Y	Enable an attribute.

5.10 RTRV-TOD

The Retrieve Time of Day (RTRV-TOD) command retrieves the system date and time for the NE.

Usage Guideline
None

Category
System

Security
Retrieve

Input Format
RTRV-TOD:[<TID>]::<CTAG>;

Input Example
RTRV-TOD:NODE1::2;

Input Parameter
None

Output Format

SID DATE TIME
M CTAG COMPLD
 "<YEAR>,<MONTH>,<DAY>,<HOUR>,<MIN>,<SECOND>,<DIFF>:<TMTYPE>"
;

Output Example

RTRV-TOD:CISCO1::1;

   CISCO1 1971-07-07 02:28:42

M   1 COMPLD

   "1971,07,07,02,28,42,0:UTC"

;

Output Parameters

<YEAR>	The current calendar year. YEAR is an integer. The valid range is from 1993 to 2035.
<MONTH>	The month of the year. It ranges from 01 to 12.
<DAY>	The day of the month. Ranges from 01 to 31. DAY is an integer.
<HOUR>	The hour of the day. Ranges from 00 to 23. HOUR is an integer.
<MIN>	The minute of the hour. Ranges from 00 to 59. MINUTE is an integer.
<SEC>	The second of the minute. Ranges from 00 to 59. SECOND is an integer.
<DIFF>	The number of minutes of UTC. DIFF is an integer.
<TMTYPE>	Identifies the time zone.

5.11 RTRV-TH-<mod2>

The Retrieve Threshold (RTRV-TH-<MOD2>) command retrieves the NE's threshold-related information for OPTICS, OC3, OC12, OC48, OC192, OC3, OC12,   STM16, STM64, STS48c, STS192c, VC416c, VC464c, GIGE, MOD2, OTUk, ODUk where k={1-4, 1E, 1F, 2E, 2F, 3E1 ,3E2, C2, C4*}, ODU0, ODUFlex , GIGE, 10GIGE, 40GIGE, 100GIGE.

Usage Guidelines:

All optics thresholds are retrieved in dBm.

Category

System

Security
Retrieve

Input Format
RTRV-TH-<MOD2>:[<TID>]:<AID>:<CTAG>::[<MONTYPE>],[<LOCN>],[<TMPER>][::];

Input Example
RTRV-TH-OTU1:GAUR1:FAC0-0-0-0:1:ES-SM,NEND,15-MIN;

Input Parameters

<AID>		Access identifier. All of the STS, VT1, Facility, and DS1 AIDs are supported.
<MONTYPE>		Monitored type. A null value defaults to all montypes applicable to the modifier. The parameter type is ALL_MONTYPE, which is the monitoring type list.
		The valid values are :-
• OTN		BBE-SM
		BBER-SM
		ES-SM
		ESR-SM
		FC-SM
		SES-SM
		SESR-SM
		UAS-SM
		BBE-PM
		BBER-PM
		ES-PM
		ESR-PM
		FC-PM
		SES-PM
		SESR-PM
		UAS-PM
		BBE-TCM1
		BBER-TCM1
		ES-TCM1
		ESR-TCM1
		FC-TCM1
		SES-TCM1

SESR-TCM1

UAS-TCM1

BBE-TCM2

BBER-TCM2

ES-TCM2

ESR-TCM2

FC-TCM2

SES-TCM2

SESR-TCM2

UAS-TCM2

BBE-TCM3

BBER-TCM3

ES-TCM3

ESR-TCM3

FC-TCM3

SES-TCM3

SESR-TCM3

UAS-TCM3

BBE-TCM4

BBER-TCM4

ES-TCM4

ESR-TCM4

FC-TCM4

SES-TCM4

SESR-TCM4

UAS-TCM4

BBE-TCM5

BBER-TCM5

ES-TCM5

ESR-TCM5

FC-TCM5

SES-TCM5

SESR-TCM5

UAS-TCM5

BBE-TCM6

BBER-TCM6

ES-TCM6

		ESR-TCM6
		FC-TCM6
		SES-TCM6
		SESR-TCM6
		UAS-TCM6
•	OPTICS	LBCL-MIN
		LBCL-MAX
		LBCL-AVG
		OPT-MIN
		OPT-MAX
		OPT-AVG
		OPR-MIN
		OPR-MAX
		OPR-AVG
•	OC	CVS
		ESS
		SESS
		SEFSS
		CVL
		ESL
		SESL
		UASL
		FCL
•	STS	ESP
		SESP
		CVP
		UASP
•	STM	RS-EB
		RS-ES
		RS-ESR
		RS-SES
		RS-SESR
		RS-BBE
		RS-BBER
		RS-UAS
		MS-EB

		MS-ES
		MS-ESR
		MS-SES
		MS-SESR
		MS-BBE
		MS-BBER
		MS-UAS
•	VC	HP-EB
		HP-ES
		HP-ESR
		HP-SES
		HP-SESR
		HP-BBE
		HP-BBER
		HP-UAS
•	OTU	FEC = biec unc-words,
•	GFP	gfpStatsRxBitErrors
		gfpStatsRxTypeInvalid
		gfpStatsRxCRCErrors
		gfpStatsLFDRaised
		gfpStatsCSFRaised
•	ETHER	rxTotalPkts
		etherStatsPkts
		etherStatsOctets
		etherStatsOversizePkts
		dot3StatsFCSErrors
		dot3StatsFrameTooLong
		etherStatsJabbers
		etherStatsPkts64Octets
		etherStatsPkts65to127Octets
		etherStatsPkts128to255Octets
		etherStatsPkts256to511Octets
		etherStatsPkts512to1023Octets
		etherStatsPkts1024to1518ctets
		ifInUcastPkts, ifInMulticastPkts

	ifInBroadcastPkts	
	ifOutUcastPkts	
	ifOutBroadcastPkts	
	ifOutMulticastPkts	
	txTotalPkts	
	ifOutOctets	
	ifInOctets	
	etherStatsMulticastPkts	
	etherStatsBroadcastPkts	
	etherStatsUndersizePkts	
<LOCN>	Location associated with a particular command in reference to the entity identified by the AID. A null value defaults to NEND. The parameter identifies the location where the action is to be taken.	
• FEND	Action occurs on the far end of the facility	
• NEND	Action occurs on the near end of the facility	
<TMPER>	Accumulation time period for performance counters. If TMPER is 1-DAY, MONTM is not applicable (null), and is treated as null. A null value defaults to 15-MIN. The parameter type is TMPER, which is the accumulation time period for the performance management center.	
• <1-DAY>	Performance parameter accumulation interval length every 24-hour.	
• <15-MIN>	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.	

Output Format
SID DATE TIME
   M CTAG COMPLD
   "<AID>,[<AIDTYPE>]:<MONTYPE>,[<LOCN>],,<THLEV>,[TMPER>]"

;

Output Example
chassis1 2014-05-26 04:54:08

M   1 COMPLD

   "FAC-0-8-0-6,OTU1:BBE-SM,NEND,,10000,15-MIN"

   "FAC-0-8-0-6,OTU1:BBER-SM,NEND,,1,15-MIN"

   "FAC-0-8-0-6,OTU1:ES-SM,NEND,,500,15-MIN"

   "FAC-0-8-0-6,OTU1:ESR-SM,NEND,,1,15-MIN"

   "FAC-0-8-0-6,OTU1:FC-SM,NEND,,10,15-MIN"

   "FAC-0-8-0-6,OTU1:SES-SM,NEND,,500,15-MIN"

"FAC-0-8-0-6,OTU1:SESR-SM,NEND,,1,15-MIN"

"FAC-0-8-0-6,OTU1:UAS-SM,NEND,,500,15-MIN"

"FAC-0-8-0-6,OTU1:BIEC,,,903330,15-MIN"

"FAC-0-8-0-6,OTU1:UNC-WORDS,,,5,15-MIN";

Output Parameters

Please see below for layer specific output parameter.

OTN	BBE-SM
	BBER-SM
	ES-SM
	ESR-SM
	FC-SM
	SES-SM
	SESR-SM
	UAS-SM
	BBE-PM
	BBER-PM
	ES-PM
	ESR-PM
	FC-PM
	SES-PM
	SESR-PM
	UAS-PM
	BBE-TCM1
	BBER-TCM1
	ES-TCM1
	ESR-TCM1
	FC-TCM1
	SES-TCM1
	SESR-TCM1
	UAS-TCM1
	BBE-TCM2
	BBER-TCM2
	ES-TCM2
	ESR-TCM2

FC-TCM2

SES-TCM2

SESR-TCM2

UAS-TCM2

BBE-TCM3

BBER-TCM3

ES-TCM3

ESR-TCM3

FC-TCM3

SES-TCM3

SESR-TCM3

UAS-TCM3

BBE-TCM4

BBER-TCM4

ES-TCM4

ESR-TCM4

FC-TCM4

SES-TCM4

SESR-TCM4

UAS-TCM4

BBE-TCM5

BBER-TCM5

ES-TCM5

ESR-TCM5

FC-TCM5

SES-TCM5

SESR-TCM5

UAS-TCM5

BBE-TCM6

BBER-TCM6

ES-TCM6

ESR-TCM6

FC-TCM6

SES-TCM6

SESR-TCM6

UAS-TCM6

OPTICS	LBCL-MIN
	LBCL-MAX
	OPT-MIN
	OPT-MAX
	OPR-MIN
	OPR-MAX
FEC	BIEC
	UNC-WORDS
GFP	gfpStatsRxBitErrors
	gfpStatsRxTypeInvalid
	gfpStatsRxCRCErrors
	gfpStatsLFDRaised
	gfpStatsCSFRaised
OCN	CVS
	ESS
	SESS
	SEFSS
	CVL
	ESL
	SESL
	UASL
	FCL
STS	ESP
	SESP
	CVP
	UASP
STM	RS-EB
	RS-ES
	RS-ESR
	RS-SES
	RS-SESR
	RS-BBE
	RS-BBER
	RS-UAS
	MS-EB

	MS-ES	
	MS-ESR	
	MS-SES	
	MS-SESR	
	MS-BBE	
	MS-BBER	
	MS-UAS	
VC	HP-EB	
	HP-ES	
	HP-ESR	
	HP-SES	
	HP-SESR	
	HP-BBE	
	HP-BBER	
	HP-UAS	

Ethernet	rxTotalPkts
	etherStatsPkts
	etherStatsOctets
	etherStatsOversizePkts
	dot3StatsFCSErrors
	dot3StatsFrameTooLong
	etherStatsJabbers
	etherStatsPkts64Octets
	etherStatsPkts65to127Octets
	etherStatsPkts128to255Octets
	etherStatsPkts256to511Octets
	etherStatsPkts512to1023Octets
	etherStatsPkts1024to1518ctets
	ifInUcastPkts, ifInMulticastPkts
	ifInBroadcastPkts
	ifOutUcastPkts
	ifOutBroadcastPkts
	ifOutMulticastPkts
	txTotalPkts
	ifOutOctets
	ifInOctets
	etherStatsMulticastPkts
	etherStatsBroadcastPkts
	etherStatsUndersizePkts

5.12 RTRV-TH-ALL

The Retrieve Threshold All (RTRV-TH-ALL) command retrieves the threshold level of all monitored parameters on the NE.

Usage Guidelines:
All optics thresholds are retrieved in dBm.

Category
System

Security
Retrieve

Input Format
RTRV-TH-ALL:[<TID>]::<CTAG>::[<MONTYPE>],[<LOCN>],[<TMPER>][::];

Input Example
RTRV-TH-ALL:GAUR1::1:ES-SM,NEND,15-MIN;

Input Parameters

<MONTYPE>		Monitored type. A null value defaults to all montypes applicable to the modifier. The parameter type is ALL_MONTYPE, which is the monitoring type list.
		The valid values are :-
• OTN		BBE-SM
		BBER-SM
		ES-SM
		ESR-SM
		FC-SM
		SES-SM
		SESR-SM
		UAS-SM
		BBE-PM
		BBER-PM
		ES-PM
		ESR-PM
		FC-PM
		SES-PM
		SESR-PM
		UAS-PM
		BBE-TCM1
		BBER-TCM1
		ES-TCM1
		ESR-TCM1
		FC-TCM1
		SES-TCM1
		SESR-TCM1
		UAS-TCM1

BBE-TCM2

BBER-TCM2

ES-TCM2

ESR-TCM2

FC-TCM2

SES-TCM2

SESR-TCM2

UAS-TCM2

BBE-TCM3

BBER-TCM3

ES-TCM3

ESR-TCM3

FC-TCM3

SES-TCM3

SESR-TCM3

UAS-TCM3

BBE-TCM4

BBER-TCM4

ES-TCM4

ESR-TCM4

FC-TCM4

SES-TCM4

SESR-TCM4

UAS-TCM4

BBE-TCM5

BBER-TCM5

ES-TCM5

ESR-TCM5

FC-TCM5

SES-TCM5

SESR-TCM5

UAS-TCM5

BBE-TCM6

BBER-TCM6

ES-TCM6

ESR-TCM6

FC-TCM6

		SES-TCM6
		SESR-TCM6
		UAS-TCM6
•	OPTICS	LBCL-MIN
		LBCL-MAX
		LBCL-AVG
		OPT-MIN
		OPT-MAX
		OPT-AVG
		OPR-MIN
		OPR-MAX
		OPR-AVG
•	OC	CVS
		ESS
		SESS
		SEFSS
		CVL
		ESL
		SESL
		UASL
		FCL
•	STS	ESP
		SESP
		CVP
		UASP
•	STM	RS-EB
		RS-ES
		RS-ESR
		RS-SES
		RS-SESR
		RS-BBE
		RS-BBER
		RS-UAS
		MS-EB
		MS-ES
		MS-ESR

		MS-SES
		MS-SESR
		MS-BBE
		MS-BBER
		MS-UAS
•	VC	HP-EB
		HP-ES
		HP-ESR
		HP-SES
		HP-SESR
		HP-BBE
		HP-BBER
		HP-UAS
•	OTU	FEC = biec unc-words,
•	GFP	gfpStatsRxBitErrors
		gfpStatsRxTypeInvalid
		gfpStatsRxCRCErrors
		gfpStatsLFDRaised
		gfpStatsCSFRaised
•	ETHER	rxTotalPkts
		etherStatsPkts
		etherStatsOctets
		etherStatsOversizePkts
		dot3StatsFCSErrors
		dot3StatsFrameTooLong
		etherStatsJabbers
		etherStatsPkts64Octets
		etherStatsPkts65to127Octets
		etherStatsPkts128to255Octets
		etherStatsPkts256to511Octets
		etherStatsPkts512to1023Octets
		etherStatsPkts1024to1518ctets
		ifInUcastPkts, ifInMulticastPkts
		ifInBroadcastPkts
		ifOutUcastPkts

	ifOutBroadcastPkts
	ifOutMulticastPkts
	txTotalPkts
	ifOutOctets
	ifInOctets
	etherStatsMulticastPkts
	etherStatsBroadcastPkts
	etherStatsUndersizePkts

<LOCN>	Valid values are 'NEND' and 'FEND'. Defaults to NEND
<TMPER>	Valid values are '15-MIN' or '1-DAY'. Defaults to 15-MIN.

Output Format

```
SID DATE TIME
    M CTAG COMPLD
    "<AID>,<AIDTYPE>:<MONTYPE>,<LOCN>,,<THLEV>,<TMPER>"

;
```

Output Example
```
chassis1 2014-05-26 05:12:51
M   1 COMPLD
    "FAC-0-8-0-6,OTU1:BBE-SM,NEND,,10000,15-MIN"
    "FAC-0-8-0-6,OTU1:BBER-SM,NEND,,1,15-MIN"
    "FAC-0-8-0-6,OTU1:ES-SM,NEND,,500,15-MIN"
    "FAC-0-8-0-6,OTU1:ESR-SM,NEND,,1,15-MIN"
    "FAC-0-8-0-6,OTU1:FC-SM,NEND,,10,15-MIN"
    "FAC-0-8-0-6,OTU1:SES-SM,NEND,,500,15-MIN"
    "FAC-0-8-0-6,OTU1:SESR-SM,NEND,,1,15-MIN"
    "FAC-0-8-0-6,OTU1:UAS-SM,NEND,,500,15-MIN"
    "FAC-0-8-0-6,OTU1:BIEC,,,903330,15-MIN"
    "FAC-0-8-0-6,OTU1:UNC-WORDS,,,5,15-MIN"
    "FAC-0-8-0-6,OPTICS:LBCL-MIN,,,0,15-MIN"
    "FAC-0-8-0-6,OPTICS:LBCL-MAX,,,0,15-MIN"
    "FAC-0-8-0-6,OPTICS:OPT-MIN,,,-inf ,15-MIN"
    "FAC-0-8-0-6,OPTICS:OPT-MAX,,,-inf ,15-MIN"
    "FAC-0-8-0-6,OPTICS:OPR-MIN,,,-inf,15-MIN"
    "FAC-0-8-0-6,OPTICS:OPR-MAX,,,-inf,15-MIN";
```

Output Parameters

Please see below for layer specific output parameter.

OTN	BBE-SM
	BBER-SM
	ES-SM
	ESR-SM

FC-SM

SES-SM

SESR-SM

UAS-SM

BBE-PM

BBER-PM

ES-PM

ESR-PM

FC-PM

SES-PM

SESR-PM

UAS-PM

BBE-TCM1

BBER-TCM1

ES-TCM1

ESR-TCM1

FC-TCM1

SES-TCM1

SESR-TCM1

UAS-TCM1

BBE-TCM2

BBER-TCM2

ES-TCM2

ESR-TCM2

FC-TCM2

SES-TCM2

SESR-TCM2

UAS-TCM2

BBE-TCM3

BBER-TCM3

ES-TCM3

ESR-TCM3

FC-TCM3

SES-TCM3

SESR-TCM3

UAS-TCM3

BBE-TCM4

		BBER-TCM4
		ES-TCM4
		ESR-TCM4
		FC-TCM4
		SES-TCM4
		SESR-TCM4
		UAS-TCM4
		BBE-TCM5
		BBER-TCM5
		ES-TCM5
		ESR-TCM5
		FC-TCM5
		SES-TCM5
		SESR-TCM5
		UAS-TCM5
		BBE-TCM6
		BBER-TCM6
		ES-TCM6
		ESR-TCM6
		FC-TCM6
		SES-TCM6
		SESR-TCM6
		UAS-TCM6
		SESR-PM-NE
		SESR-PM-FE
		UAS-PM-NE
		UAS-PM-FE
		BBE-PM-NE
		BBE-PM-FE
		BBER-PM-NE
		BBER-PM-FE
		FC-PM-NE
		FC-PM-FE
OPTICS		LBCL-MIN
		LBCL-MAX
		OPT-MIN
		OPT-MAX
		OPR-MIN

	OPR-MAX
FEC	BIEC
	UNC-WORDS
GFP	gfpStatsRxBitErrors
	gfpStatsRxTypeInvalid
	gfpStatsRxCRCErrors
	gfpStatsLFDRaised
	gfpStatsCSFRaised
OCN	CVS
	ESS
	SESS
	SEFSS
	CVL
	ESL
	SESL
	UASL
	FCL
STS	ESP
	SESP
	CVP
	UASP
STM	RS-EB
	RS-ES
	RS-ESR
	RS-SES
	RS-SESR
	RS-BBE
	RS-BBER
	RS-UAS
	MS-EB
	MS-ES
	MS-ESR
	MS-SES
	MS-SESR
	MS-BBE
	MS-BBER

		MS-UAS
VC		HP-EB
		HP-ES
		HP-ESR
		HP-SES
		HP-SESR
		HP-BBE
		HP-BBER
		HP-UAS
Ethernet		rxTotalPkts
		etherStatsPkts
		etherStatsOctets
		etherStatsOversizePkts
		dot3StatsFCSErrors
		dot3StatsFrameTooLong
		etherStatsJabbers
		etherStatsPkts64Octets
		etherStatsPkts65to127Octets
		etherStatsPkts128to255Octets
		etherStatsPkts256to511Octets
		etherStatsPkts512to1023Octets
		etherStatsPkts1024to1518ctets
		ifInUcastPkts, ifInMulticastPkts
		ifInBroadcastPkts
		ifOutUcastPkts
		ifOutBroadcastPkts
		ifOutMulticastPkts
		txTotalPkts
		ifOutOctets
		ifInOctets
		etherStatsMulticastPkts
		etherStatsBroadcastPkts
		etherStatsUndersizePkts

5.13 SET-TH-<mod2>

Usage Guidelines:
All optics thresholds are set in dBm.

Category
System

Security
Provisioning

Input Format
SET-TH-<MOD2>:[<TID>]:<AID>:<CTAG>::<MONTYPE>,<THLEV>,<LOCN>,,[<TMPER>][::];

Input Example

SET-TH-ODU0:TID:AID:240::BBE-PM,1,NEND,,15-MIN;

Input Parameters

<TMPER>	The valid values are 15-MIN and 1-DAY.	
<MONTYPE>	Monitored type. A null value defaults to all montypes applicable to the modifier. The parameter type is ALL_MONTYPE, which is the monitoring type list.	
	The valid values are :-	
• OTN	BBE-SM	
	BBER-SM	
	ES-SM	
	ESR-SM	
	FC-SM	
	SES-SM	
	SESR-SM	
	UAS-SM	
	BBE-PM	
	BBER-PM	
	ES-PM	
	ESR-PM	
	FC-PM	

SES-PM

SESR-PM

UAS-PM

BBE-TCM1

BBER-TCM1

ES-TCM1

ESR-TCM1

FC-TCM1

SES-TCM1

SESR-TCM1

UAS-TCM1

BBE-TCM2

BBER-TCM2

ES-TCM2

ESR-TCM2

FC-TCM2

SES-TCM2

SESR-TCM2

UAS-TCM2

BBE-TCM3

BBER-TCM3

ES-TCM3

ESR-TCM3

FC-TCM3

SES-TCM3

SESR-TCM3

UAS-TCM3

BBE-TCM4

BBER-TCM4

ES-TCM4

ESR-TCM4

FC-TCM4

SES-TCM4

SESR-TCM4

UAS-TCM4

BBE-TCM5

BBER-TCM5

ES-TCM5

		ESR-TCM5
		FC-TCM5
		SES-TCM5
		SESR-TCM5
		UAS-TCM5
		BBE-TCM6
		BBER-TCM6
		ES-TCM6
		ESR-TCM6
		FC-TCM6
		SES-TCM6
		SESR-TCM6
		UAS-TCM6
•	OPTICS	LBCL-MIN
		LBCL-MAX
		LBCL-AVG
		OPT-MIN
		OPT-MAX
		OPT-AVG
		OPR-MIN
		OPR-MAX
		OPR-AVG
•	OC	CVS
		ESS
		SESS
		SEFSS
		CVL
		ESL
		SESL
		UASL
		FCL
•	STS	ESP
		SESP
		CVP
		UASP
•	STM	RS-EB

		RS-ES
		RS-ESR
		RS-SES
		RS-SESR
		RS-BBE
		RS-BBER
		RS-UAS
		MS-EB
		MS-ES
		MS-ESR
		MS-SES
		MS-SESR
		MS-BBE
		MS-BBER
		MS-UAS
•	VC	HP-EB
		HP-ES
		HP-ESR
		HP-SES
		HP-SESR
		HP-BBE
		HP-BBER
		HP-UAS
•	OTU	FEC = biec unc-words,
•	GFP	gfpStatsRxBitErrors
		gfpStatsRxTypeInvalid
		gfpStatsRxCRCErrors
		gfpStatsLFDRaised
		gfpStatsCSFRaised
•	ETHER	rxTotalPkts
		etherStatsPkts
		etherStatsOctets
		etherStatsOversizePkts
		dot3StatsFCSErrors
		dot3StatsFrameTooLong
		etherStatsJabbers

	etherStatsPkts64Octets
	etherStatsPkts65to127Octets
	etherStatsPkts128to255Octets
	etherStatsPkts256to511Octets
	etherStatsPkts512to1023Octets
	etherStatsPkts1024to1518ctets
	ifInUcastPkts, ifInMulticastPkts
	ifInBroadcastPkts
	ifOutUcastPkts
	ifOutBroadcastPkts
	ifOutMulticastPkts
	txTotalPkts
	ifOutOctets
	ifInOctets
	etherStatsMulticastPkts
	etherStatsBroadcastPkts
	etherStatsUndersizePkts
<THLEV>	This parameter is mandatory. Threshold level.
<LOCN>	The valid values are 'NEND', 'FEND'.

5.14 RTRV-ALMTH-OPTICS

The RTRV-ALMTH-OPTICS command retrieves alarm thresholds for optics controllers.

Usage Guideline
None

Category
System

Security
Retrieve

Input Format
RTRV-ALMTH-OPTICS:[<TID>]:<AID>:<CTAG>::[< CONDTYPE>][::];

Input Example

RTRV-ALMTH-OPTICS::FAC-0-0-0-0:1::LBCL-HIGH;

Input Parameters

<CONDTYPE>	Threshold type for which threshold value is to be retrieved
	OPR-LOW, OPR-HIGH, OPT-LOW, LBCL-HIGH,CD-LOW, CD-HIGH, OPT-HIGH OSNR-LOW, DGD-HIGH.

Output Format

SID DATE TIME
   M CTAG COMPLD
  "<AID>,OPTICS:<THTYPE>,,,<THVALUE>"

;

Output Example

  NCS4k1 2014-03-11 07:37:57

M   1 COMPLD

  "FAC-0-8-0-6,OPTICS:OPT-LOW,,,-18.0"

;

Output Parameters

Please see below for layer specific output parameter.

THTYPE	•	LBCL-HIGH
	•	OPR-LOW
	•	OPR-HIGH
	•	OPT-LOW
	•	OPT-HIGH
	•	CD-LOW
	•	CD-HIGH
THVALUE	Threshold value retrieved.	

5.15 SET-ALMTH-OPTICS

The SET-ALMTH-OPTICS command sets value for thresholds for optics controller.

Usage Guidelines:
None

Category
System

Security
Provisioning

Input Format
SET-ALMTH-OPTICS:[<TID>]:<AID>:<CTAG>::<CONDTYPE>,<THLEV>[::];

Input Example
SET-ALMTH-OPTICS::FAC-0-0-0-0:1::LBCL-HIGH, 25;

Input Parameters	
<CONDTYPE>	Threshold type for which threshold value is to be SET
	OPR-LOW, OPR-HIGH,OPT-LOW, OPT-HIGH, LBCL-HIGH, CD-LOW, CD-HIGH, OSNR-LOW, DGD-HIGH.
<THLEV>	Value to be set for the corresponding CONDTYPE

Output Format
SID DATE TIME
    M CTAG COMPLD

;

Output Example
NCS4k1 2014-03-11 07:37:38

   M   1 COMPLD;

Chapter6. Facility Management

This chapter provides Facility Management commands for the Cisco NCS 4000 Series.

6.1 Enter

6.1.1 Enter Client Type

The enter command is used in the creation of the specified port.

Usage Guideline

This command creates the port with default values for various configuration parameters. The value for these can be changed using the edit command. These commands are corresponding to the port-mode commands.

Category

Ports

Security

Provisioning

Input Format

ENT-<CLIENT_TYPE>:[<TID>]:<AID>:<CTAG>::[<RATE>],[<MAPPING>],[<FRAMING>];

Input Example

ENT-OTU4:ROUTER8:FAC-0-0-0-0:1::,,Opu4,

Input Parameters

CLIENT_TYPE	This parameter specifies the type of controller that needs to be created. Valid values for the same can be GIGE, 10GIGE, 40GIGE, 100GIGE, OC3, OC12, OC48 ,OC192, OC768 , STM1, STM4, STM16, STM64, OTU1, OTU1E, OTU2, OTU2E, OTU3, OTU4, OTU0, , 100GIGEL2*.	
AID	This specifies the access identifier for the controller that is being created. This will be the identifier for the optic that has been created on insertion of the card. This AID is of the type FACILITY. Valid values as specified in Section 11.	
RATE	Valid values for rate are 10GIGE*, 40GIGE*, 100GIGE*, OC192, STM64.	

