



Release Notes for Cisco ONS 15327

Release 5.0.3



Note

The terms “Unidirectional Path Switched Ring” and “UPSR” may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as “Path Protected Mesh Network” and “PPMN,” refer generally to Cisco’s path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

August, 2007

Release notes address closed (maintenance) issues, caveats, and new features for the Cisco ONS 15327 SONET. For detailed information regarding features, capabilities, hardware, and software introduced with this release, refer to Release 5.0 of the *Cisco ONS 15327 Procedure Guide*, *Cisco ONS 15327 Reference Manual*, *Cisco ONS SONET TL1 Command Guide*, and *Cisco ONS 15327 Troubleshooting Guide*. For the most current version of the Release Notes for Cisco ONS 15327 Release 5.0.3, visit the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/ong/15327/rnotes/index.htm>

Cisco also provides Bug Toolkit, a web resource for tracking defects. To access Bug Toolkit, visit the following URL:

http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

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Changes to the Release Notes

This section documents supplemental changes that have been added to the *Release Notes for Cisco ONS 15327 Release 5.0.3* since the production of the Cisco ONS 15327 System Software CD for Release 5.0.3.

No changes have been added to the release notes for Release 5.0.3.

Caveats

Review the notes listed below before deploying the ONS 15327. Caveats with DDTS tracking numbers are known system limitations that are scheduled to be addressed in a subsequent release. Caveats without DDTS tracking numbers are provided to point out procedural or situational considerations when deploying the product.

Maintenance and Administration



Caution

VxWorks is intended for qualified Cisco personnel only. Customer use of VxWorks is not recommended, nor is it supported by Cisco's Technical Assistance Center. Inappropriate use of VxWorks commands can have a negative and service affecting impact on your network. Please consult the troubleshooting guide for your release and platform for appropriate troubleshooting procedures. To exit without logging in, enter a Control-D (hold down the Control and D keys at the same time) at the Username prompt. To exit after logging in, type "logout" at the VxWorks shell prompt.



Note

In releases prior to 4.6 you could independently set proxy server gateway settings; however, with Release 4.6.x and forward, this is no longer the case. To retain the integrity of existing network configurations, settings made in a pre-4.6 release are not changed on an upgrade to Release 5.0.x. Current settings are displayed in CTC (whether they were inherited from an upgrade, or they were set using the current GUI).

DDTS # CSCed24448

After a static route is provisioned to 0.0.0.0 and then deleted, the default route disappears. If this occurs, reprovision the default gateway. This issue will be resolved in a future release.

DDTS # CSCee65731

An ONS 15327 that does not have an SNTP server reference resets the time to Jan. 1, 1970 during a software activation. A routine common control switchover does not cause the node to lose the time setting. To avoid this issue provision a SNTP server reference. This issue cannot be resolved.

DDTS # CSCdy10030

CVs are not positively adjusted after exiting a UAS state. When a transition has been made from counting UAS, at least 10 seconds of non-SES must be counted to exit UAS. When this event occurs, Telcordia GR-253 specifies that CVs that occurred during this time be counted, but they are not. There are no plans to resolve this issue at this time.

DDTS # CSCdy49608

A node connection might fail during bulk circuit creation, causing the circuit creation to also fail. For example, this has been seen while creating 224 VT 1.5 protected circuits, on a path protection consisting of eight ONS 15327 nodes. If you experience a bulk circuit creation failure of this type, cancel the circuit creation batch, then delete any incomplete circuits. Restart the batch from the last successful circuit. This issue will not be resolved.

DDTS # CSCdx35561

CTC is unable to communicate with an ONS 15327 that is connected via an Ethernet craft port. CTC does, however, communicate over an SDCC link with an ONS 15327 that is Ethernet connected, yielding a slow connection. This situation occurs when multiple ONS 15327s are on a single Ethernet segment and the nodes have different values for any of the following features:

- Enable OSPF on the LAN
- Enable Firewall
- Craft Access Only

When any of these features are enabled, the proxy ARP service on the node is also disabled. The ONS 15327 proxy ARP service assumes that all nodes are participating in the service.