Mapping	Valid values for mapping can be Amp , Bmp , Gmp , Gfpf , GfpFExt , Wis. This is an optional parameter.
Framing	Valid values for framing can be Opu0 , Opu1 , Opu1e , Opu1f , Opu2 , Opu2e , Opu2f , Opu3 , Opu3e1 , Opu3e2 , Opu4 , Opuflex|, opuc2, opuc4*, packet*. This is an optional parameter only for otn client types.

6.1.2 Enter ODU Group

The enter command is used in the creation of an ODU group instance.

Category
Ports

Security
Provisioning

Input Format
ENT-ODG-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>::<SIGNAL>,[<TS>]:[WRCTRID=<WRCTRID>],[PRTCTRID=<PRTCTRID>],[CONMODE=<CONMODE>],[TCMID=<TCMID>],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[RVTM=<RVTM>],[PRTHOTM=<PRTHOTM>];

Input Example
ENT-ODG-ODU2E::ODG-1:1::OTN,:WRCTRID=ODU-0-7-0-1,PRTCTRID=ODU-0-7-0-4;

Input Parameters

AID	This parameter specifies the identifier for the ODU group that needs to be created.
ODU_TYPE	Specifies the type of ODUs that will form part of the cross connect. ODU0 ODU1 ODU2 ODU3

	ODU4
	ODU1E
	ODU2E
	ODU3E1
	ODU3E2
	ODU1F
	ODU2F
	ODUFlex
SIGNAL	This parameter specifies the client type for the odu group. It can take the following values:- Sonnet sdh ether otn fibre
TS	This parameter specifies the tributary slots for odu. This parameter is optional and is to be given only when ODU type is OduFlex.
WRCTRID	This parameter specifies the identifier for the working ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
PRTCTRID	This parameter specifies the identifier for the protecting ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
CONMODE	Specifies the connection mode (protection attribute) for the ODU group. Valid values for the same can be: • snc-i Inherent Secure Network Communication • snc-n Sub Network Secure Network Communication • snc-s Non Intrusive Secure Network Communication
TCMID	This is the TCM level for the ODU Type which needs to be associated with snc-s type of CONMODE. Its valid range is 1-6.

PROTTYPE	Specifies the protection type for the ODU group. Valid values for the same can be as follows:
	• APSbidi 1+1 bi-directional Automatic Protection Switching • APSuni 1+1 unidirectional Automatic Protection Switching • noAPSuni 1+1 no Automatic Protection Switching
RVRTV	Specifies the protection mode. Valid values for the same can be : • N: (nonrevertive) Protection switching system does not revert service to the original line after restoration. • Y: (revertive) protection switching system reverts service to the original line after restoration.
PRTHOTM	Specifies the value to be configured for the hold off protection timer. Valid value for the same can be 100-10000 milli seconds.
RVTM	Specifies the value to be configured for the wait to restore protection timer. Valid value for the same can be 0 or 5 to 12 minutes.

6.1.3 Channelizing an ODU

Usage Guidelines
This command is used to channelize an ODU type into ODUs of lower order.

Category
Ports

Security
Provisioning

Input Format
ENT-<ODU_TYPE>:<TID>:<AID>:<CTAG>::<PARENTNM>,<TS>;

Input Example
ENT-ODUFLEX::ODU-0-0-0-7-10:1::ODU2,1&2;

Input Parameters

ODU_TYPE	Specifies the type of ODU Type of the ODU that needs to be created.
AID	This is ODU access identifier. The value for the AID is the ODU ID of the channelized This AID is of the type FACILITY. Valid values as specified in Section 11.
PARENTNM	Parent ODU which is to be channelized. Valid values are ODU1 , ODU2 , ODU3 , ODU4.
TS	It is the time slot allocated to the channelized ODU controller. The values can be specified either in a range (using an '&&') or as discrete values using a '&'.

6.2 Edit

This command can be used in editing various configuration parameters for a previously created port.

6.2.1 Edit Optics

This command is used for the creation of an optics controller.

Usage Guideline
None

Category
Ports

Security
Provisioning

Input Format
ED-OPTICS:[<TID>]:<AID>:<CTAG>:::[PM=<PM>],[SOAK=<SOAK>],[VOATXPOWER=<VOATXPOWER>],[FREQ=<FREQ>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]];

Input Example
ED-OPTICS::FAC-0-7-0-0:1:::PM=Y,VOATXPOWER=-10,FREQ=1961,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

AID	RSIP of the optics controller to be created
PM	Enable Performance Monitoring, Valid values are Y/N.

SOAK	Soak time for specified as integer. It will be applicable only when secondary admin state is 'AINS' and will be ingonored for all other state. It is measured in interval of 15 minutes. A value of 4 equals a soak time of 1-hour. Allowable range is 0- 192 intervals (48 hours). Soak time is an integer.
VOATXPOWER	This parameter specifies the transponder transmit power. Valid range can be from -19 to +1.5.
FREQ	Frequency. Valid values are <1911.5,1912 or 1912.0,1912.5,1913or1913.0…,1960.5,1961or1961.0>.
CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
FEC	(Optional) Forward error correction. Valid vaues are as below: HG-15: High Gain 15% FEC, HG-25: High Gain 20% FEC
PST	Primary Administrative State. Valid values are:- • IS – In Service • OOS- Out Of Service
SST	Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.2 Edit OTU

There are specific commands for editing various parameters of the various types of ports. The respective edit command should be used for the specific type of port.

Usage Guideline

None

Category

Ports

Security

Provisioning

Input Format

ED-<OTU_TYPE>:[<TID>]:<AID>:<CTAG>:::[GCC0=<GCC0>],[SDBER=<SDBER>],[OSPF=<OSPF>],[NNI=<NNI>],[RSVP=<RSVP>],

[SFBER=<SFBER>],[SMTCA=<SMTCA>],[FEC=<FEC>],[TRIGTH=<TRIGTH>],[TRIGWINDOW=<TRIGWINDOW>],[RVRTTH=<RVRTTH>],[RVRTWINDOW=<RVRTWINDOW>],[PM<PM>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]]";

Input Example

ED-OTU2::FAC-0-7-0-6:1:::GCC0=Y,SDBER=1E-7,OSPF=Y,NNI=TCM2,RSVP=Y,SFBER=1E-5,SMTCA=3,FEC=OFF,PM=N,CMDMDE=FRCD:OOS,DSBLD

;

Input Parameters

OTU_TYPE	This parameter specifies the specific OTU type. Valid values for this can be OTU1, OTU1E, OTU1F, OTU2, OTU2E, OTU3, OTU4, , ODU1E, ODU2E, ODU1F, ODU2F, ODUFlex	
AID	OTU Access identifier. This AID is of the type FACILITY. This AID is of the type FACILITY. Valid values as specified in Section 11.	
GCC0	This parameter configures the GCC0 value. Valid value are:- • Y: "enable" • N: "disable".	
SDBER	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.	

OSPF	If the controller is to be added to ospf topology Valid values are Y/N
NNI	Configuring nni type for out controller in ospf topology . Valid values are : sm, pm, tcm1, tcm2, tcm3, tcm4, tcm5, tcm6
RSVP	If the controller is to be added to RSVP topology . Valid values are : Y/N
SFBER	(Optional)Signal Failure threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
SMTCA	TCA threshold value , Range is <3-9>
TRIGTH	It is the Trigger threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <3-9> respectively.
RVRTTH	It is the Revert threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <4-10> respectively.
TRIGWINDOW	Proactive Trigger window , it is the No. of times threshold crossing is tested, Integration window for FRR trigger in ms
RVRTWINDOW	Proactive Revert window , it is the No. of times threshold crossing is tested, Integration window for FRR revert in ms

PM	Enable and disable performance monitoring. Valid values are: • Y • N
FEC	(Optional) Forward error correction. It can be enabled only if ITU-T G.709 monitoring is turned ON. It is either off or enabled in standard or enhanced mode. The system default is standard FEC enabled. The FEC level PM and thresholds apply if the FEC is turned ON. The parameter type is FEC_MODE, which specifies the type of forward error correction. Valid vaues are as below: OFF: FEC is disabled. , STD: Standard FEC is enabled, ENH-I7: Enhanced FEC 1.7 is enabled, ENH-I4: Enhanced FEC 1.4 is enabled, HG-7: High Gain 7% FEC, HG-20: High Gain 20% FEC,
CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PST	Primary admin state for OTU controller. Valid values are : • IS – In Service • OOS- Out Of Service
SST	Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.3 Edit ODU

6.2.3.1   Configuring ODU

Usage Guidelines

There are specific commands for editing various parameters of the various types of ports. The respective edit command should be used for the specific type of port.

Category

Ports

Security

Provisioning

Input Format

ED-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[GCC1=<GCC1>],[SDBER=<SDBER>],

[SFBER=<SFBER>],[PMTCA=<PMTCA>],[PM=<PM>],TSG=<TSG>],[CMDMDE=<CMDMDE>],[PMTIMCA=<PMTIMCA>]:[<PST>[,<SST>]];

Input Example

ED-ODU2::ODU-0-7-0-2:1:::GCC1=Y,SDBER=1E-6,SFBER=1E-5,PMTCA=4,PM=Y,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0 , ODU1 , ODU2 , ODU3 , ODU4 , ODU1E , ODU2E , ODU1F , ODU2F , ODU3E1 ,ODU3E2 , ODUFlex.
AID	This is ODU access identifier. This identifier is of the type FACILITY. Valid values/format specified in Section 11.
GCC1	This parameter configures the GCC1 value. Valid value are:- • Y: "enable" • N: "disable".
SDBER	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K:

	Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9,
	For Other NCS 4000 Card:
	Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.
SFBER	(Optional)Signal Failure threshold.
	For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K:
	Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9,
	For Other NCS 4000 Card:
	Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
PM	Enable and disable performance monitoring. Valid values are: • Y • N
PMTCA	Threshold crossing alert Value(Range 10e-n, Default 6) range is <3-9>
TSG	Configures the Tributary slot granularity level. Valid values can be: 1G25, 2G5.
CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PMTIMCA	Parameter to enable/disable PM TIM consecutive action. Valid values are : • Y • N
PST	Primary admin sate for odu controller . Valid values are : • IS – In Service • OOS- Out Of Service
SST	Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.3.2   Configuring ODU TCM levels

Usage Guidelines

This command configures various TCM levels for an ODU. This command needs to be executed separately for configuraing each of the different types of TCM levels for each ODU.

Category

Ports

Security

Provisioning

Input Format

SET-TCM-<ODU-TYPE>:[<TID>]:<AID>:<CTAG>::<TCID>:[SDBER=<SDBER>],[SFBER
=<SFBER>],[EXTSAPI=<EXTSAPI>],[EXTDAPI=<EXTDAPI>],[EXTOSASCII=<EXTOSASCII>],[EXTOSHEX=<EXT
OSHEX>],[EXTFULASCII=<EXTFULASCII>],[EXTFULHEX=<EXTFULHEX>],[TRCSAPI=<TRCSAPI>],[TRCDAPI=
<TRCDAPI>],[TRCO-ASCII=<TRCOSASCII>],[TRCOHEX=<TRCOSHEX>],[TRCFULASCII=<TRCFULASCII>],[TRC
FULHEX=<TRCFULHEX>],[TCMMODE=<TCMMODE>],[TCMLTCCA=<TCMLTCCA>],[TCMTIMCA=<TCMTIMCA
>][:];

Input Example

SET-TCM-ODU2::ODU-0-7-0-2:1::3:SDBER=1E-8,SFBER=1E-6,PM=Y;

Input Parameters

ODU_TYPE	Specifies the type of ODU for which the TCM needs to be configured.
AID	This is the ODU Access Identifier. This AID is of the type FACILITY. Valid values as specified in Section 11.
TCID	Specifies the TCM level for the ODU configuration. Valid values for this can be 1-6.
SDBER	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.

SFBER	(Optional)Signal Failure threshold.
	For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K:
	Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9,
	For Other NCS 4000 Card:
	Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
PM	Valid values are : • Y • N
<EXTFULASCII>	Expected section trace content. Indicates the expected section trace message contents. EXTFULASCII is any 64-character ASCII string; including the terminating CR (carriage return) and LF (line feed). Defaults to NULL.
<EXTFULHEX>	Expected section trace content. Indicates the expected section trace message contents. EXTFULLHEX is any 128-character HEX text, including the terminating CR (carriage return) and LF (line feed). Defaults to NULL.
<TRCFULASCII>	The section trace message to be transmitted. The trace byte continuously transmits a 64-byte, fixed length ASCII string, one byte at a time. A null value defaults to the NE transmitting 62 null characters (hex 00) and CR and LF.
<TRCFULHEX>	The section trace message to be transmitted. The trace byte continuously transmits a 128-byte, fixed length HEX text.
<EXTSAPI>	Expected Source Access Point Identifier ASCII string. Maximum length 14 characters.
<EXTDAPI>	Expected Destination Access Point Identifier ASCII string. Maximum length 14 characters.
<EXTOSASCII>	(Optional) Operator specific ASCII string for Expected section trace. Maximum length can be 64 characters.
<EXTOSHEX>	(Optional) Operator specific HEX string of Expected section trace. Length of the hex expected section trace must be even. Max length 64 characters.
<TRCSAPI>	Send Source Access Point Identifier ASCII string. Maximum length 14 characters.
<TRCDAPI>	Send Destination Access Point Identifier ASCII string. Maximum length 14 characters.
<TRCOSASCII>	(Optional) Operator specific ASCII string for trace message to be transmitted. Maximum length can be 64 characters.
<TRCOSHEX>	(Optional) Operator specific HEX string for trace message to be transmitted. Length of the hex expected section trace must be even. Max length 64 characters.
<TRCFULASCII>	Send section trace content. Indicates the expected section trace message contents. TRCFULASCII is any 64-character ASCII string; including the terminating CR (carriage return) and LF (line feed). Defaults to NULL.
<TRCFULHEX>	Send section trace content. Indicates the send section trace message contents. TRCFULLHEX is any 128-character HEX text, including the terminating CR (carriage return) and LF (line feed). Defaults to NULL.
<TRCFULASCII>	The section trace message to be transmitted. The trace byte continuously transmits a 64-byte, fixed length ASCII string, one byte at a time. A null value defaults to the NE transmitting 62 null

	characters (hex 00) and CR and LF.
<TCMMODE>	This parameter is used to ser TCM mode. Valid values are : • TRANSPARENT • OPERATIONAL • NIM
<TCMLTCCA>	This parameter is used to enable/disable LTC consecutive action. Valid values are: • Y • N
<TCMTIMCA>	This parameter is used to enable/disable TIM consecutive action. Valid values are: • Y • N

6.2.4 Edit OCN

Usage Guidelines

This command edits the attributes (i.e., service parameters) and state of an OC-N facility.

Category

Ports

Security

Provisioning

Input Format

ED-<OCNTYPE>:[<TID>]:<AID>:<CTAG>:::[TRCMODE=<TRCMODE>],[TRCFORMAT=<TRCFORMAT>],[TRC=<TRC>],[EXPTRC=<EXPTRC>],[PM=<PM>],[B1TCA=<B1TCA>],[B2TCA=<B2TCA],[SDBER=<SDBER>],[SFBER=<SFBER>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]]

Input Example

ED-OC48::FAC-0-7-0-2:1:::TRCFORMAT=16-BYTE,TRC=ABCS,PM=Y,B1TCA=6,B2TCA=5,SDBER=1E-7,SFBER=1E-4,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0 , ODU1 , ODU2 , ODU3 , ODU4,
AID	This is ODU access identifier. This identifier is of the type FACILITY. Valid values/format specified in Section 11.
GCC1	This parameter configures the GCC1 value. Valid value are:- • Y: "enable" • N: "disable".
SDBER	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.
SFBER	(Optional)Signal Failure threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
PM	Enable and disable performance monitoring. Valid values are: • Y • N
TRCMODE	This parameter is used for reverting trc paramaeters configured, if any. Valid value is : OFF
TRCFORMAT	Valid Value is : ☐ 16-Byte
TRC	Valid value is any string
EXPTRC	Valid value is any string
B1TCA	Valid values are <3-9>
B2TCA	Valid values are <3-9>
TSG	Configures the Tributary slot granularity level. Valid values can be: 1G25, 2G5.

CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.	
• FRCD	Force the system to override a state in which the command would normally be denied.	
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.	
PST	Primary admin sate for odu controller . Valid values are : • IS – In Service • OOS- Out Of Service	
SST	Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance	

6.2.5 Edit STM

Usage Guidelines
This command edits the attributes (i.e., service parameters) and state of an STM facility.

Category
Ports

Security
Provisioning

Input Format
ED-<STMTYPE>:[<TID>]:<AID>:<CTAG>:::[TRCMODE=<TRCMODE>],[TRCFORMAT=<TRCFORMAT>],[TRC=<TRC>],[EXPTRC=<EXPTRC>],[PM=<PM>],[B1TCA=<B1TCA>],[B2TCA=<B2TCA],[SDBER=<SDBER>],[SFBER=<SFBER>],[CMDMDE=<CMDMDE>]:[<PST>[,<SST>]]

Input Example
ED-STM16::FAC-0-7-0-2:1:::TRCFORMAT=16-BYTE,TRC=ABCS,PM=Y,B1TCA=6,B2TCA=5,SDBER=1E-7,SFBER=1E-4,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

<AID>	Access identifier. Valid values specified in Section 11.
TRCMODE	This parameter is used for reverting trc paramaeters configured, if any. Valid value is : OFF
TRCFORMAT	Valid Value is : • 16-Byte
TRC	Valid value is any string
EXPTRC	Valid value is any string
PM	Valid values are : • Y • N
B1TCA	Valid values are <3-9>
B2TCA	Valid values are <3-9>
SDBER	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.
SFBER	(Optional)Signal Failure threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PST	Primary admin state for STM controller. Valid values are : • IS – In Service • OOS- Out Of Service
SST	Secondary Administrative State. The valid values are :-

- DSBLD - disabled
- MT - Maintenance

6.2.6 Edit STS

Usage Guidelines

This command edits the attributes (i.e., service parameters) and state of an STS facility.

Category

Ports

Security

Provisioning

Input Format

"ED-<STSTYPE>:[<TID>]:<AID>:<CTAG>:::[TRCMODE=<TRCMODE>],[TRCFORMAT=<TRCFORMAT>],[TRC=<TRC>],[EXPTRC=<EXPTRC>],[PM=<PM>],[B3TCA=<B3TCA>],[CMDMDE= <CMDMDE>]:[<PST>[,<SST>]]";

Input Example

ED-STS192C::STS-0-7-0-10:1:::TRCFORMAT=16-BYTE,TRC=ABCD,PM=Y,B3TCA=5,CMDMDE=FRCD:OOS,DSBLD
;

Input Parameters

<AID>	Access identifier. Valid values specified in Section 11.	
TRCMODE	This parameter is used for reverting trc paramaeters configured, if any. Valid value is : OFF	
TRCFORMAT	Valid Values are : • 16-Byte • 64-Byte	
TRC	Valid value is a any string	
EXPTRC	Valid value is any string	
PM	This parameter is used for enabling/disabling performance monitoring. Valid values are : • Y • N	

B3TCA		Valid vaues are <3-9>
CMDMDE		(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
	• FRCD	Force the system to override a state in which the command would normally be denied.
	• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PST		Primary admin state for controller : • IS – In Service • OOS- Out Of Service
SST		Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.7 Edit VC

Usage Guidelines
This command edits the attributes (i.e., service parameters) and state of an VC facility.

Category
Ports

Security
Provisioning

Input Format
"ED-<VCTYPE>:[<TID>]:<AID>:<CTAG>:::[TRCMODE=<TRCMODE>],[TRCFORMAT=<TRCFORMAT>],[TRC=<TRC>],[EXPTRC=<EXPTRC>],[PM=<PM>],[B3TCA=<B3TCA>],[CMDMDE=< CMDMDE>]:[<PST>[,<SST>]]";

Input Example
ED-VC464C::STS-0-7-0-10:1:::TRCFORMAT=16-BYTE,TRC=ABCD,PM=Y,B3TCA=5,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

<AID>	Access identifier. Valid values specified in Section 11.

TRCMODE	This parameter is used for reverting trc paramaeters configured, if any. Valid value is : OFF
TRCFORMAT	Valid Values are : 16-Byte 64-Byte
TRC	Valid value is any string
EXPTRC	Valid value is any string
PM	This parameter is used for enabling/disabling performance monitoring. Valid values are : • Y • N
B3TCA	Valid vaues are <3-9>
CMDMDE	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PST	Primary admin state for controller. Valid values : • IS – In Service • OOS- Out Of Service
SST	Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.8 Edit Gige

This command edits the Ethernet facility attributes.

Usage Guideline
None

Category
Ports

Input Format
ED-<GIGE_TYPE>:[<TID>]:<AID>:<CTAG>:::[FLOWCTRL=<FLOWCTRL>],[PM=<PM>],[CMDMDE=<CMDMDE>]:[
<PST>[,<SST>]];

Input Example
ED-10GIGE::FAC-0-5-0-10:1:::FLOWCTRL=INGRESS,CMDMDE=FRCD:OOS,DSBLD;

Input Parameters

GIGETYPE		Specifies the gige type. Valid values can be GIGE, 10GIGE, 40GIGE, 100GIGE, 10GIGEL2*, 100GIGEL2*.
<AID>		This identifier is of the type FACILITY. Valid values/format specified in Section 11.
<FLOWCTRL>		(Optional) Flow control. The parameter is FLOW, which indicates the type of flow control that has been negotiated for an Ethernet port. Defaults to NONE.
<PM>		Performance monitoring enablr disable. Valid values are Y/N
CMDMDE		(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to set controller in OOS state.
	• FRCD	Force the system to override a state in which the command would normally be denied.
	• NORM	Execute the command normally. Do not override any conditions that could make the command fail.
PST		Primary admin state for Ethernet controller. Valid values : • IS – In Service • OOS- Out Of Service
SST		Secondary Administrative State. The valid values are :- • DSBLD - disabled • MT - Maintenance

6.2.9 Edit ODU group

The enter command is used in the creation of an ODU group instance.

Usage Guideline
None

Category
Ports

Security
Provisioning

Input Format
ED-ODG-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[WRCTRID=<WRCTRID>],[PRTCTRID=<PRTCTRID>],[CONMODE=<CONMODE>],[TCMID=<TCMID>],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[RVTM=<RVTM>],[[PRTHOTM=<PRTHOTM>];

Input Example
ED-ODG-ODU2::ODG-11:1:::WRCTRID=ODU-0-7-0-6,PRTCTRID=ODU-0-7-0-7,CONMODE=SNC-S,TCMID=2,PROTTYPE=APSBIDI,RVRTV=Y,PRTHOTM=200,RVTM=8;

Input Parameters

AID	This parameter specifies the identifier for the ODU group that needs to be configured.
ODU_TYPE	Specifies the type of ODUs that form part of the cross connect.
	Currently supported values are :
	ODU0 , ODU1 , ODU2 , ODU3 , ODU4 , ODU1E , ODU2E , ODU3E1 , ODU3E2 , ODU1F , ODU2F, ODU Flex
WRCTRID	This parameter specifies the identifier for the working ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
PRTCTRID	This parameter specifies the identifier for the protecting ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
CONMODE	Specifies the connection mode (protection attribute) for the ODU group. Valid values for the same can be:
	• snc-i Inherent Secure Network Communication
	• snc-n Sub Network Secure Network Communication

	• snc-s Non Intrusive Secure Network Communication
TCMID	This is the TCM level for the ODU Type which needs to be associated with snc-s type of CONMODE. Its valid range is 1-6.
RVRTV	Specifies the protection mode. Valid values for the same can be : • N: (nonrevertive) Protection switching system does not revert service to the original line after restoration. • Y: (revertive) protection switching system reverts service to the original line after restoration.
PRTHOTM	Specifies the value to be configured for the hold off protection timer. Valid value for the same can be 100-10000 milli seconds.
RVTM	Specifies the value to be configured for the wait to restore protection timer. Valid value for the same can be 0 or 5 to 12 minutes.

6.2.10 Set SRLG

The set command is used to configure network SRLG sets. User can configure maximum of 6 srlg sets.

Usage Guideline
None

Category
Ports

Security
Provisioning

Input Format
SET-SRLG-<TYPE>:[<TID>]:<AID>:<CTAG>::<SRLGIDX>,<VAL1>,[<VAL2>],[<VAL3>],[<VAL4>],[<VAL5>],[<VAL6>];

Input Example
SET-SRLG-OTU1::FAC-0-7-0-2:1::2,123,32;

Input Parameters

<TYPE>	This parameter specifies the specific SRLG type. Valid values for this can be OPTICS , OTU1 , OTU1E , OTU2 , OTU2E , OTU3 , OTU3E1 , OTU3E2 , OTU4 , ODU0 , ODU1 , ODU1e , ODU2 , ODU3 , ODU3e1 , ODU3e2 , ODU4, , ODUC4*.

<SRLGIDX>	SRLGIDX is the index of the srlg set. The valid range for index is from 0 to 17.
<VAL1> - <VAL6>	SRLG set can have 6 SRLG values The valid range for srlg values is from 0 to 4294967294.

6.1.1 Edit PRBS

Usage Guideline

ED-PRBS-<opu_type> is used to configure PRBS parameters for ODU type controller.

Pre-requisites for PRBS test are:-

- ODU Interface should exist

- Admin-state {IN/MT/OOS}: The interface needs to be in 'MT' state to run PRBS test.

Category

Ports

Security

Provisioning

Input Format

ED-PRBS-

<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[PRBSMDE=<PRBSMDE>],[PRBSGENPATTERN=<PRBSGENPATTERN>];

Input Example

> ED-PRBS-ODU2::ODU-0-7-0-3:1:::PRBSMDE=SRC-SINK,PRBSGENPATTERN=PRBS-11;

   10.78.161.183 1971-06-02 13:48:35

M   1 COMPLD

;

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0 | ODU1 | ODU2 | ODU3 | ODU4 | ODU1E | ODU2E | ODU3E1 | ODU3E2 | ODUFlex | ODU1F | ODU2F,
AID	This is ODU access identifier. This identifier is of the type FACILITY.
<PRBSMDE>	Identify the mode for PRBS test. It has no default value. PRBSMDE is mandatory if PRBSPATTERN is not NONE.

• SRC	The port will start generating continuously the configured PRBS pattern in the egress ODU payloads on the port	
• SINK	The port will detect ingress PRBS patterns and analyze against the configured pattern to peg PRBS statistics counters.	
• SRC-SINK	The port will simultaneously act as the Source as well as Sink for the configured PRBS pattern.	
<PRBSPATTERN>	Identifies the type of PRBS generator pattern. It has no default value.	
• NONE	Delete PRBS configuration and stop PRBS test.	
• PRBS-11	PN 11 pattern	
• PRBS-23	PN 23 pattern	
• PRBS-31	PN 31 pattern	
• PRBS-INV-11	PN 11 pattern inverted	
• PRBS-INV-31	PN 31 pattern inverted	

6.1 Retrieve

Filtering will not be supported for retrieval commands of controllers (Optics, OCN, GE, ODU, OTU)

6.1.1 Retrieve FAC

Usage Guidelines
The Retrieve Facility (RTRV-FAC) command retrieves the Payload type,Framing and Mapping of the facility. It can also dump all the facilities on a given card and is applicable to all cards.

Category
Ports

Security
Retrieve

Input Format
RTRV-FAC:[TID]:<SRC>:<CTAG>[:::];

Input Example

RTRV-FAC::FAC-0-8-0-1:1;

Input Parameter

None

Output Format

SID DATE TIME

M CTAG COMPLD

"<SRC>::PAYLOAD=<PAYLOAD>,FRAMING=<FRAMING>,MAPPING=<MAPPING>";

Output Example

Chessis1 2015-01-05 10:33:50

  M 1 COMPLD

  "FAC-0-8-0-12::PAYLOAD=GIGE,FRAMING=OPU0,MAPPING=GMP"

;

Output Parameter

<SRC>	ALL OR RSIP of the port, Valid format for the access identifier specified in section 11.
<PAYLOAD>	(Optional) Payload type of the facility. The parameter type is PAYLOAD, which identifies payload type.
100GIGE	100 Gigabit Ethernet.
40GIGE	40-Gigabit Ethernet.
10GIGE	10-Gigabit Ethernet.
GIGE	Gigabit Ethernet Payload
OTU1	Optical Transport Unit Level 1
OTU2	Optical Transport Unit Level 2
OTU3	Optical Transport Unit Level 3
OTU3E1	Optical Transport Unit Level 3e1
OTU3E2	Optical Transport Unit Level 3e2
OTU4	Optical Transport Unit Level 4
OTU1E	Optical Transport Unit Level 1e
OTU1F	Optical Transport Unit Level 1f

OTU2E	Optical Transport Unit Level 2e
OTU2F	Optical Transport Unit Level 2f
STM1	NCS STM1 mode
STM4	NCS STM4 mode
STM16	NCS STM16 mode
STM64	NCS STM64 mode
STM256	NCS STM256 mode
OC3	NCS OC3 mode
OC12	NCS OC12 mode
OC48	NCS OC48 mode
OC768	NCS OC768 mode
OTUC2	Optical Transport Unit Level c2
	Optical Transport Unit Level c4
OC192	NCS OC192 mode
<FRAMING>	Valid values for framing can be Opu0 , Opu1 , Opu1e , Opu1f , Opu2 , Opu2e , Opu2f , Opu4 , OpuFlex, opu3, opu3e1, opu3e2, opuc2, opuc4*, packet*. This is an optional parameter only for otn client types.
<MAPPING>	Valid values for mapping can be Amp , Bmp , Gmp , Gfpf , GFPFEXT , Wis. . This is an optional parameter

6.1.2 Retrieve Optics

Usage Guidelines
This command is used for retrieving the values configured for the particular optics controller.

Category
Ports

Security
Provisioning

Input Format

RTRV-OPTICS:[<TID>]:<AID>:<CTAG>[:::];

Input Example

RTRV-OPTICS::FAC-0-7-0-0:1;

Input Parameter

None

Output format

SID DATE TIME

M CTAG COMPLD

"<AID>::[FREQ=<FREQ>],[LBCL=<LBCL>],[OPT=<OPT>],[OPR=<OPR],[SRLG=<SRLG>],[PM=<PM>],[PMD=<PMD>],[SOPMD=<SOPMD>],[OSNR=<OSNR>],[DGD=<DGD>],>],[PN=<PN>],[
[PDL=<PDL>],[VOATXPOWER=<VOATXPOWER>],[[PCR=<PCR>], [FEC=<FEC>]:[<PST>],[<SST>]";

Output Example

10.78.162.11 2011-07-29 17:41:34

M   1 COMPLD

   "FAC-0-13-0-2:: FREQ=1530.334,LBCL=0.0 ,OPT=-40.00,OPR=56.24,PM=Y:IS-NR"

;

Output Parameters

AID	ALL OR RSIP of the optics controller to be created
FREQ	Specifies the wavelength frequency. FREQ is a float.
LBCL	Laser Bias Current. LBCL is a float.
OPT	This parameter specifies the transmit power. OPT is a float.
OPR	This parameter specifies the receive power. OPR is a float.
PMD	This parameter specifies the polarization mode dispersion.
SOPMD	This parameter specifies the second order polarization mode dispersion
OSNR	This parameter specifies the optical signal to noise ratio.
PDL	This parameter specifies the polarization dependent loss.
PCR	This parameter specifies the polarization rate change.
DGD	This parameter specifies the differential group delay
PN	This parameter specifies the phase noise.
VOATXPOWER	This parameter specifies the transponder transmit power. Valid range can be from -19 to +1.5.

FEC	(Optional) Forward error correction. Valid vaues are as below:	
	HG-15: High Gain 15% FEC,	
	HG-25: High Gain 20% FEC	
PST	Primary Administrative State. The valid combinations are:-	
• OOS-MA	Out of service and Management	
• OOS-AUMA	Out of service and Autonomous management	
• OOS-AU	Out of Service and Autonomous	
• IS-NR	In Service - Normal	
SST	Secondary Admin State. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	

6.1.3 Retrieve Optics Lane data

Usage Guidelines
This command is used for retrieving current values on sub-lanes of optics controller. This command is valid only when multiple sublanes exists for an optics controller.

Category
Ports

Security
Provisioning

Input Format
RTRV-OTL:[<TID>]:<AID>:<CTAG>[::::];

Input Example
None

Input Parameter

None

Output format

SID DATE TIME

M CTAG COMPLD

"<AID>:<LANE>,,,:[LBCL=<LBCL>],[OPT=<OPT>],[OPR=<OPR]:[<PST>,[<SST>]]";

Output Example

10.78.162.11 2011-07-29 17:41:34

M   1 COMPLD

   "FAC-0-13-0-2:1,,,:LBCL=0.0 ,OPT =-4.00,OPR =56.24:IS-NR"

   "FAC-0-13-0-2:2,,,:LBCL=0.0 ,OPT =-4.00,OPR =56.24:IS-NR";

Output Parameters

AID	RSIP of the optics controller to be created
<ROLE>	(Optional) The port role in a Y-cable protection scheme. The parameter defines the role the unit is playing in the protection group.
PROT	The entity is a protection unit in the protection group.
WORK	The entity is a working unit in the protection group.
<STATUS>	(Optional) The port status in a Y-cable protection scheme. The parameter defines the status of the unit in the protection pair.
ACT	The entity is the active unit in the shelf.
NA	Status is unavailable.
STBY	The entity is the standby unit in the shelf.
LANE	Sub Lane number
LBCL	Laser Bias Current. LBCL is a float.
OPT	This parameter specifies the optical transmit power. OPT is a float.
OPR	This parameter specifies the optical receive power. OPR is a float.
PST	Primary Administrative State. The valid combinations are:-
• OOS-MA	Out of service and Management
• OOS-AUMA	Out of service and Autonomous management
• OOS-AU	Out of Service and Autonomous

• IS-NR	In Service - Normal	
SST	Secondary Admin State. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	

6.1.4 Retrieve OCN Type

Usage Guidelines
This command is used for retrieving the values configured for the particular OCN type..

Category
Ports

Security
Provisioning

Input Format
RTRV-<OCN_TYPE>:[<TID>]:<AID>:<CTAG>[::::];

Input Example
RTRV-OC192::FAC-0-7-0-3:1;

Input Parameter
None

Output format
SID DATE TIME
M CTAG COMPLD
"<AID>:,,[<ROLE>],[<STATUS>]:[SFBER=<SFBER>],[SDBER=<SDBER>],[B1TCA=<B1TCA>],[B2TCA=<B2TCA>],[
TRCFORMAT=<TRCFORMAT>],[TRC = <TRC>],[EXPTRC=<EXPTRC>],[RCVTRC=<RCVTRC>],[TRCMODE =
<TRCMODE>],:[<PST>,[<SST>]];

Output Example

10.78.161.91 2014-06-10 07:19:56

M   1 COMPLD

"FAC-0-14-0-0,OC48:: SFBER=1E-5,SDBER=1E-6,B1TCA=1E-6,TRC=16-BYTE,TRC=ABCD :OOS-MA,DSBLD"

Output Parameters

<AID>	Access identifier.
<ROLE>	(Optional) An OC-N port role. The parameter type is SIDE, which is the role the unit is playing in the protection group. Value can be PROT,WORK
<STATUS>	(Optional) An OC-N port status. The parameter type is STATUS, which is the status of the unit in the protection pair. Valid values can be ACT,NA,STBY
<SFBER>	(Optional)Signal Failure threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
<SDBER>	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.
<B1TCA>	Set B1 BER Threshold Crossing Alert (TCA) threshold
<B2TCA>	Set B2 BER Threshold Crossing Alert (TCA) threshold
<TRCFORMAT>	SONET/SDH port trace buffer.
<TRC>	SONET/SDH transmitted port trace buffer. Valid value is 16-byte.
<EXPTRC>	SONET/SDH expected port trace buffer
<RCVTRC>	SONET/SDH received trace buffer.
<TRCMODE>	Valid value is 'OFF'
PST	Primary Administrative State. The valid combinations are:-
• OOS-MA	Out of service and Management

•	OOS-AUMA	Out of service and Autonomous management
•	OOS-AU	Out of Service and Autonomous
•	IS-NR	In Service - Normal
	SST	Secondary Admin State. The valid values are :-
•	DSBLD	Disabled
•	MT	Maintenance
•	FLT	Fault
•	LPBK	Loopbacked
•	AINS	Automatic-In-Service

6.1.5 Retrieve STM Type

Usage Guidelines
This command is used for retrieving the values configured for the particular OCN type..

Category
Ports

Security
Provisioning

Input Format
RTRV-<STM_TYPE>:[<TID>]:<AID>:<CTAG>[::::];

Input Example
RTRV-STM64::FAC-0-7-0-1:1;

Input Parameter
None

Output format
SID DATE TIME
M CTAG COMPLD
""<AID>:,,[<ROLE>],[<STATUS>]

:[SFBER=<SFBER>],[SDBER=<SDBER>],[B1TCA=<B1TCA>],[B2TCA=<B2TCA>],[TRCFORMAT=<TRCFORMAT>],[TRC = <TRC>],[EXPTRC=<EXPTRC>],[RCVTRC=<RCVTRC>],[TRCMODE = <TRCMODE>], [<PST>,[<SST>]];

Output Example

10.78.161.91 2014-06-10 07:18:55

M   1 COMPLD

   "FAC-0-14-0-3::SFBER=1E-5,SDBER=1E-6,B1TCA=1E-6,B2TCA=1E-6,OOS-MA,DSBLD"

Output Parameters

<AID>	Access identifier.
<ROLE>	(Optional) An OC-N port role. The parameter type is SIDE, which is the role the unit is playing in the protection group. Value can be PROT,WORK
<STATUS>	(Optional) An OC-N port status. The parameter type is STATUS, which is the status of the unit in the protection pair. Valid values can be ACT,NA,STBY
<SFBER>	(Optional)Signal Failure threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
<SDBER>	(Optional) Signal Degrade threshold. For NCS4K-20T-O-S/NCS4K-24LR-O-S/NCS4K-2H-O-K: Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9, For Other NCS 4000 Card: Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9.
<B1TCA>	Set B1 BER Threshold Crossing Alert (TCA) threshold
<B2TCA>	Set B2 BER Threshold Crossing Alert (TCA) threshold
PST	Primary Administrative State. The valid combinations are:-
• OOS-MA	Out of service and Management
• OOS-AUMA	Out of service and Autonomous management
• OOS-AU	Out of Service and Autonomous

• IS-NR	In Service – Normal	

SST	Secondary Admin State. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	

6.1.6 Retrieve VC Type

Usage Guidelines
This command is used for retrieving the values configured for the particular VC type.

Category
Ports

Security
Provisioning

Input Format
RTRV-<VC_TYPE>:[<TID>]:<AID>:<CTAG>[::::];

Input Example
RTRV-VC464C::VC-0-8-0-10:1;

Input Parameter
None

Output format
SID DATE TIME
M CTAG COMPLD
""<AID>:,,[<ROLE>],[<STATUS>],[PM=< PM>],[B3TCA=<B3TCA>]:[<PST>[,<SST>]]"

Output Example

10.78.161.91 2014-06-10 07:20:37

M   1 COMPLD

   "VC-0-14-0-23,VC4-64C::PM=Y,B3TCA=1E-6:OOS-MA,DSBLD"

;

Output Parameters

<AID>		Access identifier.
<ROLE>		(Optional) An OC-N port role. The parameter type is SIDE, which is the role the unit is playing in the protection group.
		Value can be PROT,WORK
<STATUS>		(Optional) An OC-N port status. The parameter type is STATUS, which is the status of the unit in the protection pair.
		Valid values can be ACT,NA,STBY
<PM>		Whether performance monitoring is enabled or disabled
<B3TCA>		B3 BER threshold crossing alert
		Valid values can be 1E-3,1E-4,1E-5
PST		Primary Administrative State. The valid combinations are:-
	• OOS-MA	Out of service and Management
	• OOS-AUMA	Out of service and Autonomous management
	• OOS-AU	Out of Service and Autonomous
	• IS-NR	In Service - Normal
SST		Secondary Admin State. The valid values are :-
	• DSBLD	Disabled
	• MT	Maintenance
	• FLT	Fault
	• LPBK	Loopbacked
	• AINS	Automatic-In-Service

6.1.7 Retrieve STS Type

Usage Guidelines

This command is used for retrieving the values configured for the particular STS type..

Category

Ports

Security

Provisioning

Input Format

RTRV-<STS_TYPE>:[<TID>]:<AID>:<CTAG>[::::];

Input Example

RTRV-STS192C::STS-0-6-0-1;

Input Parameter

None

Output format

SID DATE TIME

M CTAG COMPLD

""<AID>:,,[<ROLE>],[<STATUS>]:[TRCMODE=<TRCMODE>],[TRCFORMAT=<TRCFORMAT>],[TRC=<TRC>],[EXPTR
C=<EXPTRC>] ,[PM=< PM>],[B3TCA=<B3TCA>]:[<PST>[,<SST>]]"

Output Example

10.78.161.91 2014-06-10 07:21:01

M   1 COMPLD

"STS-0-14-0-11,STS192C:: TRCFORMAT=16-BYTE,trc=abcd,B3TCA=1E-6:OOS-MA,DSBLD";

Output Parameters

<AID>	Access identifier.
<ROLE>	(Optional) An OC-N port role. The parameter type is SIDE, which is the role the unit is playing in the protection group. Value can be PROT,WORK
<STATUS>	(Optional) An OC-N port status. The parameter type is STATUS, which is the status of the

	unit in the protection pair.	
	Valid values can be ACT,NA,STBY	
<TRCFORMAT>	SONET/SDH port trace buffer. Valid values are 16-byte,64-byte	
<TRC>	SONET/SDH transmitted port trace buffer	
<EXPTRC>	SONET/SDH expected port trace buffer	
<RCVTRC>	SONET/SDH received trace buffer.	
<TRCMODE>	Valid value is 'OFF'	
<TRCFORMAT>	SONET/SDH port trace buffer. Valid values are 16-byte,64-byte	
<PM>	Whether performance monitoring is enabled or disabled	
<B3TCA>	B3 BER threshold crossing alert Valid values can be 1E-3,1E-4,1E-5	
PST	Primary Administrative State. The valid combinations are:-	
• OOS-MA	Out of service and Management	
• OOS-AUMA	Out of service and Autonomous management	
• OOS-AU	Out of Service and Autonomous	
• IS-NR	In Service - Normal	
SST	Secondary Admin State. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	

6.1.8 Retrieve GIGE Type

Usage Guidelines

This command is used for retrieving the values configured for the particular facility.

Category
Ports

Input Format
RTRV-<GIGE_TYPE>:[<TID>]:<AID>:<CTAG>;

Input Example
RTRV-GIGE::FAC-0-7-0-2:1;

Input Parameter
None

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>,,[<ROLE>],[<STATUS>]:[SPEED=<SPEED>],[DUPLEX=[DUPLEX],[FLOWCTRL=<FLOWCTRL>],[MTU=<M
TU>]:[<PST>[,<SST>]]"
;

Output Example
Ncs 4k1 2014-03-17 23:54:46

M   1 COMPLD

    "FAC-0-8-0-14::SPEED=1,DUPLEX=FULL-DUPLEX,FLOWCTRL=INGRESS:IS"

;

Output Parameters

<AID>	This identifier is of the type FACILITY. Valid values/format specified in Section 11.
SPEED	Speed parameter is in Gbps.
<FLOWCTRL>	(Optional) Flow control. The parameter type is FLOW, which indicates the type of flow control that has been negotiated for an Ethernet port. Defaults to NONE. Valid values can be EGRESS , INGRESS , BIDIRECTIONAL
<DUPLEX>	(Optional) The parameter is ETHERNET_DUPLEX, which indicates duplex mode. Valid values can be FULL-DUPLEX , HALF-DUPLEX.
PST	Primary Administrative State. The valid combinations are:-

•	OOS-MA	Out of service and Management
•	OOS-AUMA	Out of service and Autonomous management
•	OOS-AU	Out of Service and Autonomous
•	IS-NR	In Service - Normal
SST		Secondary Admin State. The valid values are :-
•	DSBLD	Disabled
•	MT	Maintenance
•	FLT	Fault
•	LPBK	Loopbacked
•	AINS	Automatic-In-Service

6.1.9 Retrieve ODU Type

Usage Guidelines

This command is used for retrieving the values configured for the particular facility.

Category

Ports

Security

Provisioning

Input Format

Following will be the commands for each kind of facility

RTRV-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>;

Input Example

RTRV-ODU2::ODU-0-8-0-0:1;

Input Parameter

None

Output Format

SID DATE TIME

M CTAG COMPLD

"<AID>:,,[<ROLE>],[<STATUS>]:,[GCC1=<GCC_VALUE>],[SDBER=<SDBER>],[SFBER=<SFBER>],[PMTCA=<PM
TCA>],[PM=<PM>],[PMMODE=<PMMODE>],[PMTIMCA=<PMTIMCA>],
[OWNER=<OWNER>],[PT=<PT>],[TSG=<TSG>],[ATS=<ATS>],[RESST=<RESST>]:[<PST>[,<SST>]]";

Output Example

 CHASSIS17 1970-04-12 01:37:50

M   1 COMPLD

   "ODU-0-0-0-1: ,,,ACT:GCC1=N,SDBER=1E-6,SFBER=1E-5,
PM=N,OWNER=ALL,RESST=ODU-RESOURCE-FREE,TSG=1G25:OOS:DSBLD"

;

Output Parameters

ROLE	This parameter specifies role of the controller in the protection group. Valid values for the same can be as follows:
	PROT The entity is the protection unit in the protection group.
	WORK The entity is the working unit in the protection group.
	REST The entity is the restore unit in the protection group.
STATUS	This parameter specifies status of the controller in the protection group. Valid values for the same can be as follows:
	ACT The entity is the active unit in the protection group.
	ACT when Protection state in Protection group is
	NOT_PRESENT or STATE_ACTIVE
	STBY The entity is the standby unit in the protection group.
	STBY when Protection state in Protection group is
	STATE_ACTIVE_TX, STATE_ACTIVE_RX, STATE_NOT_ACTIVE, STATE_FAILED or STATE_EXTRA
PT	Payload Type
ATS	Number of time slots allocated
OWNER	ODU User
PM	Specifies if performance monitoring is enabled or disabled.Valid values are: • Y • N
PMMODE	This parameter specifies PM mode.Valid values are:

	• NIM	
	• OPERATIONAL	
PMTIMCA	Parameter to enable/disable PM TIM consecutive action. Valid values are :	
	• Y	
	• N	
RESST	Resource State. Values can be ODU-RESOURCE-FREE, ODU-OPEN-CONNECTION, ODU-CROSS-CONNECTED or ODU-IS-CHANNELIZED	
PST	Primary Administrative State. The valid combinations are:-	
• OOS-MA	Out of service and Management	
• OOS-AUMA	Out of service and Autonomous management	
• OOS-AU	Out of Service and Autonomous	
• IS-NR	In Service - Normal	
SST	Secondary Admin State. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	

6.1.10 Retrieve OTU Type

Usage Guidelines

This command is used for retrieving the values configured for the particular facility.

Category

Ports

Security

Provisioning

Input Format

RTRV-<OTU_TYPE>:[<TID>]:<AID>:<CTAG>;

Input Example

RTRV-OTU2:: FAC-0-7-0-10:1;

Input Parameter

None

Output Format

SID DATE TIME

M CTAG COMPLD

 "<AID>:[GCC0=<GCC0>],[SDBER=<SDBER>],[SFBER=<SFBER>], [TRIGTH=<
TRIGTH>],[TRIGWINDOW=<TRIGWINDOW>],[RVRTTH=<RVRTTH>],[RVRTWINDOW=<RVRTWINDOW>],[PM=
<PM>],>],[FEC=<FEC>],[SRLG=<SRLG>],"[OSPF=<OSPF>],[RSVP=<RSVP>],[NNI=<NNI>]" [:<PST>,[<SST>]]";

Output Example

19 2015-08-21 07:33:43

M   1 COMPLD

"FAC-0-6-0-10::GCC0=N,SDBER=1E-7,SFBER=1E-6,PM=Y,FEC=STD,TRIGTH=1E-4,RVRTTH=1E-4,TRIGWINDOW=
10,RVRTWINDOW=2000,OSPF=Y,NNI=TCM6,RSVP=N:IS-NR"

;

>

Output Parameters

The description of the parameters is same as in section ED-<OTU-TYPE> command. The additional parameters are as
described below:

PST		Primary Administrative State. The valid combinations are:-
	• GCC0	This parameter describes the GCC0 value. Valid value are:- • Y: "enable" • N: "disable".
	• SDBER	(Optional) Signal Degrade threshold
	• OSPF	If the controller has been added to ospf topology Valid values are Y/N
	• NNI	Configuring nni type for out controller in ospf topology . Valid values are : • sm, • pm, • tcm1,

		• tcm2,
		• tcm3,
		• tcm4,
		• tcm5,
		• tcm6
	• RSVP	If the controller has been added to RSVP topology . Valid values are : Y/N
	• SFBER	(Optional)Signal Failure threshold
	• TRIGTH	It is the Trigger threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <3-9> respectively
	• RVRTTH	It is the Revert threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <4-10> respectively
	• TRIGWINDOW	Proactive Trigger window , it is the No. of times threshold crossing is tested, Integration window for FRR trigger in ms
	• RVRTWINDOW	Proactive Revert window , it is the No. of times threshold crossing is tested, Integration window for FRR revert in ms
	• PM	Performance monitoring. Valid values are: • Y • N
	• FEC	(Optional) Forward error correction. It can be enabled only if ITU-T G.709 monitoring is turned ON. It is either off or enabled in standard or enhanced mode. The system default is standard FEC enabled. The FEC level PM and thresholds apply if the FEC is turned ON. The parameter type is FEC_MODE, which specifies the type of forward error correction. Valid vaues are as below: OFF: FEC is disabled. , STD: Standard FEC is enabled, ENH-I7: Enhanced FEC 1.7 is enabled, ENH-I4: Enhanced FEC 1.4 is enabled, HG-7: High Gain 7% FEC, HG-20: High Gain 20% FEC

PST		Primary Administrative State. The valid combinations are:-
	• OOS-MA	Out of service and Management
	• OOS-AUMA	Out of service and Autonomous management
	• OOS-AU	Out of Service and Autonomous
	• IS-NR	In Service - Normal
	SST	Secondary Admin State. The valid values are :-
	• DSBLD	Disabled
	• MT	Maintenance
	• FLT	Fault
LPBK		Loopbacked
AINS		Automatic-In-Service

6.1.11 Retrieve TCM configuration for an ODU Type

Usage Guidelines
This command is used for retrieving the configuration of the TCM levels for an ODU Type.

Category
Ports

Security
Provisioning

Input Format
Following will be the commands for each kind of facility

RTRV-TCM-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>::<TCMID>;

Input Example
RTRV-TCM-ODU2::ODU-0-8-0-2:1::3;

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0 , ODU1 , ODU2 , ODU3 , ODU4
AID	The AID here is the ODU Access Identifier. Valid format for the access identifier specified in section 11.
TCMID	This is the TCM level for the ODU Type whose configuraton needs to be retrieved. If this value is not specified configuration of all TCM levels for this ODUType are retrieved.

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>:<TCM-ID-COUNT>:[SDBER=<SDBER>],[SFBER=<SFBER>],[PM=<PM>],[TRCSAPI=<TRCSAPI>],[TRCDA
PI=<TRCDAPI>],[TRCOS-ASCII=<TRCOS-ASCII>],[TRCOS-HEX=<TRCOS-HEX>],[EXTSAPI=<EXTSAPI>],[EXTD
API=<EXTDAPI>],[EXTOS-ASCII=<EXTOS-ASCII>],[RECSAPI=<RECSAPI>],[RECDAPI=<RECDAPI],[TRCFULASC
II=<TRCFULASCII>],[EXTFULASCII=<EXTFULASCII>],[TRCFULHEX=<TRCFULHEX>],[EXTFULHEX=<EXTFUL
HEX>],[TCMMODE=<TCMMODE>],[TCMLTCCA=<TCMLTCCA>],[TCMTIMCA=<TCMTIMCA>][:]:[<PST>[,<SST>]]";

Output Example
10.78.161.183 1970-11-25 19:14:34

M   1 COMPLD

"ODU-0-7-0-1:1:SDBER=1E-7,SFBER=1E-6,PM=N,RCVSAPI=ffffffffffffffffffffffffffffffffff,RCVDAPI=fffffffffffffffffffffff
ffffffffff,RCVOSHEX=ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff,EXTSAPI=abcd:OOS-AU,FLT"

;

Output Parameters
The description of the parameters is same as in section 8.2.3. The additional parameters are as described below:

AID	The AID here is the ODU Access Identifier. Valid format for the same specified in section 11.
SDBER	(Optional) Signal Degrade threshold.
	For Digi/Hyphy/CPAK:
	Defaults to 1E-7. Valid values are 1E-6,1E-7,1E-8,1E-9,
	For Other Scapa Card:
	Defaults to 1E-7, Valid values are 1E-5, 1E-6, 1E-7, 1E-8, 1E-9
SFBER	(Optional)Signal Failure threshold.
	For Digi/Hyphy/CPAK:
	Defaults to 1E-6. Valid values are 1E-6,1E-7,1E-8,1E-9,

	For Other Scapa Card:
	Defaults to 1E-5. Valid values are 1E-5,1E-6,1E-7,1E-8,1E-9,
PM	Valid values are : • Y • N
<EXTFULASCII>	Expected section trace content. Indicates the expected section trace message contents. EXTFULASCII is any 64-character ASCII string; including the terminating CR (carriage return) and LF (line feed). Defaults to NULL.
<EXTFULHEX>	Expected section trace content. Indicates the expected section trace message contents. EXTFULLHEX is any 128-character HEX text, including the terminating CR (carriage return) and LF (line feed). Defaults to NULL
<TRCFULASCII>	The section trace message to be transmitted. The trace byte continuously transmits a 64-byte, fixed length ASCII string, one byte at a time. A null value defaults to the NE transmitting 62 null characters (hex 00) and CR and LF.
<TRCFULHEX>	The section trace message to be transmitted. The trace byte continuously transmits a 128-byte, fixed length HEX text
<EXTSAPI>	Expected Source Access Point Identifier ASCII string. Maximum length 14 characters
<EXTDAPI>	Expected Destination Access Point Identifier ASCII string. Maximum length 14 characters
<RECSAPI>	Received Source Access Point Identifier ASCII string. Maximum length 14 characters
<RECDAPI>	Received Destination Access Point Identifier ASCII string. Maximum length 14 characters
<EXTOSASCII>	(Optional) Operator specific ASCII string for Expected section trace. Maximum length can be 64 characters
<EXTOSHEX>	(Optional) Operator specific HEX string of Expected section trace. Length of the hex expected section trace must be even. Max length 64 characters
<TRCSAPI>	Send Source Access Point Identifier ASCII string. Maximum length 14 characters
<TRCDAPI>	Send Destination Access Point Identifier ASCII string. Maximum length 14 characters
<TRCOSASCII>	(Optional) Operator specific ASCII string for trace message to be transmitted. Maximum length can be 64 characters
<TRCOSHEX>	(Optional) Operator specific HEX string for trace message to be transmitted. Length of the hex expected section trace must be even. Max length 64 characters
<TCMMODE>	This parameter is used to ser TCM mode. Valid values are : • TRANSPARENT • OPERATIONAL • NIM

<TCMLTCCA>	This parameter is used to enable/disable LTC consecutive action. Valid values are: • Y • N	
<TCMTIMCA>	This parameter is used to enable/disable TIM consecutive action. Valid values are: • Y • N	
PST	Primary Administrative State of ODU controller. The valid combinations are:-	
• OOS-MA	Out of service and Management	
• OOS-AUMA	Out of service and Autonomous management	
• OOS-AU	Out of Service and Autonomous	
• IS-NR	In Service - Normal	
SST	Secondary Admin State of ODU controller. The valid values are :-	
• DSBLD	Disabled	
• MT	Maintenance	
• FLT	Fault	
• LPBK	Loopbacked	
• AINS	Automatic-In-Service	
GCC0	This parameter configures the GCC0 value. Valid value are:- • Y: "enable" • N: "disable".	
TRIGTH	It is the Trigger threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <3-9> respectively.	
TRIGWINDOW	Proactive Trigger window , it is the No. of times threshold crossing is tested, Integration window for FRR trigger in ms	
RVRTTH	It is the Revert threshold in the form xE-y where value 'x' and 'y' have range <1-9> and <4-10> respectively.	
RVRTWINDOW	Proactive Revert window , it is the No. of times threshold crossing is tested, Integration window for FRR revert in ms	
OSPF	If the controller is to be added to ospf topology Valid values are Y/N	
NNI	Configuring nni type for out controller in ospf topology . Valid values are : sm, pm,	

tcm1,

tcm2,

tcm3,

tcm4,

tcm5,

tcm6

6.1.12Retrieve ODU group

The enter command is used in the creation of an ODU group instance.

Usage Guideline
None

Category
Ports

Security
Provisioning

Input Format
RTRV-ODG:<TID>:<AID>:<CTAG>;

Input Example
RTRV-ODG::ODG-13:1;

Input Parameters

AID   This parameter specifies the identifier for the ODU group that needs to be retrieved.

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>,[<ODU_TYPE>]::[ROLE=<ROLE>],[WRCTRID=<WRCTRID>],[WRCTRROLE=<WRCTRROLE>],[PRTCTRI
D=<PRTCTRID>],[PRTCTRROLE=<PRTCTRROLE>],[RSCTRID=<RSCTRID>],[RSCTRROLE=<RSCTRROLE>],[CO

NMODE=<CONMODE>],[PROTTYPE=<PROTTYPE>],[TCMID=<TCMID>],[RVRTV=<RVRTV>],[PRTHOTM=<PRT HOTM>],[RVTM=<RVTM>]";

Output Example
10.78.161.183 1970-12-03 18:18:12
M   1 COMPLD

"ODG-1,ODU2E:WRCTRID=ODU-0-7-0-1,WRCTRROLE=NOT-ACTIVE,PRCTRID=ODU-0-7-0-4,PRTCTRROLE=NOT-ACTIVE,CONMODE=SNC-N,PROTTYPE=APSBIDI,RVRTV=N,PRTHOTM=0,RVTM=0.0"
;

Output Parameters
The parameters are as described below:

AID	This parameter specifies the identifier for the ODU group that needs to be configured.
WRCTRID	This parameter specifies the identifier for the working ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
WRCTRROLE	This parameter specifies the role of the working ODU controller which forms part of the ODU Group. Valid values for the same can be as follows: - N_O Not Set - W Working - P Protect - R Restore
PRTCTRID	This parameter specifies the identifier for the protecting ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
PRCTRROLE	This parameter specifies the role of the working ODU controller which forms part of the ODU Group. Valid values for the same can be as follows: - N_O Not Set - W Working - P Protect - R Restore
RSTCTRID	This parameter specifies the identifier for the restore ODU controller which forms part of the ODU Group. This is of the type Access identifier for ODUs.
RSCTRROLE	This parameter specifies the role of the working ODU controller which forms part of the ODU Group. Valid values for the same can be as follows: - N_O Not Set - W Working - P Protect

	• R	Restore

CONMODE	Specifies the connection mode (protection attribute) for the ODU group. Valid values for the same can be: • snc-i Inherent Secure Network Communication • snc-n Sub Network Secure Network Communication • snc-s Non Intrusive Secure Network Communication
PROTTYPE	Specifies the protection type for the ODU group. Valid values for the same can be as follows: • APSbidi 1+1 bi-directional Automatic Protection Switching • APSuni 1+1 unidirectional Automatic Protection Switching • noAPSuni 1+1 no Automatic Protection Switching
RVRTV	Specifies the protection mode. Valid values for the same can be : • N: (nonrevertive) Protection switching system does not revert service to the original line after restoration. • Y: (revertive) protection switching system reverts service to the original line after restoration.
PRTHOTM	Specifies the value to be configured for the hold off protection timer. Valid value for the same can be 100-10000 milli seconds.
RVTM	Specifies the value to be configured for the wait to restore protection timer. Valid value for the same can be 0 or 5 to 12 minutes.

6.1.13 Retrieve PRBS

Usage Guideline
RTRV-PRBS-<ODU_TYPE> command is used to retrieve the configured PRBS parameters for ODU controllers.

Category
Ports

Security
Provisioning

Input Format
RTRV-PRBS-<ODU_TYPE>:<TID>:<AID>:<CTAG>;

Input Example
rtrv-prbs-odu2::odu-0-7-0-3:1;

Input Parameters

AID	This parameter specifies the identifier for the ODU group that needs to be retrieved.

Output Format

SID DATE TIME

M CTAG COMPLD

"<AID>::[PRBSMDE=<PRBSMDE>],[PRBSGENPATTERN=<PRBSGENPATTERN>],[PATTERNSYNCSTATUS=<PATTERNSYNCSTATUS>";

Output Example

> rtrv-prbs-odu2::odu-0-7-0-3:1;

   10.78.161.183 1971-06-02 13:48:42

M   1 COMPLD

   "ODU-0-7-0-3:::PRBSMODE=SRC-SINK,PRBSGENPATTERN=PRBS-11,PATTERNSYNCSTATUS=PATTERN-ERROR"

;

>

Output Parameters

The parameters are as described below:

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0 | ODU1 | ODU2 | ODU3 | ODU4 | ODU1E | ODU2E | ODU3E1 | ODU3E2 | ODUFlex | ODU1F | ODU2F,
AID	This is ODU access identifier. This identifier is of the type FACILITY.
<PRBSMDE>	Identify the mode for PRBS test. It has no default value.
• SRC	The port will start generating continuously the configured PRBS pattern in the egress ODU payloads on the port
• SINK	The port will detect ingress PRBS patterns and analyze against the configured pattern to peg PRBS statistics counters.
• SRC-SINK	The port will simultaneously act as the Source as well as Sink for the configured PRBS pattern.
<PRBSGENPATTERN>	Identifies the type of PRBS generator pattern. It has no default value.
• PRBS-11	PN 11 pattern

•	PRBS-23	PN 23 pattern
•	PRBS-31	PN 31 pattern
•	PRBS-INV-11	PN 11 pattern inverted
•	PRBS-INV-31	PN 31 pattern inverted
<PATTERNSYNCSTATUS>		Pattern sync status. It can be of the following type:-
•	PATTERN-NONE	No pattern
•	PATTERN-OK	Generated and received pattern matched
•	PATTERN-ERROR	Generated and received pattern do not match

6.2 Delete

6.2.1 Delete port

The delete command deletes the specific port that has been specified in the command. The delete command from facility management can be used to delete the following kinds of ports - GIGE,10GIGE, 10GIEGL2*,   OC3, OC12, 40GIGE, 100GIGE, OC48, OC192,   STM1, STM4, STM16 ,STM64,   VC416c,VC464c, STS192c,STS48c, OTU1, OTU1E ,OTU1F, OTU2, OTU2E, OTU2F, OTU3, OTU3E1 , OTU4,   .

Usage Guidelines
mod2fac = OTU: Deletes both OTU and ODU created through ENT-OTU cmd.

Category
Ports

Security
Provisioning

Input Format
DLT-<mod2fac>:<TID>:<AID>:<CTAG>[::::];

Input Example
DLT-100GIGE:100G-LC-C:FAC-3-1-1:1;

Input Parameters

< mod2fac>	This parameter specifies the port that needs to be deleted. Valid values for the same can be: GIGE,10GIGE,40GIGE,100GIGE, OC3, OC12, OC48, OC192, STM1, STM4, STM16, STM64, OTU1, OTU1E, OTU1F, OTU2, OTU2E, OTU2F, OTU3, OTU4, , 8GFC, 10GFC, OTU1, OTU1E, OTU2, OTU2E, OTU3, OTU4

6.2.2 Delete channelized ODU

The delete command deletes the specific channelized ODU controller that has been specified in the command.

Usage Guidelines
mod2fac = ODU: Deletes channelized ODUs only.

Category
Ports

Security
Provisioning

Input Format
DLT-<mod2fac>:<TID>:<AID>:<CTAG>::<PARENTNM>[::];

Where mod2fac: ODU0, ODU1, ODU2, ODU3, ODU1e, ODU2e,   ODU3e2

Input Example
DLT-ODU1::ODU-3-1-1-0-11:1::ODU2;

Input Parameters

< mod2fac>	This parameter specifies the channelized ODU controller that needs to be deleted. Valid values for the same can be:ODU0,ODU1,ODU2,ODU3
AID	This is ODU access identifier. This identifier is of the type FACILITY. Valid values/format specified in Section 11.
PARENTNM	Parent ODU which is to be channelized. Valid values are ODU1 , ODU2 , ODU3 , ODU4.

6.2.3 Delete ODU Group

The delete command is for deleting an ODU group.

Usage Guideline
None

Category
Ports

Security
Provisioning

Input Format
DLT- ODG:<TID>:<AID>:<CTAG>[::::];

Input Example
DLT-ODG:HSNAME:ODG-2:1;

Input Parameters

AID	This parameter specifies the identifier for the ODU group that needs to be deleted. This is of the format ODU Group as specified in the Access Identifier section.

Chapter7. Cross Connect Management

7.1 Enter Cross Connect

This command is used to create a cross connect between ODUk - ODUk, ODUk – ODUGroup or ODUGroup – ODUGroup.

Usage Guidelines
None

Category
Cross Connections

Security
Provisioning

Input Format
ENT-CRS-<ODU_TYPE>:[<TID>]:<FROM>,<TO>:<CTAG>:::[CKTID=<CKTID>][:];

Input Example
ENT-CRS-ODU1::ODU-0-7-0-0,ODU-0-7-0-1:1:::CKTID=ABCD;

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0, ODU1, ODU1E, ODU2, ODU2E, ODU1F, ODU2F, ODU3, ODU4, ODUFlex
FROM	Access identifier for the ingress point of the tunnel. Valid values can be the ids for ODU or ODUgroup. The valid values for this can be strings providing identification for the ODU or an ODG. The string can be of the form <ODU_TYPE>-R-S-I-P-*-*-* for an ODU (where *-*-* is used in case of channelization) and for an ODU group it is of the form specified in the Access Identifier section.
TO	Access identifier for the engress point of the tunnel. Valid values can be the ids for ODU or ODUgroup. The valid values for this can be strings providing identification for the ODU or an ODG. The string can be of the form <ODU_TYPE>>-R-S-I-P-*-*-* for an ODU (where *-*-* is used in case of channelization) and for an ODU group it is of the form specified in the Access Identifier section.
CKTID	Specifies the cross connect id identifying the cross-connect entered by this command. Valid value is a string .This need not be unique in the system.

7.2 Delete Cross Connect

Usage Guidelines
None

Category
Cross Connections

Security
Provisioning

Input Format
DLT-CRS-<ODU_TYPE>:[<TID>]:<FROM>,<TO>:<CTAG>:::[CKTID=<CKTID>][:];

Input Example
DLT-CRS-ODU1::ODU-0-7-0-0,ODU-0-7-0-1:1:::CKTID=ABCS;

Input Parameters

FROM	Access identifier for the ingress point of the tunnel. Valid values can be the ids for ODU or ODUgroup. The valid values for this can be strings providing identification for the ODU or an ODG. The string can be of the form <ODU_TYPE>-R-S-I-P-*-*-* for an ODU (where *-*-* is used in case of channelization) and for an ODU group it is of the form specified in the Access identifier seciton.
TO	Access identifier for the engress point of the tunnel. Valid values can be the ids for ODU or ODUgroup. The valid values for this can be strings providing identification for the ODU or an ODG. The string can be of the form <ODU_TYPE>-R-S-I-P-*-*-* for an ODU (where *-*-* is used in case of channelization) and for an ODU group it is of the form specified in the Access identifier seciton.
CKTID	Specifies the cross connect id identifying the cross-connect that needs to be deleted by this command. Valid value is a string.

7.3 Retrieve Cross Connect

This will retrieve the details of cross connections with id=cross connect id.

Usage Guidelines
None

Category
Cross Connections

Security
Provisioning

Input Format
RTRV-CRS-<ODU_TYPE>:[<TID>]:<AID>:<CTAG>:::[CKTID=<CKTID>][:];

Input Parameters

ODU_TYPE	This parameter specifies the specific ODU type. Valid values for this can be ODU0, ODU1, ODU1E, ODU2, ODU2E, ODU1F, ODU2F, ODU3, ODU4, ODUFlex
AID	ODU Acess identifier. Valid format of the ODU access identifier is specified in Section 11. This is the ODU ID of one of the ingress or egress endpoints of the cross connect. The cross connect configuration retrieved will be for the cross connect moving across the endpoint referred in AID.
CKTID	Specifies the cross connect id identifying the cross-connect that needs to be retrieved by this command. Valid value is a string.

Output Format
SID DATE TIME
M CTAG COMPLD
"<SRC>,<DST>:<CCT>,<CRSTYPE>:[CKTID=<CKTID>]:<PST>[,<SST>]";

Output Example
Node1 1998-06-20 14:30:00
M 001 COMPLD
"ODU-0-0-0-0,ODG-1:2WAY,ODU1:CKTID=11:IS-NR"
;

Output Parameters
The parameters are as described in section 8.1. the additional parameters are described below:

<AID>	Access identifier that can be Facility or ALL. The ALL AID defaults to NE, which means it reports all the existing cross-connections on the NE.
<CCT>	Type of connection.
2WAY	A bidirectional connection between the two tributaries.
<CRSTYPE>	The cross-connection type. Valid values are ODU0, ODU1, ODU1E, ODU2E, ODU2, ODU3, ODU4, ODUFLEX

<PST>,<SST>	Primary and secondary states of cross connect. Valid values:	

- DP Programmed:IS-NR
- DP NotProgrammed: OOS,DSBLD

7.4 Retrieve all Cross Connect

This will retrieve the details of all cross connection irrespective of the ODU Type.

Usage Guidelines
None

Category
Cross Connections

Security
Provisioning

Input Format
RTRV-CRS:[<TID>]:<AID>:<CTAG>:::[CKTID=<CKTID>][:];

Input Parameters

AID	Access identifier. This is the ODU ID of one of the endpoints whether ingress or egress points of the cross connect. The cross connect configuration retrieved will be for the cross connect moving across the endpoint referred in AID.
CKTID	Specifies the cross connect id identifying the cross-connect that needs to be retrieved by this command. Valid value is a string.

Output Format
SID DATE TIME
M CTAG COMPLD
"<SRC>,<DST>:<CCT>,<CRSTYPE>:[CKTID=<CKTID>]:<PST>[,<SST>]"
;

Output Example
Node1 1998-06-20 14:30:00
M 001 COMPLD
"ODU-0-0-0-0,ODG-1:2WAY,ODU1:CKTID=11:IS-NR"
;

Output Parameters

The parameters are as described in section 8.1. the additional parameters are described below:

<AID>	Access identifier that can be Facility or ALL. The ALL AID defaults to NE, which means it reports all the existing cross-connections on the NE.
<CCT>	Type of connection.
2WAY	A bidirectional connection between the two tributaries.
<CRSTYPE>	The cross-connection type. Valid values are ODU0, ODU1, ODU1E, ODU2E, ODU2, ODU3, ODU4, ODUFLEX, ODU1F, ODU2F
<PST>,<SST>	Primary and secondary states of cross connect. Valid values: DP Programmed:IS-NR DP NotProgrammed: OOS,DSBLD
CKTID	Specifies the cross connect id identifying the cross-connect entered by this command. Valid value is a string .This need not be unique in the system.

Chapter8. Loopback Management

8.1 Operate Loopback

Usage Guidelines
None

Category
Troubleshooting

Security
Maintenance

Input Format
OPR-LPBK-<MOD2>:[<TID>]:<SRC>:<CTAG>: [<LOCATION>],,,[<LPBKTYPE>];

Input Example
OPR-LPBK-ODU1::ODU-0-13-0-1:1::NEND;

Input Parameters

SRC	Source identifier
MOD2	ODU0 , ODU1 , ODU1E , ODU2 , ODU2E , ODU3 , ODU1F, ODU2F, ODU3E2 , ODU4 , ODUFlex , OC48 , OC192 , OC3, OC12, OTU1 , OTU1E , OTU2, OTU2E , OTU3E1 , OTU3E2 , OTU4, OTU1F, OTU2F, OTV3, STM16 , STM 64, STM1, STM4, STS48c, STS192c, VC416c, VC464c, OTUC4
LOCATION	Currently on NEND option is supported.
LPBKTYPE	This is the type of loopback. Valid values are: • FACILITY, • TERMINAL, FACILITY is default, when no optional LPBKTYPE parameter is provided.

8.2 Release Loopback

Usage Guidelines
None

Category
Troubleshooting

Security
Maintenance

Input Format
RLS-LPBK-<MOD2>:[<TID>]:<SRC>:<CTAG>::[LOCATION],,,[<LPBKTYPE>];

Input Example
RLS-LPBK-ODU1::ODU-0-13-0-1:1::NEND;

Input Parameters

SRC	Source identifier
MOD2	ODU0 , ODU1 , ODU1E , ODU2 , ODU2E , ODU3 , ODU1F, ODU2F,
	ODU3E2 , ODU4 , ODUFlex , OC48 , OC192 , OC3, OC12, OTU1 , OTU1E , OTU2 , OTU2E , OTU3E1 , OTU3E2 , OTU4 , STM1, STM16 , STM64 , STS48c , STS192c , VC416c , VC464c, OTUC4
LOCATION	As of now default value of LOCATION is NEND. This parameter is not applicale for STS and VC.
LPBKTYPE	This is the type of loopback.
	Valid values are:
	• FACILITY
	• TERMINAL

Chapter9. Performance Monitoring

9.1   INIT-REG-<MOD2>

Initialize Register for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3 , OC12, OC48, OC192,   STM1, STM4, STM16, STM64, STS48c, STS192c, VC416c, VC464c ,ODU0, ODUFlex, OTUk, ODUk where k= {1-4,1E,2E,1F,2F,3E1,3E2,C2,C4*}. (INIT-REG-<MOD2>) command initializes the performance monitoring (PM) registers.

Usage Guidelines
All cards support only the receive (RCV) direction.

BTH is not supported for this command.

Category
Performance

Security
Provisioning

Input Format
INIT-REG-<MOD2>:[<TID>]:<AID>:<CTAG>::,,,,[<tmper>::]
;

Input Examples
INIT-REG-OTU1:CISCO:FAC-0-0-0-0:1:;

Input Parameters

<AID>	Access identifier. All of the Facility AIDs are supported.
TMPER	Clear either 15-min or 24-hr counters. Default value is 15-min.
15-min	Clear 15-min counters.
1-day	Clear 24-hr counters

9.2   RTRV-PM-<MOD2>

The Retrieve Performance for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3,OC12,OC48, OC192,   STM1, STM4, STM16, STM64, STS48c, STS192c, VC416c, VC464c, ODU0, ODUFlex, OTUk, ODUk where k={1-4,1E,2E,1F,2F,3E1,3E1,C2,C4*} (RTRV-PM-<MOD2>) command retrieves the values of PM parameters for a specified card type.

Usage Guidelines

•   The format of MONDAT is MM-DD, where MM (month of the year) ranges from 1 to 12 and DD (day of the month) ranges from 1 to 31.

•   The format for MONTM is HH-MM, where HH (hour of the day) ranges from 0 to 23 and MM (minute of the hour) ranges from 0 to 59.

•   If there are no errors to report, the response will be COMPLD (completed).

•   If the TMPER is 1-DAY, MONTM is not applicable (null), and is treated as null if MONTM is not null.

•   A null value for MONDAT defaults to the current date (MM-DD).

•   A null value for MONTM defaults to the current time (HH-MM).

Category
Performance

Security
Retrieve

Input Format
RTRV-PM-<MOD2>:[<TID>]:<AID>:<CTAG>::

[<MONTYPE>],[MONLEV],[<LOCN>],[DIRECTION],[<TMPER>],[<DATE>],[<TIME>];

Input Example
RTRV-PM-OTU1:TID:OTU1-0-0-0-0:123::;

Input Parameters

<AID>	Access identifier. All of the STS, VT1, Facility, and DS1 AIDs are supported.
<MONTYPE>	Monitored type. A null value defaults to all montypes applicable to the modifier. The parameter type is ALL_MONTYPE, which is the monitoring type list.
	The valid values are :-
	OTN OTUk = BBE-SM, BBER-SM, ES-SM, ESR-SM, FC-SM, SES-SM, SESR-SM, UAS-SM,
	OTN ODUk = BBE-PM, BBER-PM, ES-PM, ESR-PM, FC-PM, SES-PM, SESR-PM, UAS-PM,

PRBS = EBC, FOUND-COUNT, LOST-COUNT

FEC = BIEC, UNC-WORDS,

OC : CVS,ESS,SESS,SEFSS,CVL,ESL,SESL,UASL,FCL,

STS : ESP,SESP,UASP,CVP,

STM : RS-EB, RS-ES, RS-ESR, RS-SES, RS-SESR, RS-BBE, RS-BBER, RS-UAS, MS-EB, MS-ES, MS-ESR, MS-SES, MS-SESR, MS-MS-BBE, MS-BBER, MS-UAS,

VC : HP-EB, HP-ES, HP-ESR, HP-SES, HP-SESR,HP-BBE, HP-BBER, HP-UAS

OTU, FEC = biec, unc-words,

OPTICS =   lbcl-min, lbcl-max, lbcl-avg,

Opt-min, opt-max, opt-avg,

Opr-min, opr-max, opr-avg.

GFP = gfpStatsRxBitErrors, gfpStatsRxTypeInvalid, gfpStatsRxCRCErrors, gfpStatsLFDRaised, gfpStatsCSFRaised

ETHER = rxTotalPkts,   etherStatsPkts ,   etherStatsOctets, etherStatsOversizePkts, dot3StatsFCSErrors, dot3StatsFrameTooLong, etherStatsJabbers, etherStatsPkts64Octets, etherStatsPkts65to127Octets, etherStatsPkts128to255Octets, etherStatsPkts256to511Octets, etherStatsPkts512to1023Octets, etherStatsPkts1024to1518ctets,   ifInUcastPkts, ifInMulticastPkts, ifInBroadcastPkts, ifOutUcastPkts, ifOutBroadcastPkts, ifOutMulticastPkts, txTotalPkts, ifOutOctets,   ifInErrors , ifInOctets ,etherStatsMulticastPkts, etherStatsBroadcastPkts, etherStatsUndersizePkts

<MONLEV>	(Optional) The discriminating level of the requested monitored parameter in the format of LEVEL-DIRN, where LEVEL is the measured value of the monitored parameter (MONVAL) and DIRN is the type of direction. A NULL value defaults to 1-UP. MONLEV is a string.
<LOCN>	Location associated with a particular command in reference to the entity identified by the AID. A null value defaults to NEND. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility
• NEND	Action occurs on the near end of the facility
<DIRECTION>	Currently not supported.
<TMPER>	Accumulation time period for performance counters. If TMPER is 1-DAY, MONTH is not applicable (null), and is treated as null. A null value defaults to 15-MIN. The parameter type is TMPER, which is the accumulation time period for the performance management center.
• <1-DAY>	Performance parameter accumulation interval length every 24-hour.
• <15-MIN>	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.

<DATE>	The beginning date of the PM or storage register period specified in TMPER. The format of DATE is MM-DD, where MM (month of year) ranges from 1 to 12 and DD (day of month) ranges from 1 to 31. A null value defaults to current date.
<TIME>	The beginning time of day of the PM or storage register period specified in TMPER. The format of TIME is HH-MM, where HH (hour of day) ranges from 0 to 23 and MM (minute of hour) ranges from 0 to 59. A null value defaults to current time.

Output Format
SID DATE TIME
   M CTAG COMPLD

"<AID>,[<AIDTYPE>]:<MONTYPE>,<MONVAL>,[VALIDITY],[<LOCN>],[DIRECTION],[<TMPER>],[<MONDAT>],
[<MONTM>]"

;

Output Example
SC1 2014-08-24 00:21:45

   M   1 COMPLD

   "FAC-0-8-0-0,OC48:ESL,0,PRTL,NEND,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:SESL,0,PRTL,NEND,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:UASL,105,PRTL,NEND,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:CVL,0,PRTL,NEND,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:FCL,1,PRTL,NEND,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:ESS,105,PRTL,,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:SESS,105,PRTL,,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:SEFSS,0,PRTL,,,15-MIN,8-24,0-21"

   "FAC-0-8-0-0,OC48:CVS,0,PRTL,,,15-MIN,8-24,0-21"

;

Output Parameters

Please see below for layer specific output parameter.

OTN	•	BBE-SM
	•	BBER-SM
	•	ES-SM
	•	ESR-SM
	•	FC-SM
	•	SES-SM
	•	SESR-SM
	•	UAS-SM
	•	BBE-PM
	•	BBER-PM
	•	ES-PM
	•	ESR-PM
	•	FC-PM
	•	SES-PM
	•	SESR-PM
	•	UAS-PM
	•	PRBS specific counters are: - EBC - FOUND-COUNT - LOST-COUNT
OPTICS	•	LBCL-MIN
	•	LBCL-AVG
	•	LBCL-MAX
	•	OPT-MIN
	•	OPT-AVG
	•	OPT-MAX
	•	OPR-MIN
	•	OPR-AVG
	•	OPR-MAX
FEC	•	BIEC
	•	UNC-WORDS
GFP	•	gfpStatsRxBitErrors
	•	gfpStatsRxTypeInvalid
	•	gfpStatsRxCRCErrors
	•	gfpStatsLFDRaised
	•	gfpStatsCSFRaised
OCN	•	CVS

	• ESS
	• SESS
	• SEFSS
	• CVL
	• ESL
	• SESL
	• UASL
	• FCL
STS	• ESP
	• SESP
	• CVP
	• UASP
STM	• RS-EB
	• RS-ES
	• RS-ESR
	• RS-SES
	• RS-SESR
	• RS-BBE
	• RS-BBER
	• RS-UAS
	• MS-EB
	• MS-ES
	• MS-ESR
	• MS-SES
	• MS-SESR
	• MS-BBE
	• MS-BBER
	• MS-UAS
VC	• HP-EB
	• HP-ES
	• HP-ESR
	• HP-SES
	• HP-SESR
	• HP-BBE
	• HP-BBER
	• HP-UAS
Ethernet	• rxTotalPkts

- etherStatsPkts
- ifInOctets
- etherStatsOctets
- etherStatsOversizePkts
- dot3StatsFCSErrors
- dot3StatsFrameTooLong
- etherStatsJabbers
- etherStatsPkts64Octets
- etherStatsPkts65to127Octets
- etherStatsPkts128to255Octets
- etherStatsPkts256to511Octets
- etherStatsPkts512to1023Octets
- etherStatsPkts1024to1518ctets
- ifInUcastPkts, ifInMulticastPkts
- ifInBroadcastPkts
- ifOutUcastPkts
- ifOutBroadcastPkts
- ifOutMulticastPkts
- txTotalPkts
- ifOutOctets
- ifInOctets
- etherStatsMulticastPkts
- etherStatsBroadcastPkts
- etherStatsUndersizePkts

<AID>	Access identifier
<AIDTYPE>	(Optional) Type of facility, link, or other addressable entity targeted by the message. The parameter type is MOD2B, which is the alarm type.
• GIGE	1 Gigabit Ethernet.
• 10GIGE	10-Gigabit Ethernet
• 40GIGE	40-Gigabit Ethernet
• 100GIGE	100-Gigabit Ethernet
• OCn	OCn facility, where n = 3,12,48,192,768
• STMn	STMn facility, where n = 1,4,16,64,256
• STS48c	STS48c facility
• STS192c	STS192c facility

•	VC416c	VC416c facility
•	VC464c	VC464c facility
•	OTUk	Optical Transport Unit Level k, where k = 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, 1F, 2F, C2,C4*
•	ODUk	Optical Data Unit level k where k = 0, 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, Oduflex, 1F, 2F, C2, C4*
•	OPTICS	Optical facility
<MONTYPE>		Monitored type. The parameter type is ALL_MONTYPE, which is the monitoring type list.
<MONVAL>		The value to which the register identified by MONTYPE is to be initialized to or the measured value of a monitored parameter. The value is in the form of numeric counts or rates. MOVAL is a string.
<VLDTY>		(Optional) Indicates whether the information for the specified time period was accumulated over the entire time period or some portion thereof. Validity indicator for the reported PM data. The parameter type is VALIDITY, which is the response validity.
COMPL		Complete response
PRTL		Partial response
<LOCN>		(Optional) Location associated with a particular command. The parameter type is LOCATION, which is the location where the action is to take place
•	FEND	Action occurs on the far end of the facility.
•	NEND	Action occurs on the near end of the facility.
<DIRECTION>		Currently not supported.
<TMPER>		(Optional) Accumulation time period for performance counters. The parameter type is TMPER, which is the accumulation time period for the performance management center.
•	1-DAY	Performance parameter accumulation interval length; every 24-hours.
•	15-MIN	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.
<MONDAT>		(Optional) The beginning date of the PM or storage register period specified in TMPER. The format of MONDAT is MM-DD, where MM (month of year) ranges from 1 to 12 and DD (day of month) ranges from 1 to 31. MONDAT is a string.
<MONTM>		(Optional) The beginning time of day of the PM or storage register period specified in TMPER. The format of MONTM is HH-MM, where HH (hour of day) ranges from 0 to 23 and MM (minute of hour) ranges from 0 to 59. MONTM is a string.

9.3   RTRV-PM-ALL

The Retrieve Performance Monitoring All (RTRV-PM-ALL) command retrieves the values of all the performance monitoring parameters for the specified AID. When the ALL AID is used, the response will include the PM parameters for all cards and ports in the chassis.

Usage Guidelines

•   The format of MONDAT is MM-DD, where MM (month of the year) ranges from 1 to 12 and DD (day of the month) ranges from 1 to 31.

•   The format for MONTM is HH-MM, where HH (hour of the day) ranges from 0 to 23 and MM (minute of the hour) ranges from 0 to 59.

•   If the TMPER is 1-DAY, MONTM is not applicable (null), and is treated as null if MONTM is not null.

•   A null value for MONDAT defaults to the current date (MM-DD).

•   A null value for MONTM defaults to the current time (HH-MM).

Category
Performance

Security
Retrieve

Input Format
RTRV-PM-ALL:[<TID>]:<AID>:<CTAG>::[<MONTYPE>],[MONLEV],[<LOCN>],,[<TMPER>],[<DATE>],[<TIME>];

Input Example
RTRV-PM-ALL:TID:FAC-2-1-1-1:123::BBER-SM,NEND,15-MIN;

Input Parameters

<AID>	Access identifier. The DS1 AID is used to access .FAC-[RACk]-[SLOT]-[INSTANCE]-[PORT] or ODU-[RACK]-[SLOT]-[INSTANCE]-[PORT]
<MONTYPE>	Monitored type. A null value defaults to all montypes applicable to the modifier.
	The valid values are :-
	OTN OTUk = BBE-SM, BBER-SM, ES-SM, ESR-SM, FC-SM, SES-SM, SESR-SM, UAS-SM,
	OTN ODUk = BBE-PM, BBER-PM, ES-PM, ESR-PM, FC-PM, SES-PM, SESR-PM, UAS-PM,
	PRBS = EBC, FOUND-COUNT, LOST-COUNT

FEC = BIEC, UNC-WORDS,

OC : CVS,ESS,SESS,SEFSS,CVL,ESL,SESL,UASL,FCL,

STS : ESP,SESP,UASP,CVP,

STM : RS-EB, RS-ES, RS-ESR, RS-SES, RS-SESR, RS-BBE,
RS-BBER, RS-UAS, MS-EB, MS-ES, MS-ESR, MS-SES, MS-SESR,
MS-MS-BBE, MS-BBER, MS-UAS,

VC : HP-EB, HP-ES, HP-ESR, HP-SES, HP-SESR,HP-BBE,
HP-BBER, HP-UAS

OTU, FEC = biec, unc-words,

OPTICS = lbcl-min, lbcl-max, OPT-AVG,

 opt-MIN, OPT-MAX, OPT-AVG,

 opr-MIN, OPR-MAX, OPR-AVG.

GFP = gfpStatsRxBitErrors, gfpStatsRxTypeInvalid,
gfpStatsRxCRCErrors, gfpStatsLFDRaised, gfpStatsCSFRaised

ETHER = rxTotalPkts,   etherStatsPkts, ifInOctets,
etherStatsOctets,etherStatsOversizePkts, dot3StatsFCSErrors,
dot3StatsFrameTooLong, etherStatsJabbers, etherStatsPkts64Octets,
etherStatsPkts65to127Octets, etherStatsPkts128to255Octets,
etherStatsPkts256to511Octets, etherStatsPkts512to1023Octets,
etherStatsPkts1024to1518ctets,   ifInUcastPkts, ifInMulticastPkts,
ifInBroadcastPkts, ifOutUcastPkts, ifOutBroadcastPkts,
ifOutMulticastPkts, txTotalPkts, ifOutOctets,   ifInOctets
,etherStatsMulticastPkts, etherStatsBroadcastPkts,
etherStatsUndersizePkts

<MONLEV>	(Optional) The discriminating level of the requested monitored parameter in the format of LEVEL-DIRN, where LEVEL is the measured value of the monitored parameter (MONVAL) and DIRN is the type of direction. A NULL value defaults to 1-UP. MONLEV is a string.
<LOCN>	Location associated with a particular command in reference to the entity identified by the AID. A null value defaults to NEND. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility
• NEND	Action occurs on the near end of the facility
<DIRECTION>	Currently not supported.
<TMPER>	Accumulation time period for performance counters. If TMPER is 1-DAY, MONTM is not applicable (null), and is treated as null. A null value defaults to 15-MIN. The parameter type is TMPER, which is the

	accumulation time period for the performance management center.	**Output Format** SID DATE TIME
• <1-DAY>	Performance parameter accumulation interval length; every 24-hours.	M CTAG COMPLD "<AID>,[<AIDTYPE >]:<MONTYPE>,< MONVAL>,[<LOCN >],,
• <15-MIN>	Performance parameter accumulation interval length; every 15 minutes. There are 32 MIN15 buckets of history data available for this accumulation interval length.	[<TMPER>],[<MON DAT>],[<MONTM>] " ;
<DATE>	The beginning date of the PM or storage register period specified in TMPER. The format of DATE is MM-DD, where MM (month of year) ranges from 1 to 12 and DD (day of month) ranges from 1 to 31. A null value defaults to current date.	
<TIME>	The beginning time of day of the PM or storage register period specified in TMPER. The format of TIME is HH-MM, where HH (hour of day) ranges from 0 to 23 and MM (minute of hour) ranges from 0 to 59. A null value defaults to current time.	**Output Example** CHASSIS1 2014-05-26 05:13:11 M 1 COMPLD "FAC-0-8-0-6,OT

```
U1:BBE-SM,0,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:BBER-SM,0.00,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:ES-SM,0,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:ESR-SM,0.00,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:FC-SM,0,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:SES-SM,0,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:SESR-SM,0.00,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:UAS-SM,0,NEND,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:BIEC,0,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OTU1:UNC-WORDS,0,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:LBCL-MIN,0,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:LBCL-AVG,0,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:LBCL-MAX,0,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPT-MIN,-inf,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPT-AVG,-inf,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPT-MAX,-inf,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPR-MIN,-inf,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPR-AVG,-inf,,,15-MIN,5-26,5-13"
   "FAC-0-8-0-6,OPTICS:OPR-MAX,-inf,,,15-MIN,5-26,5-13"

;
```

Output Parameters

Please see below for layer specific output parameter.

OTN	• BBE-SM
	• BBER-SM
	• ES-SM
	• ESR-SM
	• FC-SM
	• SES-SM
	• SESR-SM

	• UAS-SM
	• BBE-PM
	• BBER-PM
	• ES-PM
	• ESR-PM
	• FC-PM
	• SES-PM
	• SESR-PM
	• UAS-PM
	PRBS specific counters are:
	• EBC
	• FOUND-COUNT
	• LOST-COUNT
OPTICS	• LBCL-MIN
	• LBCL-AVG
	• LBCL-MAX
	• OPT-MIN
	• OPT-AVG
	• OPT-MAX
	• OPR-MIN
	• OPR-AVG
	• OPR-MAX
FEC	• BIEC
	• UNC-WORDS
GFP	• gfpStatsRxBitErrors
	• gfpStatsRxTypeInvalid
	• gfpStatsRxCRCErrors
	• gfpStatsLFDRaised
	• gfpStatsCSFRaised
OCN	•
	• CVS
	• ESS
	• SESS
	• SEFSS
	• CVL
	• ESL
	• SESL

	•	UASL
	•	FCL
STS	•	ESP
	•	SESP
	•	CVP
	•	UASP
STM	•	RS-EB
	•	RS-ES
	•	RS-ESR
	•	RS-SES
	•	RS-SESR
	•	RS-BBE
	•	RS-BBER
	•	RS-UAS
	•	MS-EB
	•	MS-ES
	•	MS-ESR
	•	MS-SES
	•	MS-SESR
	•	MS-BBE
	•	MS-BBER
	•	MS-UAS
VC	•	HP-EB
	•	HP-ES
	•	HP-ESR
	•	HP-SES
	•	HP-SESR
	•	HP-BBE
	•	HP-BBER
	•	HP-UAS
Ethernet	•	RxTotalPkts
	•	etherStatsPkts
	•	etherStatsOctets
	•	etherStatsOversizePkts
	•	dot3StatsFCSErrors
	•	dot3StatsFrameTooLong
	•	etherStatsJabbers
	•	etherStatsPkts64Octets

- etherStatsPkts65to127Octets
- etherStatsPkts128to255Octets
- etherStatsPkts256to511Octets
- etherStatsPkts512to1023Octets
- etherStatsPkts1024to1518ctets
- ifInUcastPkts, ifInMulticastPkts
- ifInBroadcastPkts
- ifOutUcastPkts
- ifOutBroadcastPkts
- ifOutMulticastPkts
- txTotalPkts
- ifOutOctets
- ifInOctets
- etherStatsMulticastPkts
- etherStatsBroadcastPkts
- etherStatsUndersizePkts

<AID>	Access identifier
<AIDTYPE>	(Optional) Type of facility, link, or other addressable entity targeted by the message. The parameter type is MOD2B, which is the alarm type.
• GIGE	1 Gigabit Ethernet.
• 10GIGE	10-Gigabit Ethernet
• 40GIGE	40-Gigabit Ethernet
• 100GIGE	100-Gigabit Ethernet
• OCn	OCn facility, where n = 3,12,48,192,768
• STMn	STMn facility, where n = 1,4,16,64,256
• STS48c	STS48c facility
• STS192c	STS192c facility
• VC416c	VC416c facility
• VC464c	VC464c facility
• OTUk	Optical Transport Unit Level k, where k = 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, 1F, 2F, C2,C4*
• ODUk	Optical Data Unit level k where k = 0, 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, Oduflex, 1F, 2F, C2, C4*
• OPTICS	Optical facility

<MONTYPE>	Monitored type. The parameter type is ALL_MONTYPE, which is the monitoring type list.	
<MONVAL>	The value to which the register identified by MONTYPE is to be initialized to or the measured value of a monitored parameter. The value is in the form of numeric counts or rates. MOVAL is a string.	
<VLDTY>	(Optional) Indicates whether the information for the specified time period was accumulated over the entire time period or some portion thereof. Validity indicator for the reported PM data. The parameter type is VALIDITY, which is the response validity.	
•	COMPL	Complete response
•	PRTL	Partial response
<LOCN>	(Optional) Location associated with a particular command. The parameter type is LOCATION, which is the location where the action is to take place	
•	FEND	Action occurs on the far end of the facility.
•	NEND	Action occurs on the near end of the facility.
<TMPER>	(Optional) Accumulation time period for performance counters. The parameter type is TMPER, which is the accumulation time period for the performance management center.	
•	24-HOUR	Performance parameter accumulation interval length; every 24-hours.
•	15-MIN	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.
<MONDAT>	(Optional) The beginning date of the PM or storage register period specified in TMPER. The format of MONDAT is MM-DD, where MM (month of year) ranges from 1 to 12 and DD (day of month) ranges from 1 to 31. MONDAT is a string.	
<MONTM>	(Optional) The beginning time of day of the PM or storage register period specified in TMPER. The format of MONTM is HH-MM, where HH (hour of day) ranges from 0 to 23 and MM (minute of hour) ranges from 0 to 59. MONTM is a string.	

9.4   SCHED-PMREPT-<MOD2>

The Schedule Performance Monitoring Report for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3, OC12, OC48, OC192,   STM1, STM4, STM16, STM64,   STS48c, STS192c, VC416c, VC464c, ODU0, ODUFlex, OTUk, ODUk where k={1-4,1E,2E,1F,2F,3E1,3E2,C2,C4*} (SCHED-PMREPT-<MOD2>) command schedules/reschedules the network element (NE) to report the performance monitoring (PM) data for a line facility path periodically, using the automatic REPT PM message. This command can also remove the previously created schedule.

Usage Guidelines

The automatic PM reporting scheduled by this command is inhibited by default. ALW-PMREPT-ALL can be used to allow the NE to send the PM report. INH-PMREPT-ALL can be used to stop the NE from sending the PM report. The schedules created for the NE can be retrieved by RTRV-PMSCHED command.

The deletion of the schedule for the automatic PM reporting can be done by issuing SCHED-PMREPT-<MOD2> with the NUMREPT parameter equal to zero.

Note

•   The current maximum number of schedules allowed to be created for a NE is 1000. If this number of schedules has been created for the NE, an error message "Reached Limitsof MAX Schedules Allowed. Can Not Add More" will be returned if another schedule creation is attempted on the NE. Frequent use of automatic PM reporting will significantly degrade the performance of the NE.

•   A schedule cannot be created if the card associated with the schedule is not provisioned, or if the cross-connection associated with the schedule has not been created. However, a schedule is allowed to be deleted even if a card is not provisioned, or if the cross-connection has not been created.

•   The number of outstanding PM reports counter (NUMREPT) will not be decremented•   An expired schedule would not be automatically removed. The SCHED-PMREPT command has to be issued with the NUMREPT parameter equal to zero in order to delete the expired schedule.

•   Identical schedules for an NE are not allowed. Two schedules are considered identical if they have the same AID, MOD2 type, performance monitor type, performance monitor level, location, direction, and time period. An error message "Duplicate Schedule" is returned if you try to create a schedule that is a duplicate of an existing schedule. However, if the existing schedule expires (with the parameter NUMINVL equal to zero when retrieved by the RTRV-PMSCHED command, that is, no more PM reporting is sent) the new schedule with the identical parameters will replace the existing schedule.

The card or cross-connect can be unprovisioned or deleted through CTC. The schedules associated with that card or that cross-connection will also be removed silently by the NE.

Category
Performance

Security
Retrieve

Input Format
SCHED-PMREPT-<MOD2>:[<TID>]:<SRC>:<CTAG>::[<REPTINVL>],[<REPTSTATM>],
[<NUMREPT>],,[<MONLEV>],[<LOCN>],,[<TMPER>],[<TMOFST>];

Input Example
SCHED-PMREPT-OTU1:NE-NAME:FAC-3-1-1-1:123::15-MIN,15-30,100,,1-UP,NEND,,15-MIN,0-0-15;

Input Parameters

<AID>	Access identifier which identifies MOD2. Must not be null.
<REPTINVL>	Reporting interval. How often a report is to be generated and sent to the appropriate

	operating system (OS). Specifies how often a PM report is generated. The format is VAL-UN, where valid values for VAL (value) are 1 to 31 if UN (units of time) is DAY, 1 to 24 if UN is HR, or 1 to 1440 if UN is MIN. Examples are 10-DAY, 12-HR, and 100-MIN. A null value for the input defaults to 15-MIN. REPTINVL is a string.
	Note PM schedule processing is performed every 5 minutes. Therefore, specifying a REPTINVL of 5-MIN or less would be processed at the earliest every 5 minutes.
\<REPTSTATM\>	The start time for the PM report. The format is HOD-MOH, where HOD (hour of day) ranges from 0 to 23, and MOH (minute of hour) ranges from 0 to 59. If the input value of the starting time is smaller than the current time, for example, the input value is 5-30 (5:30 in the morning), and the current time is 10:30, the reporting will be scheduled to start at 5:30 the next day. A null value defaults to the current time of day. REPTSTATM is a string.
\<NUMREPT\>	The number of reports that the schedule is expected to produce. A value of 0 is used to delete an existing identical schedule. If NUMREPT is null, the schedule will be kept in effect until it is deleted. The value of NUMREPT will continue to be decremented even though the automatic PM reporting is inhibited. NUMREPT is an integer.
\<MONLEV\>	The discriminating level of the requested monitored parameter. It applies to all MONTYPE of the scheduled PM report. The null input defaults to 1-UP. MONLEV is a string.The format is LEV-DIRN, where valid values for LEV are decimal numbers, and valid values for DIRN are as follows:
	• UP monitored parameter with values equal to or greater than the value of LEV will be reported.
	• DN monitored parameter with values equal to or less than the value of LEV will be reported.
\<LOCN\>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. A null input defaults to NEND..
• FEND	Action occurs on the far end of the facility.
• NEND	Action occurs on the near end of the facility.
\<TMPER\>	(Optional) Accumulation time period for performance counters. A null value defaults to 15-MIN. The parameter type is TMPER, which is the accumulation time period for the performance management center.
• 1-DAY	Performance parameter accumulation interval length; every 24 hours.
• 15-MIN	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.
\<TMOFST\>	Time offset between reporting/diagnostics/exercises; from the end of the last complete accumulation time period to the beginning of the accumulation time period specified by TMPER. The format is DAY-HR-MIN where DAYS (days) ranges from 0 to 99, HR (hours) ranges from 0 to 23, and MIN (minutes) ranges from 1 to 59. A null value defaults to 0-0-0. Grouping of this parameter is not supported.
	If the value specified is larger than the maximum length of PM history the system

is saving, there will be no PM report for the PM schedule generated. For example, if a PM schedule for OC48 is created with TMOFST of 2-1-0 (format: day-hour-minute), no report will be generated because the system can only hold two days worth of PM history. For setting 15-MIN schedules, the system can only hold 32 15-MIN buckets, which totals eight hours. Therefore, a schedule greater than 0-8-0 will not result in PM schedules being generated. TMOFST is a string.

9.5 RTRV-PMSCHED-<MOD2>

The Retrieve Performance Monitoring Schedule for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3, OC12, OC48, OC192, STM1, STM4, STM16, STM64, STS48c, STS192c, VC416c, VC464c, ODU0, ODUFlex , OTUk, ODUk where k={1-4,1E,2E,1F,2F,3E1,3E2,C2,C4*} (RTRV-PMSCHED-<MOD2>) command retrieves the PM reporting schedule that was set for the NE by the SCHED-PMREPT command.

Usage Guidelines
The command supports the modifier OTU, ODU, OC, GE types.

Category
Performance

Security
Retrieve

Input Format
RTRV-PMSCHED-<MOD2>:[<TID>]:<AID>:<CTAG>;

Input Example
RTRV-PMSCHED-OTU1::FAC-13-5-7-1:777;

Input Parameters

<AID>	Access identifier

Output Format
SID DATE TIME M CTAG COMPLD "<AID>,[<AIDTYPE>]:<REPTINVL>,<REPTDAT>,<REPTTM>,[<NUMINVL>],,[<MONLEV>],<LOCN>,,[<TMPER>],[<TMOFST>],[<INHMODE>]"

;

Output Example

TID-000 1998-06-20 14:30:00

M 001 COMPLD

"FAC-3-1-1-1:15-MIN,5-25,14-46,100,,1-UP,NEND,,15-MIN,0-0-15,ALW";

Output Parameters

<AID>		Access identifier
<AIDTYPE>		(Optional) Type of facility, link or other addressable entity targeted by the message. The parameter type is MOD2, which is the line/path modifier.
•	OPTICS	Optics facility
•	GIGE	1 Gigabit Ethernet.
•	10GIGE	10-Gigabit Ethernet
•	40GIGE	40-Gigabit Ethernet
•	100GIGE	100-Gigabit Ethernet
•	OC3	OC3 facility
•	OC12	OC12 facility
•	OCn	OCn facility, where n = 3,12,48,192,768
•	STMn	STMn facility, where n = 1,4,16,64,256
•	STS48c	STS48c facility
•	STS192c	STS192c facility
•	VC416c	VC416c facility
•	VC464c	VC464c facility
•	OTUk	Optical Transport Unit Level k, where k = 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, 1F, 2F, C2,C4*
•	ODUk	Optical Data Unit level k where k = 0, 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, Oduflex, 1F, 2F, C2,C4*
•	STS	• ESP • SESP • CVP • UASP
•	STM	• RS-EB • RS-ES • RS-ESR

	• RS-SES
	• RS-SESR
	• RS-BBE
	• RS-BBER
	• RS-UAS
	• MS-EB
	• MS-ES
	• MS-ESR
	• MS-SES
	• MS-SESR
	• MS-BBE
	• MS-BBER
	• MS-UAS
• VC	• HP-EB
	• HP-ES
	• HP-ESR
	• HP-SES
	• HP-SESR
	• HP-BBE
	• HP-BBER
	• HP-UAS
<REPTINVL>	Reporting interval. How often a report is to be generated and sent to the appropriate NE. REPTINVL is a string.
<REPTDAT>	Report date. Date for the next report. REPTDAT is a string.
<REPTTM>	Report time. The time of day for the next PM report. REPTTM is a string. Note PM schedule processing is performed every 5 minutes. Therefore, specifying a REPTINVL of 5-MIN or less would be processed at the earliest every 5 minutes.
<NUMINVL>	(Optional) The remaining number of intervals over which the PM will be reported. NUMINVL is an integer.
<MONLEV>	(Optional) This parameter is used for filtering counters on the basis of threshold levels.
<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode will be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility.
• NEND	Action occurs on the near end of the facility.

<TMPER>		(Optional) Accumulation time period for performance counters. The parameter type is TMPER, which is the accumulation time period for the performance management center.
•	1-DAY	Performance parameter accumulation interval length; every 24 hours. For SONET PM data, only one day of history data is available.
•	15-MIN	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.
<TMOFST>		(Optional) Time offset between reporting/diagnostics/exercises; from the end of the last complete accumulation time period to the beginning of the accumulation time period specified by TMPER. TMOFST is a string.
<INHMODE>		(Optional) Indicates whether a function is inhibited by an INH command. Indicates whether the reporting of PM data is inhibited (by the INH-PMREPT-ALL command) or is allowed (by the ALW-PMREPT-ALL command). The parameter type is INH_MODE, which indicates whether the function is inhibited.
•	ALW	Function is allowed.
•	INH	Function is inhibited.

9.6   RTRV-PMSCHED-ALL

The Retrieve Performance Schedule All (RTRV-PMSCHED-ALL) command retrieves all the PM reporting schedules that were set for the NE by the SCHED-PMREPT command.

Usage Guideline
None

Category
Performance

Security
Retrieve

Input Format
RTRV-PMSCHED-ALL:[<TID>]::<CTAG>;

Input Example
RTRV-PMSCHED-ALL:CISCO-NODE::123;

Input Parameters
None that require description

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>,[<AIDTYPE>]:<REPTINVL>,<REPTDAT>,<REPTTM>,[<NUMINVL>],,
[<MONLEV>],<LOCN>,,[<TMPER>],<TMOFST>,[<INHMODE>]";

Output Example
TID-000 1998-06-20 14:30:00
M 001 COMPLD
"FAC-3-1-1-1,OC48:15-MIN,5-25,14-46,100,,1-UP,NEND,,15-MIN,0-0-15,ALW"
;

Output Parameters

<AID>	Access identifier
<AIDTYPE>	(Optional) Type of facility, link or other addressable entity targeted by the message. The parameter type is MOD2, which is the line/path modifier.
• GIGE	1 Gigabit Ethernet.
• 10GIGE	10-Gigabit Ethernet
• 40GIGE	40-Gigabit Ethernet
• 100GIGE	100-Gigabit Ethernet
• OCn	OCn facility, where n = 3,12,48,192,768
• STMn	STMn facility, where n = 1,4,16,64,256
• STS48c	STS48c facility
• STS192c	STS192c facility
• VC416c	VC416c facility
• VC464c	VC464c facility
• OTUk	Optical Transport Unit Level k, where k = 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, 1F, 2F, C2,C4*
• ODUk	Optical Data Unit level k where k = 0, 1, 1E, 2, 2E, 3, 3E1, 3E2, 4, Oduflex, 1F, 2F, C2, C4*
<REPTINVL>	Reporting interval. How often a report is to be generated and sent to the appropriate NE. REPTINVL is a string.

<REPTDAT>	Report date. Date for the next report. REPTDAT is a string.
<REPTTM>	Report time. The time of day for the next PM report. REPTTM is a string.
<NUMINVL>	(Optional) The remaining number of intervals over which PM is to be reported. NUMINVL is an integer.
<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility.
• NEND	Action occurs on the near end of the facility.
<TMPER>	(Optional) Accumulation time period for performance counters. The parameter type is TMPER, which is the accumulation time period for the performance management center.
• 1-DAY	Performance parameter accumulation interval length; every 24 hours.
• 15-MIN	Performance parameter accumulation interval length; every 15 minutes. There are 32 15-MIN buckets of history data available for this accumulation interval length.
<TMOFST>	(Optional) Time offset between reporting/diagnostics/exercises; from the end of the last complete accumulation time period to the beginning of the accumulation time period specified by TMPER. TMOFST is a string.
<INHMODE>	(Optional) Indicates whether a function is inhibited by an INH command. Indicates whether the reporting of PM data is inhibited (by the INH-PMREPT-ALL command) or is allowed (by the ALW-PMREPT-ALL command). The parameter type is INH_MODE, which indicates whether the function is inhibited.
• ALW	Function is allowed.
• INH	Function is inhibited.

Chapter10. Alarms

10.1 REPT ALM <MOD2ALM>

The Report Alarm for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3, OC12, OC48, OC192,   STM1, STM4, STM16, STM64, STS48c, STS192c, VC416c, VC464c, ODU0, ODUFlex , OTUk, ODUk where k= {1-4,1E,2E,1F,2F,3E1,3E2,C2,C4*} (REPT ALM <MOD2ALM>) message reports an alarm condition against a facility, an RPR interface, or a path.

Usage Guideline
None

Category
Fault

Security
Retrieve

Output Format
SID DATE TIME
** ATAG REPT ALM <MOD2ALM>
"<AID>:<NTFCNCDE>,<CONDTYPE>,<SRVEFF>,[<OCRDAT>],
[<OCRTM>],[LOCN],[DIRN]:[<DESC>],[<AIDDET>]";

Output Example
 TL1 2014-01-15 04:43:51

*C 0001.0001 REPT ALM OC48

 "FAC-0-14-0-8:CR,LOF-S,,01-15,04-43-51,,:\"SONET Section Loss Of Frame\",OC48"

Output Parameters

Parameter	Description
<AID>	Access identifier
<NTFCNCDE>	Two-letter notification code. The parameter type is NOTIF_CODE, which is a two-character notification code associated with an autonomous message.
• CL	The condition causing the alarm has cleared
• CR	A critical alarm

• MJ	A major alarm	
• MN	A minor alarm	
<CONDTYPE>	Condition type for an alarm or a reported event. The parameter type is CONDITION, which is any problem detected on the shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, Not Alarmed conditions (NA), and Not Reported (NR) conditions.	
<SRVEFF>	The effect on service caused by the standing alarm or condition. The parameter type is SERV_EFF, which is the effect of the alarm on service., optional parameter	
NSA	The condition is non-service affecting	
• SA	The condition is service affecting	
<OCRDAT>	(Optional) Date	
<OCRTM>	(Optional) Time	
<LOCN>	(Optional) Location, where the action is to take place	
NEND	Near end	
FEND	Far end	
<DIRN>	Direction relative to the entity identified by the AID. Direction of PM relative to the entity identified by the AID.	
BTH	Both transmit and receive directions.	
RCV	Receive direction only.	
TRMT	Transmit direction only.	
<DESC>	(Optional) Condition description.	
<AIDDET>	(Optional) AIDDET uses the same addressing rules as the AID, but specifies AID type and additional details about the entity being managed. The parameter type is EQPT_TYPE, which is the type of equipment being provisioned into a slot.	

10.2 RTRV-ALM-<MOD2ALM>

The Retrieve Alarm for GIGE, 10GIGE, 40GIGE, 100GIGE, OC3,OC12,OC48, OC192,   STM1, STM4, STM16, STM64, STS48c, STS192c, VC416c, VC464c,ODU0, ODUFlex , OTUk, ODUk where k= {1-4,1E,2E,1F,2F,3E1,3E2,C2,C4*} (RTRV-ALM-<MOD2ALM>) command retrieves and sends the current status of alarm conditions. The alarm condition or severity to be retrieved can be specified by using the input parameters as a filter.

Usage Guideline
None

Category
Fault

Security
Retrieve

Input Format
RTRV-ALM-<MOD2ALM>:[<TID>]:<AID>:<CTAG>::[<NTFCNCDE>],[<CONDTYPE>],[<SRVEFF>],[<LOCN>],[<DIRN>][,];

Input Example
RTRV-ALM-OTU1::FAC-5-3-1-1:1::MN;

Input Parameters

<AID>		Access identifier from the Access Identifiers Section.
<NTFCNCDE>		Two-letter notification code. A null value is equivalent to ALL. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.
•	CR	A critical alarm.
•	MJ	A major alarm.
•	MN	A minor alarm.
<CONDTYPE>		Condition type for an alarm or a reported event. The parameter type is CONDITION, which is any problem detected on the shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, NA conditions, and NR conditions.
<SRVEFF>		The effect on service caused by the standing alarm or condition. The parameter type is SERV_EFF, which is the effect of the alarm on service. A null value is equivalent to ALL.
•	NSA	The condition is non-service affecting.
•	SA	The condition is service affecting.
<LOCN>		Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
•	FEND	Action occurs on the far end of the facility.
•	NEND	Action occurs on the near end of the facility.
<DIRN>		The PM count retrieval direction. The parameter type is DIRECTION, which is the

		transmit and receive directions.
•	BTH	Both transmit and receive directions
•	RCV	Receive direction only

Output Format

SID DATE TIME

M CTAG COMPLD

"<AID>,[<AIDTYPE>]:<NTFCNCDE>,<CONDTYPE>,<SRVEFF>,[<OCRDAT>],

[<OCRTM>],[<LOCN>],[<DIRN>]:[<DESC>]"

;

Output Example

TCC2 2011-08-18 16:16:18

M 1 COMPLD

"FAC-5-3-1-1,OTU1:MN,HI-RXPOWER,NSA,08-18,12-56-40,NEND,RCV:\"Facility High Rx power\","

;

Output Parameters

<AID>	Access identifier.
<AIDTYPE>	(Optional) Type of access identifier. Valid values for the same can be as follows:
OTU1	Optical Transport Unit Level 1
OTU1E	Optical Transport Unit Level 1E
OTU1F	Optical Transport Unit Level 1F
OTU2	Optical Transport Unit Level 2
OTU2E	Optical Transport Unit Level 2E
OTU2F	Optical Transport Unit Level 2F
OTU3	Optical Transport Unit Level 3
OTU3E1	Optical Transport Unit Level 3
OTU3E2	Optical Transport Unit Level 3
OTU4	Optical Transport Unit Level 4
ODU0	Optical Data Unit Level 0

ODU1	Optical Data Unit Level 1	
ODU1E	Optical Data Unit Level 1	
ODU2	Optical Data Unit Level 2	
ODU2E	Optical Data Unit Level 2	
ODU1F	Optical Data Unit Level 1	
ODU2F	Optical Data Unit Level 2	
ODU3	Optical Data Unit Level 3	
ODU3E1	Optical Data Unit Level 3	
ODU3E2	Optical Data Unit Level 3	
ODU4	Optical Data Unit Level 4	
ODUFlex	Flexible Optical Data Unit	
• OCn	OCn facility, where n = 3,12,48,192,768	
• STMn	STMn facility, where n = 1,4,16,64,256	
• STS48c	STS48c facility	
• STS192c	STS192c facility	
• VC416c	VC416c facility	
• VC464c	VC464c facility	
• GIGE	1 Gigabit Ethernet.	
• 10GIGE	10-Gigabit Ethernet	
• 40GIGE	40-Gigabit Ethernet	
• 100GIGE	100-Gigabit Ethernet	
• 10GIGEL2*	10-Gigabit Ethernet Packet	
• 40GIGEL2*	40-Gigabit Ethernet Packet	
• 100GIGEL2	100-Gigabit Ethernet Packet	
EQPT	Equipments on chassis	
<NTFCNCDE>	Two-letter notification code. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.	
• CL	The condition causing the alarm has cleared.	
• CR	A critical alarm.	

• MJ	A major alarm.	
• MN	A minor alarm.	
• NA	The condition is not alarmed.	
• NR	The alarm is not reported.	
<CONDTYPE>	Condition type for an alarm or a reported event. The parameter type is CONDITION, which is any problem detected on an ONS 15454 shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, NA conditions, and NR conditions. See Chapter 27 "Conditions" for a list of conditions.	
<SRVEFF>	The effect on service caused by the standing alarm or condition. The parameter type is SERV_EFF, which is the effect of the alarm on service.	
• NSA	The condition is non-service affecting.	
• SA	The condition is service affecting.	
<OCRDAT>	(Optional) Date when the specific event or violation occurred, MM-DD.	
<OCRTM>	(Optional) Time when the specific event or violation occurred, HH-MM-SS.	
<LOCN>	Location associated with a particular command in reference to the entity identified by the AID. A null value defaults to NEND. The parameter type is LOCATION, which is the location where the action is to take place.	
• FEND	Action occurs on the far end of the facility.	
• NEND	Action occurs on the near end of the facility.	
<DIRN>	The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.	
• BTH	Both transmit and receive directions	
• RCV	Receive direction only	
<DESC>	(Optional) A condition description. DESC is a string.	

10.3 RTRV-ALM-ALL

The Retrieve Alarm All (RTRV-ALM-ALL) command retrieves and sends the current status of all active alarm conditions. The alarm condition or severity to be retrieved is specified using the input parameters as a filter.

Usage Guidelines
To retrieve all the NE alarms, issue all of the following commands:

RTRV-ALM-ALL
RTRV-ALM-OTU1
RTRV-ALM-ODU1

Category
Fault

Security
Retrieve

Input Format
RTRV-ALM-ALL:[<TID>]:[<AID>]:<CTAG>::[<NTFCNCDE>],
[<CONDTYPE>],[<SRVEFF>],[<LOCN>],[<DIRN>][,];

Input Example
RTRV-ALM-ALL:CISCO1:RP-0-0-33:1;

Input Parameters

<AID>		Access identifier from the "Acess Identifiers" section. A null value is equivalent to ALL. AID is a string.
<NTFCNCDE>		Two-letter notification code. A null value is equivalent to ALL. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.
•	CR	A critical alarm.
•	MJ	A major alarm.
•	MN	A minor alarm.
•	NR	The alarm is not reported.
<CONDITION>		The type of alarm condition. A null value is equivalent to ALL. The parameter type is CONDITION, which is any problem detected on the shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, NA conditions, and NR conditions.
<SRVEFF>		The effect on service caused by the standing alarm or condition. The parameter type is SERV_EFF, which is the effect of the alarm on service. A null value is equivalent to ALL.
•	NSA	The condition is non-service affecting.
•	SA	The condition is service affecting.
<LOCN>		Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
•	FEND	Action occurs on the far end of the facility.

•	NEND	Action occurs on the near end of the facility.
<DIRN>		The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.
•	BTH	Both transmit and receive directions
•	RCV	Receive direction only

Output Format

SID DATE TIME
M CTAG COMPLD
"[<AID>],[<AIDTYPE>]:<NTFCNCDE>,<CONDTYPE>,<SRVEFF>,[<LOCN>],[<DIRN>]:
[<DESC>]";

Output Example

CISCO1 1971-07-07 02:37:00

M   1 COMPLD

"RP-0-0-33,EQPT:MN,SWITCH-LINK-ERR-E,NSA,07-05,01-43-25,,:\"Switch Ethernet Link Fault\""

;

Output Parameters

<AID>		(Optional) Access identifier from the "ALL" section.
<AIDTYPE>		(Optional) Type of facility, link, or other addressable entity targeted by the message. The parameter type is MOD2B, which is the alarm type.
•	100GIGE	100 Gigabit Ethernet.
•	GIGE	Gigabit Ethernet.
•	40GIGE	40 Gigabit Ethernet.
•	100GIGE	100 Gigabit Ethernet.
•	10GIGE	10 Gigabit Ethernet.
• 10GIGEL2*		10-Gigabit Ethernet Packet
• 40GIGEL2*		40-Gigabit Ethernet Packet
•	100GIGEL2*	100-Gigabit Ethernet Packet
•	EQPT	EQPT alarm
•	OCn	OCn facility, where n = 3,12,48,192,768

•	STMn	STMn facility, where n = 1,4,16,64,256
•	STS48c	STS48c facility
•	STS192c	STS192c facility
•	VC416c	VC416c facility
•	VC464c	VC464c facility
•	OTUk	Optical Transport Unit Level k Here k = 1,2,3,4,2e,3e1,3e2,1f,2f
•	ODUk	Optical Data Unit Level k . Here k = 0, 1,2,3,4,2e,3e1,3e2,1f,2f
	<NTFCNCDE>	Two-letter notification code. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.
•	CL	The condition causing the alarm has cleared.
•	CR	A critical alarm.
•	MJ	A major alarm.
•	MN	A minor alarm.
•	NA	The condition is not alarmed.
•	NR	The alarm is not reported.
	<CONDTYPE>	Condition type for an alarm or a reported event. The parameter type is CONDITION, which is any problem detected on an ONS 15454 shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, NA conditions, and NR conditions.
	<SRVEFF>	The effect on service caused by the standing alarm or condition. The parameter type is SERV_EFF, which is the effect of the alarm on service.
•	NSA	The condition is non-service affecting.
•	SA	The condition is service affecting.
	<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
•	FEND	Action occurs on the far end of the facility.
•	NEND	Action occurs on the near end of the facility.
	<DIRN>	The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.
•	BTH	Both transmit and receive directions

• RCV	Receive direction only	
<OCRDAT>	(Optional) Date when the specific event or violation occurred, MM-DD.	
<OCRTM>	(Optional) Time when the specific event or violation occurred, HH-MM-SS.	
<DESC>	(Optional) A condition description. DESC is a string.	

10.4 REPT EVT <MOD2ALM>

The Report Event for REPT EVT <MOD2ALM>) message reports the occurrence of a non-alarmed event.

Usage Guideline
None

Category
Fault

Security
Retrieve

Output Format
SID DATE TIME
** ATAG REPT EVT <MOD2ALM>
"<AID>:<NTFCNCDE>,<CONDTYPE>,[<OCRDAT>],
[<OCRTM>]:[DESC>],[<AIDDET>]"

Output Example
10.78.161.183 1970-06-03 13:47:56

A   0020.0020 REPT EVT OTU2

   "FAC-0-5-0-10:OTUK-AIS,SC,,,,,,,:\"OTUk: Alarm Indication Signal\",OTU2"

;

Output Parameters

Parameter	Description
<AID>	Access identifier
<NTFCNCDE>	Two-letter notification code. The parameter type is NOTIF_CODE, which is a two-character notification code associated with an autonomous message.

• NA	Not an alarm	
• NR	Not Reported alarm	
<CONDTYPE>	Condition type for an alarm or a reported event. The parameter type is CONDITION, which is any problem detected on an ONS 15454 shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, Not Alarmed conditions (NA), and Not Reported (NR) conditions.	
<OCRDAT>	(Optional) Date	
<OCRTM>	(Optional) Time	
<DESC>	(Optional) Condition description.	
<AIDDET>	(Optional) AIDDET uses the same addressing rules as the AID, but specifies AID type and additional details about the entity being managed.	

10.5   RTRV-COND-<MOD2>

The Retrieve Condition (RTRV-COND-<MOD2>) command retrieves the current standing condition and state associated with an entity.

Usage Guidelines

The command supports modifiers GIGE, 10GIGE, 40GIGE, 100GIGE, OC48, OC192, OC3, OC12, STM16, STM64, STS48c, STS192c,VC416c,VC464c, Optics, OTUk, ODUk where k= {0-4,1e,2e,1f,2f,3e1,3e2}.

Category

Fault

Security

Retrieve

Input Format

RTRV-COND-<MOD2ALM>:[<TID>]:<AID>:<CTAG>::[<TYPEREQ>],[<LOCN>],[<DIRN>];

Input Example

RTRV-COND-ODU2::ODU-0-5-0-0-12:1::ODUK-BDI-PM;

Input Parameters

<AID>	Access identifier.

TYPEREQ	TYPEREQ is string. This is the type of condifion to be retrieved. Refer alarm dictionary for list of supported conditions.
<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility.
• NEND	Action occurs on the near end of the facility.
<DIRN>	The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.
• BTH	Both transmit and receive directions
• RCV	Receive direction only
• TRMT	Transmit direction only

Output Format

SID DATE TIME

M CTAG COMPLD "<AID>,[<AIDTYPE>]:<NTFCNCDE>,<CONDTYPE>,<SRVEFF>,[<OCRDAT>], [<OCRTM>] ,[<LOCN>],[<DIRN>],:[<DESC>]"

;

Output Example

node37 2016-01-21 14:06:22

M   1 COMPLD

   "ODU-0-5-0-0-12,ODU2:NR,ODUK-BDI-PM,NSA,01-21,12-31-42,NEND,RCV:\"ODUk: PM Backward Defect Indication\""

;

Output Parameters

<AID>	Access identifier.
<AIDTYPE>	(Optional) Type of access identifier. Specifies the type of facility, link or other addressable entity targeted by the message. The parameter type is MOD2ALM, which is the alarm type.

100GIGE	100 Gigabit Ethernet
10GIGE	10 Gigabit Ethernet
40GIGE	40 Gigabit Ethernet
GIGE	1 Gigabit Ethernet
• 10GIGEL2*	10-Gigabit Ethernet Packet
• 40GIGEL2*	40-Gigabit Ethernet Packet
• 100GIGEL2*	100-Gigabit Ethernet Packet
• OCn	OCn facility, where n = 3,12,48,192,768
• STMn	STMn facility, where n = 1,4,16,64,256
• STS48c	STS48c facility
• STS192c	STS192c facility
• VC416c	VC416c facility
• VC464c	VC464c facility
OTU1	Optical Transport Unit Level 1
OTU1E	Optical Transport Unit Level 1E
OTU1F	Optical Transport Unit Level 1F
OTU2	Optical Transport Unit Level 2
OTU2E	Optical Transport Unit Level 1E
OTU2F	Optical Transport Unit Level 2F
OTU3	Optical Transport Unit Level 3
OTU3E1	Optical Transport Unit Level 3E1
OTU3E2	Optical Transport Unit Level 3E2
OTU4	Optical Transport Unit Level 4
ODU0	Optical Data Unit Level 0
ODU1	Optical Data Unit Level 1
ODU1E	Optical Data Unit Level 1E
ODU2	Optical Data Unit Level 2

ODU2E	Optical Data Unit Level 2E	
ODU1F	Optical Data Unit Level 1F	
ODU2F	Optical Data Unit Level 2F	
ODU3	Optical Data Unit Level 3	
ODU3E1	Optical Data Unit Level 3E1	
ODU3E2	Optical Data Unit Level 3E2	
ODU4	Optical Data Unit Level 4	
ODUFlex	Flexible Optical Data Unit	
<NTFCNCDE>	(Optional) Two-letter notification code. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.	
• CL	The condition causing the alarm has cleared.	
• CR	A critical alarm.	
• MJ	A major alarm.	
• MN	A minor alarm.	
• NA	The condition is not alarmed.	
• NR	The alarm is not reported.	
<TYPEREP>	The condition itself. The parameter type is CONDITION, which is any problem detected on the shelf, whether or not the problem is reported (that is, whether or not it generates a trouble notification). Reported conditions include alarms, NA conditions, and NR conditions. See Chapter 27 "Conditions" for a list of conditions.	
<SRVEFF>	(Optional) The effect on service caused by the standing alarm or condition The parameter type is SERV_EFF, which is the effect of the alarm on service.	
• NSA	The condition is non-service affecting.	
• SA	The condition is service affecting.	
<OCRDAT>	(Optional) Date when the specific event or violation occurred, MM-DD.	
<OCRTM>	(Optional) Time when the specific event or violation occurred, HH-MM-SS.	
<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.	
• FEND	Action occurs on the far end of the facility.	
• NEND	Action occurs on the near end of the facility.	

<DIRECTION>	The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.	
• BTH	Both transmit and receive directions	
• RCV	Receive direction only	
<DESC>	(Optional) Condition description. DESC is a string.	

10.6 RTRV-COND-ALL

The Retrieve Condition All (RTRV-CON-ALL) command retrieves the current standing condition for all entities.

Usage Guidelines

This command does not return all conditions that are returned by other, more specific RTRV-COND commands; RTRV-COND-ALL returns a subset of these conditions. Telcordia GR-253-CORE, Section 6.2.1.8.4 states a retrieval that returns ALL conditions from a node (RTRV-COND-ALL) must omit any conditions that are "same root cause" as other raised conditions. The section also states any retrieval of a subset of the conditions from a node, regardless of how the subsetting occurs, should not omit these "same root cause" conditions.

To retrieve all the NE conditions, issue all of the following commands:

RTRV-COND-ALL
RTRV-COND-ENV

Category
Fault

Security
Retrieve

Input Format
RTRV-COND-ALL:[<TID>]:[<AID>]:<CTAG>::[<TYPEREQ>],[<LOCN>],[<DIRN>];

Input Example
RTRV-COND-ALL::ALL:4::ODUK-BDI-PM;

Input Parameters

<AID>	Access identifier. String. A null value is equivalent to ALL.
<TYPEREQ>	The type of condition to be retrieved

<LOCN>		Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
•	FEND	Action occurs on the far end of the facility.
•	NEND	Action occurs on the near end of the facility.
<DIRN>		The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.
•	BTH	Both transmit and receive directions
•	RCV	Receive direction only
•	TRMT	Transmit direction only

Output Format

SID DATE TIME

M CTAG COMPLD
"<AID>,[<AIDTYPE>]:<NTFCNCDE>,<CONDTYPE>,[<SRVEFF>],[<LOCN>],[<DIRN>],<,[<OCRDAT>],
[<OCRTM>]:[<DESC>]"

Output Example

    node37 2016-01-21 14:35:56

M   4 COMPLD

    "ODU-0-13-0-17,ODU2:NR,ODUK-BDI-PM,NSA,01-21,12-31-43,NEND,RCV:\"ODUk: PM Backward Defect
Indication\""

    "ODU-0-5-0-0-32,ODU2:NR,ODUK-BDI-PM,NSA,01-21,12-35-28,NEND,RCV:\"ODUk: PM Backward Defect
Indication\""

    "ODU-0-5-0-0-12,ODU2:NR,ODUK-BDI-PM,NSA,01-21,14-35-48,NEND,RCV:\"ODUk: PM Backward Defect
Indication\""

    "ODU-0-12-0-5,ODU2:NR,ODUK-BDI-PM,NSA,01-21,14-35-46,NEND,RCV:\"ODUk: PM Backward Defect
Indication\""

;

Output Parameters

<AID>		Access identifier from the "ALL" section that has an alarm condition.
<AIDTYPE>		(Optional) Type of access identifier. Specifies the type of facility, link or other addressable entity targeted by the message. The parameter type is MOD2B, which is the alarm type.
•	OCn	OCn facility, where n = 3,12,48,192,768

•	STMn	STMn facility, where n = 1,4,16,64,256
•	STS48c	STS48c facility
•	STS192c	STS192c facility
•	VC416c	VC416c facility
•	VC464c	VC464c facility
100GIGE		100 Gigabit Ethernet
10GIGE		10 Gigabit Ethernet
40GIGE		40 Gigabit Ethernet
GIGE		1 Gigabit Ethernet
•	10GIGEL2*	10-Gigabit Ethernet Packet
•	40GIGEL2*	40-Gigabit Ethernet Packet
• 100GIGEL2*		100-Gigabit Ethernet Packet
OTU1		Optical Transport Unit Level 1
OTU1E		Optical Transport Unit Level 1E
OTU1F		Optical Transport Unit Level 1F
OTU2		Optical Transport Unit Level 2
OTU2E		Optical Transport Unit Level 2E
OTU2F		Optical Transport Unit Level 2F
OTU3		Optical Transport Unit Level 3
OTU3E1		Optical Transport Unit Level 3E1
OTU3E2		Optical Transport Unit Level 3E2
OTU4		Optical Transport Unit Level 4
ODU0		Optical Data Unit Level 0
ODU1		Optical Data Unit Level 1
ODU1E		Optical Data Unit Level 1E
ODU2		Optical Data Unit Level 2
ODU2E		Optical Data Unit Level 2E
ODU1F		Optical Data Unit Level 1F

ODU2F	Optical Data Unit Level 2F
ODU3	Optical Data Unit Level 3
ODU3E1	Optical Data Unit Level 3E1
ODU3E2	Optical Data Unit Level 3E2
ODU4	Optical Data Unit Level 4
ODUFlex	Flexible Optical Data Unit
<NTFCNCDE>	(Optional) Two-letter notification code. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.
• NA	The condition is not alarmed.
• NR	The alarm is not reported.
<TYPEREP>	The type of condition to be retrieved.
<SRVEFF>	(Optional) The effect on service caused by the standing alarm or condition The parameter type is SERV_EFF, which is the effect of the alarm on service.
• NSA	The condition is non-service affecting.
• SA	The condition is service affecting.
<OCRDAT>	(Optional) Date when the specific event or violation occurred, MM-DD.
<OCRTM>	(Optional) Time when the specific event or violation occurred, HH-MM-SS.
<LOCN>	Location associated with a particular command. Identifies the location from which the PM mode is to be retrieved. The parameter type is LOCATION, which is the location where the action is to take place.
• FEND	Action occurs on the far end of the facility.
• NEND	Action occurs on the near end of the facility.
<DIRECTION>	The PM count retrieval direction. The parameter type is DIRECTION, which is the transmit and receive directions.
• BTH	Both transmit and receive directions
• RCV	Receive direction only
<DESC>	(Optional) Condition description. DESC is a string.

Chapter11.   Protection Management

11.1   EX-SW-<MOD2>

The Exercise Protection Switch for command exercises the algorithm for switching from a working facility to a protection facility without actually performing a switch. The Modifier2 (MOD2) can be ODG or TNL.

Category
Switching

Security
Maintenance

Input Format
EX-SW-ODG:[<TID>]:<AID>:<CTAG>[::::];

Input Example
EX-SW-ODG:ROUTER8:ODG-5:1;

Input Parameters

<AID>   Access identifier. Identifies the facility in the NE to which the switch request is directed. In this case it will be the AID for the ODU group of the format specified in the Access identifier section. It can be Odu-Group-Mp or Odu-Group-Te. The Modifier2 (MOD2) can be ODG or TNL.

11.2   OPR-PROTNSW-<MOD2>

The Operate Protection Switch command is used to actually operate a switch on an ODU group. It initiates a Y-cable protection switch request. User switch requests initiated with this command remain active until they are released by the RLS-PROTNSW-<MOD2> command or are overridden by a higher priority protection switch request.

Usage Guideline

The switch commands MAN (Manual Switch), FRCD (Forced Switch), and LOCKOUT (Lockout) are supported by the NCS.

- Manual Switch of Protection Line (to Working Line): If the AID identifies the protection line in a 1+1 protection group, then service will be transferred from the protection line to the working line, unless a request of equal or higher priority is in effect.
- Manual Switch of Working Line (to Protection Line): If the AID identifies a working line, then service will be switched from the working line to the protection line unless a request of equal or higher priority is in effect. Force Switch of Protection Line (to Working Line): If the AID identifies the protection line, then service will be transferred from the protection line to the working line unless a request of equal or higher priority is in effect.
- Force Switch of Working Line (to Protection Line): If the AID identifies a working line, then service will be transferred from the working line to the protection line unless a request of equal or higher priority is in effect. A lockout of protection and a signal fail of protection have higher priority than a Force switch command.
- Lockout of Protection Line: If the AID identifies the protection line, this switch command will prevent the working line from switching to the protection line. If the working line is already on protection, then the working line will be switched back to its original working line.
- Lockout of Working Line: If the AID identifies the working line, this switch command will prevent the working line from switching to protection line. If the working line is already on protection, then the working line will be switched back from protection line to its original working line.

Category
Switching

Security
Maintenance

Input Format
OPR-PROTNSW-<ODU_MOD2>:[<TID>]:<AID>:<CTAG>::<COMMAND>,<RESOURCE>[::];

Input Example
OPR-PROTNSW-ODU1:CISCO:ODU-0-0-0-1:100:FRCD,ODG-5;

Input Parameters

	<ODU_TYPE>	This parameter specifies the ODU type. Valid values can be ODU0, ODU1, ODU1E, ODU2, ODU2E, ODU3, ODU4, ODU1F, ODU2F, ODUFlex.
	AID	Access identifier for the ODU on which the switching is to be performed
	RESOURCE	This specifies the ODU Group in which switching is to be performed. It can be Odu-Group-Mp or Odu-Group-Te.
	COMMAND	This parameter specifies the type of switching that needs to be operated on. Valid values for the same can be: • FRCD • LOCKOUT • MAN

11.3 RLS-PROTNSW-<MOD2>

The Release Protection Switch for ODU Group command releases a line protection switch request.

Usage Guideline
None

Category
Switching

Security
Maintenance

Input Format
RLS-PROTNSW-<MOD2>:[<TID>]:<SRC>:<CTAG>[::];

Input Example
RLS-PROTNSW-ODG:CISCO:ODG-1:1;

Input Parameters

<MOD2>	Valid values can be ODG or TNL
<SRC>	This specifies the ODU Group in which switching is to be performed. It can be ODG-<id> or TNL-<id>.

11.4 RTRV-PROTNSW-<MOD2>

The Retrieve Protection Switch for ODU Group command retrieves the protection switch status of the constituent controllers.

Usage Guideline
None

Category
Switching

Security
Retrieve

Input Format
RTRV-PROTNSW-ODG:[<TID>]:<AID>:<CTAG>[::::];

Input Example
RTRV-PROTNSW-ODG:CISCO:ODG-13:007;

Input Parameters

<AID>	Access identifier for the ODU group for which the protection switching needs to be released. It can be Odu-Group-Mp or Odu-Group-Te.

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>:<SC>,[<SWITCH_TYPE>]";

Output Example
10.78.161.183 1971-01-26 16:14:12

M   1 COMPLD

   "ODG-10:APS-CLEAR,";

> rtrv-protnsw-odg::tnl-15:1;

10.78.161.183 1971-01-28 13:08:40

M 1 COMPLD

"TNL-15:APS-CLEAR,"

;

Output Parameters

<AID>	Access identifier.
SC	Switch command to be initiated. These can be 'CLEAR','EXERCISE','FRCD','LOCKOUT','MAN', NO-SWITCHOVER
<SWITCH_TYPE>	Shows the status of protection.

Chapter 12. Trace Identifier Management

12.1 ED-TRC-<MOD2>

The Edit Trace command is applicable for OTUk, ODUk where k=1,2,3,4,1e,2e,1f,2f,3e1,3e2,c2,c4* , ODU0, ODUFlex , (eg. ED-TRC-OTU1, ED-TRC-OTU2, ED-TRC-OTU3, and ED-TRC-OTU4 command edits trace-related attributes of an OTU1, OTU2, OTU3, and OTU4 facility respectively.)

Usage Guidelines

The default values for all optional parameters are NE default values. These values might not be the current value for a parameter. Use a retrieve command to obtain the current value.

Category

DWDM

Security

Provisioning

Input Format

ED-TRC-<MOD2>:[<TID>]:<AID>:<CTAG>:::[EXTSAPI=<EXTSAPI>],[EXTDAPI=<EXTDAPI>],[EXTOSASCII=<EXTOSASCII>],[EXTOSHEX=<EXTOSHEX>],[EXTFULASCII=<EXTFULASCII>],[EXTFULHEX=<EXTFULHEX>],[TRCOSSCII=<TRCOSASCII>],[TRCOSHEX=<TRCOSHEX>],[TRCFULASCII=<TRCFULASCII>],[TRCFULHEX=<TRCFULHEX>],[TRCSAPI=<TRCSAPI>],[TRCDAPI=<TRCSAPI>][:];

Input Example

ED-TRC-ODU1::ODU-0-8-0-3:1:::trcascii=trctext;

Input Parameters

<AID>	Source access identifier from facility subsection of the Access identifier section
<EXTSAPI>	Expected Source Access Point Identifier ASCII string. Maximum length 14 characters.
<EXTDAPI>	Expected Destination Access Point Identifier ASCII string. Maximum length 14 characters.
<EXTOSASCII>	(Optional) Operator specific ASCII string for Expected section trace. Maximum length can be 64 characters.

<EXTOS-HEX>	(Optional) Operator specific HEX string of Expected section trace. Length of the hex expected section trace must be even. Max length 64 characters.
<EXTFULASCII>	(Optional) ASCII string for expected section trace. Any 64 character ASCII string including the terminating CR (carriage return) and Lf (line feed). EXTFULASCII is a string.
<EXTFULHEX>	(Optional) HEX string for expected section trace. Any 128 character hex string.
<TRCSAPI>	Send Source Access Point Identifier ASCII string. Maximum length 14 characters.
<TRCDAPI>	Send Destination Access Point Identifier ASCII string. Maximum length 14 characters.
<TRCOS-ASCII>	(Optional) Operator specific ASCII string for trace message to be transmitted. Maximum length can be 64 characters.
<TRCOS-HEX>	(Optional) Operator specific HEX string for trace message to be transmitted. Length of the hex expected section trace must be even. Max length 64 characters.
<TRCFULASCII>	(Optional) ASCII string for trace message to be transmitted. Any 64 character ASCII string including the terminating CR (carriage return) and Lf (line feed). EXTFULASCII is a string.
<TRCFULHEX>	(Optional) HEX string for trace message to be transmitted. Any 128 character hex string.

12.2 RTRV-TRC-<MOD2>

The Retrieve Trace Optical Transport Unit Level (RTRV-TRC-MOD2) command retrieves the sent trace string, expected trace string, received trace string, trace mode, and the trace level for the entity specified in MOD2 argument.

Usage Guideline
None

Category
DWDM

Security
Retrieve

Input Format
RTRV-TRC-<MOD2>:[<TID>]:<AID>:<CTAG>[::::];

Input Example

RTRV-TRC-OTU1:CISCO:FAC-0-0-0-1:100;

Input Parameters

                <AID> Access identifier. Valid values are ODU0 , ODU1, ODU1E, ODU1F, ODU2, ODU2E, ODU2F, ODU3, ODU4, ODUFlex, OTU1, OTU1E, OTU1F, OTU2, OTU2E, OTU2F, OTU3, OTU4, .

Output Format

SID DATE TIME

M CTAG COMPLD

"<AID>,<AIDTYPE>::[TRCSAPI=<TRCSAPI>],[TRCDAPI=<TRCDAPI>],[TRCOSASCII=<TRCOSASCII>],[TRCOSHEX=<TRCOSHEX>],[EXTSAPI=<EXTSAPI>],[EXTDAPI=<EXTDAPI>],[EXTOSASCII=<EXTOSASCII>],[EXTOSHEX=<EXTOSHEX>][RECSAPI=<RECSAPI>],[RECDAPI=<RECDAPI>],[RECOSASCII=<RECOSASCII>],[RECOSHEX=<RECOSHEX>]";

Output Example

10.78.161.183 1970-06-04 13:02:27

M   1 COMPLD

"fac-0-5-0-10::,TRCSAPI=fgfg,TRCDAPI=hghg,TRCOSASCII=asdf456,EXTSAPI=ytre,EXTDAPI=cvbn,EXTOSASCII=\ufffdv,EXTOSHEX=987600000000000000000000000000000000"

;

Output Parameters

TRCTY	G709 TTI sent information. Can be ASCII or HEX.
TRCSAPI	Sent TTI SAPI information
TRCDAPI	Sent TTI DAPI information.
TRCOS-ASCII	Sent operator specific ASCII string.
TRCOS-HEX	Sent operator specific HEX text.
EXTSAPI	Expected TTI SAPI information
EXTDAPI	Expected TTI DAPI information.
EXTOS-ASCII	Expected operator specific ASCII string
EXTOS-HEX	Expected operator specific HEX text

RECSAPI	Received TTI SAPI information
RECDAPI	Received TTI DAPI information.
RECOS-ASCII	Received TTI Operator specific ASCII string.
RECOS-HEX	Received TTI Operator specific HEX string.

Chapter13. Equipment Management

13.1. INIT-SYS

The Initialize System (INIT-SYS) command initializes the specified card and its associated subsystems.

Usage Guidelines

If a card is hard reset, it has to be in one of the following states: OOS-MA, MT; OOS-MA, DSBLD; OOS-AUMA, MT; OOS-AUMA, DSBLD.

Category

System

Security

Maintenance

Input Format

INIT-SYS:[<TID>]:<AID>:<CTAG>:::[CMDMDE=<CMDMDE>];

Input Examples

INIT-SYS:HOTWATER:RP-0-1:201:::CMDMDE=FRCD;

Input Parameters

<AID>	Access identifier. AID of a slot is always in format RP-0-0 or LC-0-0 or FC-0-0, where first is rack and second is slot.
<CMDMDE>	(Optional) Command mode. Normal (NORM) mode is the default behavior for all commands but you can specify forced (FRCD) mode to force the system to override a state where the command would normally be denied. The FRCD mode of operation is applicable to delete a virtual concatenated (VCAT) member cross-connect in Unlocked-Enabled or Locked-Disabled, AutomaticInService service states.
• FRCD	Force the system to override a state in which the command would normally be denied.
• NORM	Execute the command normally. Do not override any conditions that could make the command fail.

13.2. RTRV-INV

The Retrieve Inventory (RTRV-INV) command retrieves a list of the physical inventory. For each unit in the system, the list identifies the system's product ID and version ID. This command also retrieves the inventory information using the AID CARDTYPE-RACK-SLOT format.

Usage Guidelines

None.

Category

System

Security

Retrieve

Input Format

RTRV-INV:[<TID>]:<AID>:<CTAG>;

Input Example

RTRV-INV:CERENT:ALL:123;

Input Parameters

<AID>	Access identifier.

Output Format

SID DATE TIME
M CTAG COMPLD
"<AID>,<AIDTYPE>::PN=<PN>,HWREV=<HWREV>,FWREV=<FWREV>,SN=<SN>,CLEI=<CLEI>,VID=<VID>,PID=<PID>"
;

Output Example

10.78.161.183 1971-01-27 15:11:31

M   1 COMPLD

"LC-0-13,NCS4K-24LR-O-S::PN=01,HWREV=\"N/A\",FWREV=2.19,SN=CAT1702B176,CLEI=UNASSIGNED,VID=V01,PID=\"NCS4K-24LR-O-S\""

"PPM-0-13-10,ONS-SI-GE-SX::PN=N/A,HWREV=\"N/A\",FWREV=\"N/A\",SN=AGM1825J058,CLEI=WMOTB8SAAA,
VID=V01,PID=\"ONS-SI-GE-SX\""

"RP-0-0,NCS4K-TSP::PN=01,HWREV=\"N/A\",FWREV=2.22,SN=CAT1706B2WS,CLEI=UNASSIGNED,VID=V01,PID
=\"NCS4K-TSP\""

"ECU-0-0,NCS4K-ECU::PN=01,HWREV=\"N/A\",FWREV=3.1,SN=EC000000001,CLEI=UNASSIGNED,VID=V01,PID=\
"NCS4K-ECU\""

"ECDISK-0-0,::PN=\"N/A\",HWREV=\"N/A\",FWREV=\"N/A\",SN=\"N/A\",CLEI=\"N/A\",VID=\"N/A\",PID=\"N/A\""

"ECDISK-0-1,::PN=\"N/A\",HWREV=\"N/A\",FWREV=\"N/A\",SN=\"N/A\",CLEI=\"N/A\",VID=\"N/A\",PID=\"N/A\""

"PWR-0-0,P-S-DC-PWF::PN=\"N/A\",HWREV=\"N/A\",FWREV=2.1,SN=SAL1652V6TR,CLEI=NOCLEICODE,VID=V0
0,PID=\"P-S-DC-PWF\""

"PWR-0-1,P-S-DC-PWF::PN=\"N/A\",HWREV=\"N/A\",FWREV=2.1,SN=SAL1650U6YD,CLEI=NOCLEICODE,VID=V0
0,PID=\"P-S-DC-PWF\""

"SHELF-0,NCS4016-SA::PN=01,HWREV=\"N/A\",FWREV=\"N/A\",SN=ARICENTCH13,CLEI=UNASSIGNED,VID=V0
1,PID=\"NCS4016-SA\""

"FAN-0-0,P-S-FANTRAY::PN=01,HWREV=\"N/A\",FWREV=2.4,SN=FMP12345678,CLEI=UNASSIGNED,VID=V01,PI
D=\"P-S-FANTRAY\""

"FAN-0-1,NCS4K-FTA::PN=01,HWREV=\"N/A\",FWREV=2.8,SN=FANTRAY0001,CLEI=UNASSIGNED,VID=V01,PID
=\"NCS4K-FTA\"";

Output Parameters

<AID>	Access identifier.
<AIDTYPE>	Specifies the type of (AID) facility, link or other addressable entity targeted by the message. AIDTYPE is a string.
<PN>	Hardware part number. PN is a string.
<HWREV>	Hardware revision. HWREV is a string.
<FWREV>	Firmware revision. It is also known as Bootrom revision. FWREV is a string.
<SN>	Serial number. SN is a string.

<CLEI>	Common language equipment identifier code for the equipment. CLEI is a string.
<VID>	Vendor ID. VID is a string.
<PID>	Product ID of the module. PID is a string.

13.3. RTRV-LOG

The Retrieve Log (RTRV-LOG) command retrieves the alarm log of the NE.

Usage Guidelines

The only option reported for LOGNM is ALARM.

Category

Log

Security

Retrieve

Input Format

RTRV-LOG:[<TID>]:<AID>:<CTAG>::<LOGNM>;

Input Example

RTRV-LOG:CERENT:ALL:123::ALARM;

Input Parameters

<LOGNM>	Log to be retrieved. The log name is ALARM. String.

Output Format

SID DATE TIME
M CTAG COMPLD
"<AID>:CURRENT=<CURRENT>,PREVIOUS=<PREVIOUS>,
<CONDITION>,[<SRVEFF>],[SET-TIME=<OCRTIME>],[SET-DATE=<OCRDAT>],[CLEAR-TIME=<OCRTIME>],[CL
EAR-DATE=<OCRDAT>]:<ALMDESCR>"
;

Output Example

tl1 2013-02-02 03:44:37

M   1 COMPLD

"FAC-0-14-0-2:CURRENT=CL,PREVIOUS=CR,LOS,,SET-TIME=08-35-34,SET-DATE=01-15-2014,CLEAR-TIME=08-35-45,CLEAR-DATE=01-15-2014:\"G.709 Loss Of Signal\""

Output Parameters

<AID>	Access identifier.
<CURRENT>	Current severity. The parameter type is NOTIF_CODE, which is the two-character notification code associated with an autonomous message.
• CL	The condition causing the alarm has cleared.
• CR	A critical alarm.
• MJ	A major alarm.
• MN	A minor alarm.
• NA	The condition is not alarmed.
• NR	The alarm is not reported.
<PREVIOUS>	Previous condition code or alarm severity this is the severity level when the alarm is raised
• CR	A critical alarm.
• MJ	A major alarm.
• MN	A minor alarm.
• NA	The condition is not alarmed.
• NR	The alarm is not reported.
<OCRDAT>	(Optional) Date when the specific event or violation.Date when alarm was triggered/Cleared
<OCRTIME>	(Optional) time at which specific event is triggered/Cleared
<ALMDESCR>	Alarm description. ALMDESCR is a string.

13.4. ED-EQPT

This Configures card connectivity (side by side backplane connectivity, Regen Mode) as well as shut/no sht of various inventory entities.

Category
Equipment

Security
Provisioning

Input Format
ED-EQPT:[<TID>]:<AID>:<CTAG>:::[CARDMODE=<CARDMODE>],[PORT=<PORT>],

[PEERCARD=<PEERCARD>],[PEERPORT=<PEERPORT>],[CMDMDE=<CMDMDE>]::[<PST>[,<SST>]];

Input Examples
ED-EQPT::LC-0-0:1:::CARDMODE=REGEN,PORT=2,PEERPORT=3;

Input Parameters

<AID>	Access identifier of the equipment.
<CARDMODE>	Card Mode. Possible values are 'REGEN' , 'BP' and BP-SA, TXP.Default value is REGEN. TXP would delete any REGEN, BP, BP-SA configuration.
<PORT>	Connectivity port of peer card. Valid values are 0, 1, 2 and 3 for Backplane mode 0,1 and 2, 3 for REGEN mode. Default value is 2.
<PEERCARD>	Peer card details in format LC-<rack>-<slot>.,RP-<rack>-<slot>,PF-<rack>-<slot> etc
<PEERPORT>	Connectivity port of peer card. Valid values are 0, 1, 2 and 3 for Backplane mode and 2, 3 for REGEN mode. Default value is 3.
<CMDMDE>	Valid values are : • NORM • FRCD
PST	Valid values are : • IS • OOS
SST	Valid value is DSBLD only to be used with OOS

13.5. RTRV-EQPT

The Retrieve Equipment (RTRV-EQPT) command display h/w module information as well as inventory entities along with corresponding shut/no shut states.

.

Category
Equipment

Security
Provisioning

Input Format
RTRV-EQPT:[<TID>]:<AID>:<CTAG>::[PORT];

Input Example
RTRV-EQPT::LC-0-0:1::0;

Input Parameters

<AID>	Access identifier of the equipment.
<PORT>	Connectivity port of peer card. Valid values are 0, 1, 2 and 3 for Backplane mode and 2, 3 for REGEN mode.

Output Format
SID DATE TIME
M CTAG COMPLD
"<AID>:<AIDTYPE>,<EQUIP>,,:CARDMODE=<CARDMODE>,[PORT=<PORT>],[PEERCARD=<PEERCARD>],[PEERPORT=<PEERPORT>]:[<PST>[,<SST>]]"
;

Output Example

10.78.161.183 1971-01-27 15:11:15

M   1 COMPLD

   "LC-0-13:NCS4K-24LR-O-S,EQUIP,,:CARDMODE=TXP:IS-NR,"

   "PPM-0-13-10:ONS-SI-GE-SX,EQUIP,,::IS-NR,"

   "RP-0-0:NCS4K-TSP,EQUIP,,::IS-NR,"

   "EC-0-0:NCS4K-ECU,EQUIP,,::IS-NR,"

   "ECDISK-0-0:,EQUIP,,::IS-NR,"

   "ECDISK-0-1:,EQUIP,,::IS-NR,"

"PWR-0-0:P-S-DC-PWF,EQUIP,,::IS-NR,"

"PWR-0-1:P-S-DC-PWF,EQUIP,,::IS-NR,"

"SHELF-0:NCS4016-SA,EQUIP,,::IS-NR,"

"FAN-0-0:P-S-FANTRAY,EQUIP,,::IS-NR,"

"FAN-0-1:NCS4K-FTA,EQUIP,,::IS-NR,"

;

Output Parameters

<AID>	Access identifier. AID of a card is always in format LC-<rack>-<slot>.
<CARDMODE>	Card Mode. Possible values are 'NONE', 'REGEN', 'TXP' and 'BP'.
<PORT>	Connectivity port of peer card. Valid values are 0, 1 for Backplane mode and 2, 3 for REGEN mode.
<PEERCARD>	Peer card details in format LC-<rack>-<slot>.
<PEERPORT>	Connectivity port of peer card. Valid values are 0, 1 for Backplane mode and 2, 3 for REGEN mode.
PST	IS, OOS
SST	NR,DSBLD

Chapter14. State Management

14.1. RMV-<MOD2>

The Remove Optics, GIGE, 10GIGE, 40GIGE, 100GIGE,   OC3, OC12, OC192, OC48,   STM1, STM4, STM16,STM64, STS48c, STS192c, VC416c, VC464c , OTU3, OTU4, OTU2, OTU1, OTU1E,OTU2E, OTU1F, OTU2F,   , ODU0, ODU1, ODU2, ODU3 and ODU4, ODU1E, ODU2E, ODU1F, ODU2F,   ODUFlex remove a facility from service.

Category
Ports

Security
Maintenance

Input Format
RMV-<MOD2>:[<TID>]:<AID>:<CTAG>[::::];

Input Example
 RMV-ODU2:CISCO1:ODU-0-3-0-2:1;

  CISCO1 1971-07-06 04:28:15

M   1 COMPLD

;

Input Parameters

<AID>	Access identifier.

14.2. RST-<MOD2>

The Restore Optics, GIGE, 10GIGE, 40GIGE, 100GIGE,   OC3, OC12, OC192, OC48,   STM1, STM4, STM16,STM64, STS48c,STS192c,VC416c,VC464c , OTU3, OTU4, OTU2, OTU1, OTU1E, OTU2E, OTU1F, OTU2F,   , ODU0, ODU1, ODU2, ODU3 and ODU4, ODU1E, ODU2E ODU1F, ODU2F,   ODUFlex command provisions a facility as In-Service (IS).

Usage Guidelines
The command supports the modifier OTUk, ODUk and OCn. This command can only be executed when the port is not loopbacked.

Category

Ports

Security

Maintenance

Input Format

RST-<MOD2>:[<TID>]:<AID>:<CTAG>::::[<PST>[,<SST>]];

Input Example

> RST-ODU2:CISCO1:ODU-0-3-0-2:1;

   CISCO1 1971-07-06 04:28:26

M 1 COMPLD

;

>Input Parameters

<AID>	Access identifier
<PST>	Primary state .Valid value is : IS
<SST>	Secondary state. Valid value is : ains. But it is currently not supported.

Chapter15. GMPLS Management

15.1. Create

15.1.1. Create NNI tunnel

This command is used for creation of NNI tunnel.

Usage Guidelines

This command is used for creation of an NNI tunnel. When used for an explicit path type the explicit path needs to be configured separately. The below section lists down the various parameters that need to be configured for an explicit NNI tunnel.

Category

GMPLS

Security

Provisioning

Input Format

ENT-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::<DST>:[SIGRATE=<SIGRATE>],[FLBR=<FLBR>],[FLFRM=<FLFRM],[
CKTID=<CKTID>],,[SHUTWRKLSP=<SHUTWRKLSP>],[SHUTPROTLSP=<SHUTPROTLSP>],[SHUTRESTLSP=<SH
UTRESTLSP>],[SHUTTNL=<SHUTTNL>], [RECRT=<RECRT>],
[PATHPROTPROF=<PATHPROTPROF>],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[CONMODE=<CONMO
DE>],[TCMID=<TCMID>],[RVTM=<RVTM>],[PRTHOTM=<PRTHOTM>][:];

Input Example

ENT-NNI-TNL::TNL-1324:1::"4.6.5.2":SIGRATE=ODU2,SHUTWRKLSP=Y,SHUTRESTLSP=Y,SHUTTNL=Y,
PATHPROTPROF=ABCD;

Input Parameters

TNLID	Specifies the ID for the tunnel. This can be used to refer to the tunnel by the edit/delete commands for this tunnel. Valid value for this can be TNL-<0-64535>.
DST	is the IPv4/IPv6 address of the destination endpoint. This address can also be ID of an NE.
SIGRATE	Specifies the signal rate. Valid values for the same can be ODU0-ODU4 , flex. If the Type is flex it is mandatory to provide values for FLBR and FLFRM.

	ODU0
	ODU1
	ODU1E
	ODU1F
	ODU2
	ODU2F
	ODU2E
	ODU3
	ODU3E1
	ODU3E2
	ODU4
	ODUFlex
FLBR	This option is required to be configured if the BW_TYPE above has been selected to be FLEX_BW. This specifies the bit rate to be used for flex signal. Valid values can be [1 , 104857600].
FLFRM	This option is required to be configured if the BW_TYPE above has been selected to be FLEX_BW. This specifies the framing to be used for flex signal. Valid values are: CBR: 20, GFP-F-non-resizable: 22,
CKTID	is an optional attribute and specifies the signaled name. The value for this can be a character string of 64 characters.
SHUTWRKLSP	Used to shut working lsp. Valid values can be Y,N.
SHUTPROTLSP	Used to shut protected lsp. Valid values can be Y,N.
SHUTRESTLSP	Used to shut restore lsp. Valid values can be Y,N.
SHUTTNL	Used to shut tunnel. Valid values can be Y,N.
RECRT	Record-route. This is an optional parameter with a Boolean value. Valid values can be Y,N
PATHPROTPROF	Protection attribute set name
PROTTYPE	Specifies the protection type for the ODU group. Valid values for the same can be as follows: • APSbidi 1+1 bi-directional Automatic Protection Switching • APSuni 1+1 unidirectional Automatic Protection Switching • noAPSuni 1+1 no Automatic Protection Switching • APSbidiR 1+1+R 1+1+R bi-direction Automatic Protection Switching

RVRTV	Specifies the protection mode. Valid values for the same can be : • N: (nonrevertive) Protection switching system does not revert service to the original line after restoration. • Y: (revertive) protection switching system reverts service to the original line after restoration.
CONMODE	Specifies the connection mode (protection attribute) for the ODU group. Valid values for the same can be: • snc-i Inherent Secure Network Communication • snc-n Sub Network Secure Network Communication • snc-s Non Intrusive Secure Network Communication
TCMID	This is the TCM level for the ODU Type which needs to be associated with snc-s type of CONMODE. Its valid range is 1-6.
RVTM	Specifies the value to be configured for the wait to restore protection timer. Valid value for the same can be 0 and 5-12 minutes.
PRTHOTM	Specifies the value to be configured for the hold off protection timer. Valid value for the same can be 100-10000 milli seconds.

15.1.2. Create UNI tunnel

This command is used for configuration of UNI endpoints for an NNI tunnel.

Usage Guidelines
None

Category
GMPLS

Security
Provisioning

Input Format
ENT-UNI-<mod2fac>:[<TID>]:<TNLID>:<CTAG>::<UNIIN_CT>,<UNIOUT_IFINX>;

Mod2fac = OTU1, OTU1E, OTU1F, OTU2, OTU2E, OTU2F, OTU3,   OTU4,   ,

OC3, OC12,OC48, OC192,   STM1,STM4,STM16,STM64,10GIGE, GIGE, 40GIGE, 100GIGE, ODU0, ODU1, ODU2, ODU3, ODU4, ODUFLEX, ODU1E, ODU1F, ODU2E, ODU2F,   ODUFlex, 100GIGEL2*.

Input Example
ENT-UNI-OTU2::TNL-134:1::FAC-0-7-0-6,23;

Input Parameters

TNLID	Specifies the ID for the tunnel. This can be used to refer to the tunnel by the edit/delete commands for this tunnel. Valid value for this can be TNL-<0-64535>.
UNIIN_CT	Specifies the controller for the ingress port for static UNI.
UNIOUT_IFINX	Specifies the interface index of the egress point of the static UNI.

15.1.3. Create Path Option

Usage Guidelines
This command is used for mapping explicit LSP with a tunnel. The tunnel is associated with the LSP type. Once configured, then this identifier can be referenced in an NNI tunnel provisioning command.

Category
GMPLS

Security
Provisioning

Input Format
ENT-NNI-POPT:[<TID>]:<TNLID>:<CTAG>:::WRKPTH=<WRKPTH>,[WRKLCKDN=<WRKLCKDN>],[WRKXRON
M=<WRKXRONM>],[PRTPTH=<PRTPTH>],[PRTLCKDN=<PRTLCKDN>],[PRTXRONM=<PRTXRONM>],[PRTRSTP
TH=<PRTRSTPTH>],[PRTRSTLCKDN=<PRTRSTLCKDN>],[PRTRSTXRONM=<PRTRSTXRONM>],[RSTPTH=<RST
PTH>],[RSTLCKDN=<RSTLCKDN>],[RSTXRONM=<RSTXRONM>][:];

Input Example
ENT-NNI-POPT::TNL-134:1:::WRKPTH=ABCD,WRKLCKDN=Y,PRTPTH=XYZ,PRTLCKDN=Y;

Input Parameters

WRKPTH	Specifies the work path-option for the tunnel. Valid values are:

	- Dynamic - Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
WRKLCKDN	Lockdown for work path. Valid value is Y. Default value is Y.
WRKXRONM	Xro name for work path. This is an identifier.
PRTPTH	Specifies the PROTECT path-option for the tunnel. Valid values are: - Dynamic - Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTLCKDN	Lockdown for protect path. Valid value is Y. Default value is Y.
RSTPTH	Specifies the restore path-option for the tunnel. Valid values are: - Dynamic - Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
RSTLCKDN	Lockdown for restore path. Valid value is Y. Default value is Y.
RSTXRONM	Xro name for restore path. This is an identifier.
PRTRSTPTH	Specifies the restore path-option for the protect path of the tunnel. Valid values are: - Dynamic - Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTRSTLCKDN	Lockdown for retore of protect path. Valid value is Y. Default value is Y.
PRTRSTXRONM	Xro name for restore of protect path This is an identifier.

15.1.4. Create Explicit Path

Usage Guidelines
This command is used for creation of an explicit LSP path.

Category
GMPLS

Security
Provisioning

Input Format
ENT-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::<PTHIDX>:NXTADD=<NXTADD>,NXTADDT=<NXTADDT>,STRINFIN=<STRINFIN>,UNNUMD=<UNNUMD>[:]";

Input Example
ENT-NNI-EXTPTH::1346:1::1345:NXTADD="3.3.33.4",NXTADDT=STRICT,STRINFIN=1427,UNNUMD=UNNUMBERED;

Input Parameters

PTHIDX	Specifies index of the explicit path. Valid range: [1-65535]
PTHNM	Specifies name of the explicit path. User needs to specify either PTHID or PTHNM as given while creating explicit path.
NXTADD	Provides the IPv4/IPv6 address or TID of the next address in the explicit path.
NXTADDT	Specifies the type of IPv4/IPv6 address or TID that has been provided in argument NXTADD. Valid value is "strict".
STRINFIN	This parameter needs to be provided only in case the value of parameter NXTADDT is strict. This specifies the interface index. Valid values can be 1-4294967295.
UNNUMD	Specifies that the IPv4/IPv6 given in parameter NXTADD is unnumbered. Valid value is "unnumbered".

15.1.5. Create Xro for circuit diversity

Usage Guidelines

This command is used for creating Xro for circuit diversity.

Category

GMPLS

Security

Provisioning

Input Format

ENT-NNI-XRO:[<TID>]:<XRONAME>:<CTAG>:::SRCXRO=<SRCXRO>,DSTXRO=<DSTXRO>,TNLIDXRO=<TNLID
XRO>,EXTTNLIDXRO=<EXTTNLIDXRO>,[LSPXRO=<LSPXRO>][:];

Input Example

ENT-NNI-XRO::PXRO1:1:::SRCXRO="10.76.113.51",DSTXRO="10.76.113.80",TNLIDXRO=10,EXTTNLIDXRO="10.1.
1.1",LSPXRO=15;

   10.76.113.45 1971-08-01 01:58:08

M   1 COMPLD

;

Input Parameters

XRONAME	This is the Xro attribute set name.
SRCXRO	This is the IPv4 address of the source node.
DSTXRO	This is the IPv4 address of the destination endpoint.
TNLIDXRO	This is a integer of range [0, 65535]
EXTTNLIDXRO	This is the IPv4 address.
LSPXRO	This is a integer of range [0, 65535]

15.2. Edit

15.2.1 Edit NNI tunnel

Usage Guidelines

This command is used for the editing an already configured NNI tunnel. The configuration of static uni endpoints for a tunnel can be removed by sending their value as NULL in this edit command.

Category

GMPLS

Security

Provisioning

Input Format

ED-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::[<DST>]:[SIGRATE=<SIGRATE>],[FLBR=<FLBR>],[FLFRM=<FLFRM>],[CKTID=<CKTID>],[SHUTWRKLSP=<SHUTWRKLSP>],[SHUTPROTLSP=<SHUTPROTLSP>],[SHUTRESTLSP=<SHUTRESTLSP>],[SHUTTNL=<SHUTTNL>],[RECRT=<RECRT>], [PATHPROTPROF=<PATHPROTPROF>],[PROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[CONMODE=<CONMODE>], [TCMID=<TCMID>],[RVTM=<RVTM>],[PRTHOTM=<PRTHOTM>],[:];

Input Example

ENT-NNI-EXTPTH::TEST:1::10:NXTADD="10.78.161.183",NXTADDT=STRICT,STRINFIN=9,UNNUMD=UNNUMBERED;

  10.78.161.183 1971-04-29 14:30:56

M 1 COMPLD

;

Input Parameters

TNLID	Specifies the ID for the tunnel. This can be used to refer to the tunnel by the edit/delete commands for this tunnel. Valid value for this can be TNL-<0- 63535>.
DST	is the IPv4/IPv6 address or TID of the destination endpoint.
SIGRATE	Specifies the signal bandwidth. Valid values for the same can be ODU0-ODU4 , flex. If the Type is flex it is mandatory to provide values for FLBR and FLFRM Valid values are: ODU0 ODU1

	ODU1E
	ODU1F
	ODU2
	ODU2E
	ODU2F
	ODU3
	ODU3E1
	ODU3E2
	ODU4
	ODUFlex
FLBR	This option is required to be configured if the BW above has been selected to be flexible. This specifies the bit rate to be used for flex signal. Valid values can be [1 , 104857600],.
FLFRM	This option is required to be configured if the BW above has been selected to be flexible. This specifies the framing to be used for flex signal. Valid values are: CBR: 20, GFP-F-nonresizable: 22,
SHUTWRKLSP	Used to shut working lsp. Valid values can be TRUE,FALSE.
SHUTPROTLSP	Used to shut protected lsp. Valid values can be Y,N.
SHUTRESTLSP	Used to shut restore lsp. Valid values can be TRUE,FALSE.
SHUTTNL	Used to shut tunnel. Valid values can be TRUE, FALSE.
CKTID	is an optional attribute and specifies the signaled name. The value for this can be a character string of 64 characters.
RECRT	This is an optional parameter with a Boolean value. Valid values can be TRUE,FALSE
PATHPROTPROF	Protection attribute set name
PROTTYPE	Specifies the protection type for the ODU group te. Valid values for the same can be as follows: - APSbidi 1+1 bi-directional Automatic Protection Switching - APSuni 1+1 unidirectional Automatic Protection Switching - noAPSuni 1+1 no Automatic Protection Switching - APSbidiR 1+1+R 1+1+R bi-direction Automatic Protection Swicthing
RVRTV	Specifies the protection mode. Valid values for the same can be : - N: (nonrevertive) Protection switching system does not revert service to the original line after restoration. - Y: (revertive) protection switching system reverts service to the original line after restoration.
CONMODE	Specifies the connection mode (protection attribute) for the ODU group. Valid values

	for the same can be: • snc-i Inherent Secure Network Communication • snc-n Sub Network Secure Network Communication • snc-s Non Intrusive Secure Network Communication
TCMID	This is the TCM level for the ODU Type which needs to be associated with snc-s type of CONMODE. Its valid range is 1-6.
RVTM	Specifies the value to be configured for the wait to restore protection timer. Valid value for the same can be0 and 0.5-12.0 minutes.
PRTHOTM	Specifies the value to be configured for the hold off protection timer. Valid value for the same can be 100-10000 milli seconds.

15.2.2 Edit path option

Usage Guidelines
This command is used for reconfigure an already existing explicit path.

Category
GMPLS

Security
Provisioning

Input Format
ED-NNI-POPT:[<TID>]:<PTHID>:<CTAG>:::[WRKPTH=<WRKPTH>],[WRKLCKDN=<WRKLCKDN>],[WRKXRON
M=<WRKXRONM>],[PRTPTH=<PRTPTH>],[PRTLCKDN=<PRTLCKDN>],[PRTXRONM=<PRTXRONM>],[PRTRSTP
TH=<PRTRSTPTH>],[PRTRSTLCKDN=<PRTRSTLCKDN>],[PRTRSTXRONM=<PRTRSTXRONM>],[RSTPTH=<RST
PTH>],[RSTLCKDN=<RSTLCKDN>],[RSTXRONM=<RSTXRONM>][:];

Input Example
ED-NNI-POPT::TNL-10:1:::WRKPTH=WRK1,WRKLCKDN=Y,WRKXRONM=EDITEDWRKXRO;

Input Parameters

WRKPTH	Sp ecifies the work path-option for the tunnel. Valid values are:

	• Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
WRKLCKDN	Lockdown for work path. Valid value is Y. Default value is Y.
WRKXRONM	Xro name for work path. This is an identifier.
PRTPTH	Specifies the PROTECT path-option for the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTLCKDN	Lockdown for protect path. Valid value is Y. Default value is Y.
PRTXRONM	Xro name for protect path. This is an identifier.
RSTPTH	Specifies the restore path-option for the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
RSTLCKDN	Lockdown for retore path. Valid value is Y. Default value is Y.
RSTXRONM	Xro name for restore path. This is an identifier.
PRTRSTPTH	Specifies the restore path-option for the protect path of the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTRSTLCKDN	Lockdown for restore of protect path. Valid value is Y. Default value is Y.
PRTRSTXRONM	Xro name for the protect restore path. This is an identifier.

15.2.3 Edit Explicit Path

Usage Guidelines
This command is used for editing of an explicit LSP path.

Category
GMPLS

Security
Provisioning

Input Format
ED-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::<PTHIDX>:NXTADD=<NXTADD>,NXTADDT=<NXTADDT>, \
STRINFIN=<STRINFIN>,UNNUMD=<UNNUMD>[:]";

Input Example
ED-NNI-EXTPTH::QWER:1::10:NXTADD="10.78.161.116",NXTADDT=STRICT,STRINFIN=9,UNNUMD=UNNUMBE
RED; 4:29 PM

Input Parameters

PTHIDX	Specifies index of the explicit path. Valid value for this can be 1-65535.
PTHNM	Specifies name of the explicit path. User needs to specify either PTHID or PTHNM as given while editing explicit path.
NXTADD	Provides the IPv4/IPv6 address or TID of the next address in the explicit path.
NXTADDT	Specifies the type of IPv4/IPv6 address or TID that has been provided in argument NXTADD. Valid value is "strict".
STRINFIN	This parameter needs to be provided only in case the value of parameter NXTADDT is strict. This specifies the interface index. Valid values can be 1-4294967295.
UNNUMD	Specifies that the IPv4/IPv6 given in parameter NXTADD is unnumbered. Valid value is "unnumbered".

15.2.4   Edit Xro for circuit diversity

Usage Guidelines
This command is used for editing Xro for circuit diversity.

Category
GMPLS

Security
Provisioning

Input Format
ED-NNI-XRO:[<TID>]:<XRONAME>:<CTAG>:::SRCXRO=<SRCXRO>,DSTXRO=<DSTXRO>,TNLIDXRO=<TNLIDXRO>,EXTTNLIDXRO=<EXTTNLIDXRO>,[LSPXRO=<LSPXRO>][:];

Input Example
ED-NNI-XRO::PXRO1:1:::SRCXRO="10.76.113.51",DSTXRO="10.76.113.80",TNLIDXRO=10,EXTTNLIDXRO="10.1.1.1",LSPXRO=100;

Input Parameters

XRONAME	This is the Xro attribute set name.
SRCXRO	This is the IPv4 address of the source node.
DSTXRO	This is the IPv4 address of the destination endpoint.
TNLIDXRO	This is an integer of the range [0, 65535].
EXTTNLIDXRO	This is the IPv4 address.
LSPXRO	This is a integer of the range [0, 65535].

15.3. Delete

15.3.1 Delete tunnel

Usage Guidelines
This command is used for deletion of a configured NNI tunnel.All existing NNI tunnels will be ddeleted if no tunnel id has been specified.

Category
GMPLS

Security
Provisioning

Input Format
DLT-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::::;

Input Example
DLT-NNI-TNL::TNL-15:1;

Input Parameters

TNLID	This parameter specifies the identifier for the tunnel that needs to be deleted. The TNLID is specified at the time of tunnel creation.

15.3.2 Delete Uni Endpoints for a NNI tunnel

Usage Guidelines
This command is used for deletion of configuration of UNI endpoints for a NNI tunnel.

Category
GMPLS

Security
Provisioning

Input Format
DLT-UNI-<MOD2>:[<TID>]:<AID>:<CTAG>::<TNLID>[::];

Input Example
DLT-UNI-10GIGE::FAC-0-8-0-11:1::TNL-10;

Input Parameters

MOD2	OTU1 , OTU2 , OTU1E , OTU2E , OTU1F , OTU2F , OTU3 , OTU3E1 , OTU3E2 , OTU4 , OTUC2 , GIGE , 10GIGE , 40GIGE , 100GIGE , 10GIGEL2* , 40GIGEL2* , 100GIGEL2* , OC3 , OC12 , OC48 , OC192 , OC768 , STM1 , STM4 , STM16 , STM64 , ODU0 , ODU1 , ODU2 , ODU1E , ODU2E , ODU1F , ODU2F , ODU3 , ODU3E1 , ODU3E2 , ODU4 , ODUC2 , ODUC4* , ODUFlex.
AID	Access identifier. RSIP of the controller. Refer section 1.6.1 for AID format.
TNLID	This parameter specifies the identifier for the tunnel that needs to be deleted. The TNLID is specified at the time of tunnel creation.

15.3.3 Delete path option

Usage Guidelines
This command is used for deleting path option configuration.

Category
GMPLS

Security
Provisioning

Input Format
DLT-NNI-POPT:[<TID>]:<TNLID>:<CTAG>[::::];

Input Example
DLT-NNI-POPT::TNL-5:1;

Input Parameters

TNLID	Specifies the ID for the tunnel. This is used to refer to the tunnel by the edit/delete commands for this tunnel. Valid value for this can be TNL-<0-.63535>

15.3.4 Delete explicit path

Usage Guidelines
This command is used for deleting the explicit path configured.

Category
GMPLS

Security
Provisioning

Input Format
DLT-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::[<PTHIDX>][::];

Input Example
DLT-NNI-EXTPTH::QWER:1::10;

Input Parameters

PTHIDX	This parameter specifies the index for the explicit path that needs to be deleted. Valid value for this can be 1-65535.

PTHNM	Path name of the explicit path created. User needs to specify either PTHIDX or PTHNM as given while creating explicit path.

15.3.5   Delete xro for circuit divesity

Usage Guidelines
This is used to delete Xro circuit diversity configuration.

Category
GMPLS

Security
Provisioning

Input Format
DLT-NNI-XRO:[<TID>]:<XRONAME>:<CTAG>:[:::];

Input Example
dlt-nni-xro::pxro1:1;

Input Parameters

XRONAME	This is the Xro attribute set name.

15.4. Retrieve

15.4.1 Retrieve Tunnel

Usage Guideline
This command is used to display the tunnel configuration.

Category
GMPLS

Security
Provisioning

Input Format
RTRV-NNI-TNL:[<TID>]:<TNLID>:<CTAG>::[<DST>];

Input Example
RTRV-NNI-TNL::TNL-1:1;

Input Parameters

TNLID	This parameter specifies the identifier for the tunnel that needs to be retrieved. ALL keyword is also supported for this parameter. The optional parameter 'DST' can additionally be specified to filter the results of the retrieve.
DST	is the identifier for the egress point of the tunnel. This specifies the IPv4/IPv6 address or TID of the egress point. This is a filter criteria in case ALL is specified in the TNLID then the retrieval can be filtered using the DST point specified by the value of this parameter.

Output Format
SID DATE TIME

M CTAG COMPLD
"<TNLID>:,[DST=<DST>],[REQBW=<REQBW>],[SIGRATE=<SIGRATE>],[FLBR=<FLBR>],[FLFRM=<FLFRM,[CKT ID=<CKTID>],[RECRT=<RECRT>],[WKCTR=<WKCTR>],[WKSUBCTR=<WKSUBCTR>],[PTCTR=<PTCTR>],[PTSU BCTR=<PTSUBCTR>],[RSCTR=<RSCTR>],[RSSUBCTR=<RSSUBCTR>],[PATHPROTPROF=<PATHPROTPROF>],[P ROTTYPE=<PROTTYPE>],[RVRTV=<RVRTV>],[CONMODE=<CONMODE>],[RVTM=<>RVTM],[PRTHOTM=<PRT HOTM>]:[<PST>[,<SST>]]";

Output Example
10.78.161.183 1971-04-22 14:04:13
M 1 COMPLD
   "TNL-1::DST=1.2.3.4,REQBW=2498775,SIGRATE=ODU1,CKTID=IOS-OTN1,RECRT=N,PATHPROTPROF=TEST,P ROTTYPE=APSUNI,RVRTV=N,CONMODE=SNC-N,RVTM=5,PRTHOTM=0:OOS-MA,MT"
;

Output Parameters

DST	is the identifier for the egress point of the tunnel. This specifies the IPv4/IPv6 address or TID of the egress point.

REQBW	Specifies the requested bandwidth for the tunnel.
SIGRATE	Specifies the signal rate. Valid values for the same can be ODU0-ODU4 , flex. If the Type is flex it is mandatory to provide values for FLEX_BW, FLEX_BITRATE, FLEX_FRAMING. FLEX_TOLERANCE is an optional parameter. ODU0 ODU1 ODU1E ODU1F ODU2 ODU2E ODU2F ODU3 ODU3E1 ODU3E2 ODU4 ODUFlex
FLBR	This will be present if the BW_TYPE has been selected to be FLEX_BW. This specifies the bit rate to be used for flex signal. Valid values can be [1 , 104857600].
FLFRM	This will be present if the BW_TYPE has been selected to be FLEX_BW. This specifies the framing to be used for flex signal. Valid values are: CBR: 20, GFP-F-resizable: 21, GFP-F-nonresizable: 22,
RECRT	This is an optional parameter with a Boolean value. Valid values can be Y,N.
CKTID	Specifies the signaled name. The value for this can be a character string of 64 characters.
WKCTR	Specifies the port info for the working controller
WKSUBCTR	Specifies the port info for the working sub-controller
PTCTR	Specifies the port info for the protecting controller
PTSUBCTR	Specifies the port info for the protecting sub-controller
RSCTR	Specifies the port info for the restore controller
RSSUBCTR	Specifies the port info for the restore sub-controller

PATHPROTPROF	Path protection APS attribute name.
PROTTYPE	Protection type. Valid values are: • APSbidi 1+1 bi-directional Automatic Protection Switching • APSuni 1+1 unidirectional Automatic Protection Switching • noAPSuni 1+1 no Automatic Protection Switching • APSbidiR 1+1+R bi-direction Automatic Protection Swicthing
RVRTV	Specifies the protection-mode. Revertive or non-revertive. Valid values are Y/N.
CONMODE	Specifies the connection mode. Valid valies are: Snc-i, snc-s,snc-n
RVTM	APS wait-to-restore timer
PRTHOTM	APS Hold-off timer
PST	Primary state. Valid values are:
• OOS-MA	Out of service and Management
• OOS-AU	Out of Service and Autonomous
• IS-NR	In Service - Normal
SST	Secondary Admin State. The valid values are :-
• DSBLD	Disabled
• MT	Maintenance
• FLT	Fault

15.4.2Retrieve path option

Usage Guidelines
This command is used to retrieve the configuration of an existing explicit LSP.

Category
GMPLS

Security
Provisioning

Input Format
RTRV-NNI-POPT:[<TID>]:<TNLID>:<CTAG>[::::];

Input Example
RTRV-NNI-POPT::TNL-10:1;

Input Parameters

TNLID	Specifies the ID for the tunnel. This is used to refer to the tunnel for which path options are requested by this command. Valid value for this can be 0-63535.

Output Format
SID DATE TIME

M CTAG COMPLD

<TNLID>:WRKPTH=<WRKPTH>,WRKLCKDN=<WRKLCKDN>,[PRTPTH=<PRTPTH>],[PRTLCKDN=<PRTLCKDN>],
[RSTPTH=<RSTPTH],[RSTLCKDN=<RSTLCKDN>],[PRTRSTPTH=<PRTRSTPTH>],[PRTRSTLCKDN=<PRTRSTLCKDN>];

Output Example
CHASSIS1 2015-02-20 08:30:54

M   1 COMPLD

   "TNL-10::WRKPTH=DYNAMIC,WRKLCKDN=Y,PRTPTH=TEST,PRTLCKDN=Y"

Output Parameter

	WRKPTH	Specifies the work path-option for the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
	WRKLCKDN	Lockdown for work path. Valid value is Y. Default value is Y.
	PRTPTH	Specifies the PROTECT path-option for the tunnel. Valid values are: • Dynamic • Explicit path name

---

	It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTLCKDN	Lockdown for protect path. Valid value is Y. Default value is Y.
RSTPTH	Specifies the restore path-option for the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
RSTLCKDN	Lockdown for restore path. Valid value is Y. Default value is Y.
PRTRSTPTH	Specifies the restore path-option for the protect path of the tunnel. Valid values are: • Dynamic • Explicit path name It order to create dynamic path, specify 'dynamic. For explicit path, specify the name.
PRTRSTLCKDN	Lockdown for retore of protect path. Valid value is Y. Default value is Y.

15.4.3Retrieve explicit path option

Usage Guidelines
In this command, explicit path index (PTHIDX) or explicit path name (PTHNM) has to be given to retrieve explicit path details.

Category
GMPLS

Security
Provisioning

Input Format
RTRV-NNI-EXTPTH:[<TID>]:<PTHNM>:<CTAG>::[<PTHIDX>][::]

Input Example

RTRV-NNI-EXTPTH::ALL:1::10;

Input Parameters

PTHIDX	This parameter specifies the index for the explicit path option that needs to be retrieved. ALL is also a valid value for this. Valid value for this can be 1-65535.
PTHNM	Specifies IP explicit path name. Either PTHIDX or PTHNM has to be given.

Output Format

SID DATE TIME

M CTAG COMPLD

"<PTHNM>:[PTHIDX=<PTHIDX>],NXTADD=<NXTADD>,NXTADDT=<NXTADDT>,[STRINFIN=<STRINFIN>],[UN NUMD=<UNNUMD>]";

Output Example

```
   10.78.161.183 1971-04-29 14:37:28
M  1 COMPLD
   "PATH1:PTHIDX=10,NXTADD=10.78.161.183,NXTADDT=STRICT,STRINFIN=5,UNNUMD=UNNUMBERED"
   "PATH2:PTHIDX=10,NXTADD=10.78.161.243,NXTADDT=STRICT,STRINFIN=9,UNNUMD=UNNUMBERED"
;
```

Output Parameters

NXTADD	Provides the IPv4/IPv6 address or TID of the next address in the explicit path.
NXTADDT	Specifies the type of IPv4/IPv6 address or TID that has been provided in argument NXTADD. Valid value is "strict".
STRINFIN	This parameter needs to be provided only in case the value of parameter NXTADDT is strict. This specifies the interface index. Valid values can be 1-65535.
UNNUMD	Specifies that the IPv4/IPv6 given in parameter NXTADD is unnumbered. Valid value is "unnumbered".

15.4.4 Retrieve Xro name

Usage Guidelines

This command is used to retrieve the Xro name.

Category
GMPLS

Security
Provisioning

Input Format
RTRV-NNI-XRO:[<TID>]:<XRONAME>:<CTAG>[::];

Input Example
RTRV-NNI-EXTPTH::ALL:1::10;

Input Parameters

XRONAME	This is the Xro attribute set name.

Output Format
SID DATE TIME

M CTAG COMPLD

" XRONAME ,0:::SRCXRO=<SRCXRO>,DSTXRO=<DSTXRO
>,TNLIDXRO=<TNLIDXRO>,EXTTNLIDXRO=<EXTTNLIDXRO>,LSPXRO=<LSPXRO>"

 ;

Output Example

10.76.113.125 1971-08-01 02:18:57

M   1 COMPLD

"PXRO1,0:::SRCXRO=10.76.113.51,DSTXRO=10.76.113.80,TNLIDXRO=10,EXTTNLIDXRO=10.1.1.1,LSPXRO=100"

   "PXRO1,1:::SRCXRO=10.76.113.51,DSTXRO=10.76.113.80,TNLIDXRO=10,EXTTNLIDXRO=10.1.1.1,LSPXRO=15"

;

Output Parameters

XRONAME	This is the Xro attribute set name.
SRCXRO	This is the IPv4 address of the source node.
DSTXRO	This is the IPv4 address of the destination endpoint.
TNLIDXRO	This is a integer of range [0, 65535]

Chapter16.   Squelch Management

This chapter provides commands to manage laser squelch or idleframe timers for the Cisco NCS 4000 Series.

16.1 ED-<OPU_TYPE>

Usage Guideline

This command is used to edit the value of timer for laser squelch or idle frame.

Category

Provisioning

Security

EDIT

Input Format

ED-<OPU_TYPE>:[<TID>]:<AID>:<CTAG>:::[TIMERTYPE=<TIMERTYPE>],[TIMERVAL=<TIMERVAL>][:];

Input Example

ED-OPU2::ODU-0-13-0-10:1:::TIMERTYPE=LASERSQUELCH,TIMERVAL=40;

Input Parameters

<OPU_TYPE>	Type of optical payload unit. Valid values are OPU0 , OPU1 , OPU2 , OPU3 , OPU4 , OPUFlex , OPU1E , OPU2E , OPU3E1 ,or OPU3E2.
<AID>	The access identifier. This value identifies the NE with which a session is established.
<CTAG>	Enter the string to recognize a particular TL1 CLI.
<TIMERTYPE>	LASERSQUELCH, IDLEFRAME.
<TIMERVAL>	Timer value in milli seconds (ms). Default value is 100 ms.

16.2 DLT-<OPU_TYPE>

Usage Guideline

This command is used to delete the value of timer for laser squelch or idle frame.

Category

Provisioning

Security

DLT

Input Format

DLT-<OPU_TYPE>:[<TID>]:<AID>:<CTAG>::<TIMERTYPE>[::];

Input Example

DLT-OPU4::ODU-0-14-0-1:1::LASERSQUELCH;

Input Parameters

<OPU_TYPE>	Type of optical payload unit. Valid values are OPU0 , OPU1 , OPU2 , OPU3 , OPU4 , OPUFlex , OPU1E , OPU2E , OPU3E1 ,or OPU3E2.
<AID>	The access identifier. This value identifies the NE with which a session is established.
<CTAG>	Enter the string to recognize a particular TL1 CLI
<TIMERTYPE>	LASERSQUELCH, IDLEFRAME.

16.3 RTRV-<OPU_TYPE>

Usage Guideline

This command is used to retrieve the timer value for the particular laser squelch.

Category

Provisioning

Security

RTRV

Input Format

RTRV-<OPU_TYPE>:[<TID>]:<AID>:<CTAG>[::::];

Input Example

RTRV-OPU4::ODU-0-14-0-1:1;

Input Parameters

	<OPU_TYPE>	Type of optical payload unit. Valid values are OPU0 , OPU1 , OPU2 , OPU3 , OPU4 , OPUFlex , OPU1E , OPU2E , OPU3E1 ,or OPU3E2.
	<AID>	Access identifier. Identifies the NE with which a session is established.
	<CTAG>	Enter the string to recognize a particular TL1 CLI