This situation can also occur immediately after the aforementioned features are enabled. Other hosts on the Ethernet segment (for example, the subnet router) may retain incorrect ARP settings for the ONS 15327s.

To avoid this issue, all nodes on the same Ethernet segment must have the same values for Enable OSPF on the LAN, Enable Firewall, and Craft Access Only. If any of these values have changed recently, it may be necessary to allow connected hosts (such as the subnet router) to expire their ARP entries.

You can avoid waiting for the ARP entries to expire on their own by removing the SDCC links from the affected ONS 15327 nodes. This will disconnect them for the purposes of the proxy ARP service and the nodes should become directly accessible over the Ethernet. Network settings on the nodes can then be provisioned as desired, after which the SDCC can be restored.

This issue will not be resolved.

DDTS # CSCdy11012

When the topology host is connected to multiple OSPF areas, but CTC is launched on a node that is connected to fewer areas, the topology host appears in CTC, and all nodes appear in the network view, but some nodes remain disconnected. This can occur when the CTC host does not have routing information to connect to the disconnected nodes. (This can happen, for example, if automatic host detection was used to connect the CTC workstation to the initial node.)

CTC will be able to contact the topology host to learn about all the nodes in all the OSPF areas, but will be unable to contact any nodes that are not in the OSPF areas used by the launch node. Therefore, some nodes will remain disconnected in the CTC network view.

To work around this issue, if no firewall enabled, then the network configuration of the CTC host can be changed to allow CTC to see all nodes in the network. The launch node must be on its own subnet to prevent network partitioning, and craft access must not be enabled. The CTC host must be provisioned with an address on the same subnet as the initial node (but this address must not conflict with any other node in the network), and with the default gateway of the initial node. CTC will now be able to contact all nodes in the network.

If a firewall is enabled on any node in the network, then CTC will be unable to contact nodes outside of the initial OSPF areas. This issue will not be resolved.

DDTS # CSCdy37198

On Cisco ONS 15327 platforms equipped with XTC cross-connect cards, Ethernet traffic may be lost during a BLSR protection switch, with no accompanying alarm or condition raised. Possible affected circuits will be between Ethernet cards (E100T-4) built over Protection Channel Access (PCA) bandwidth on BLSR spans. When BLSR issues the switch, the PCA bandwidth is preempted. Since there is no longer a connection between the ends of the Ethernet circuit, traffic is lost. Further, in nodes equipped with XTC cards, the E100T-4 cards do not raise an alarm or condition in CTC. This issue will not be resolved.

DDTS # CSCds23552

You cannot delete the standby XTC once it is removed. If you have two XTC cards and then decide to operate with only one, you will get a standing minor alarm. The alarm cannot be removed by CTC. The XTC is a combo card, combining the functionality of the ONS 15454 TCC2, cross connect, DS1 and DS3 cards, with a protection group automatically provisioned. On the ONS 15454, similar behavior occurs for the TCC2 card. The cross connect card for the ONS 15454 can only be deleted if there are no circuits provisioned. DS1 and DS3 cards can only be deleted if they are not in a protection group. User-defined alarm profiles in Release 5.0.x allow you to mask the improper removal alarm from the standby XTC slot without masking any other items if desired, thus avoiding this issue. This issue will not be resolved.

Data IO Cards

DDTS # CSCdy41135

When using a G1000-2 card, TIM-P can be mistakenly raised on a PCA circuit after a protection switch. This occurs when path trace is enabled on a PCA circuit that is no longer in use after a protection switch. To work around this issue, either disable path trace or use alarm profiling to filter out the unwanted alarm. This issue will not be resolved.

DDTS # CSCdy13035

Excessive Ethernet traffic loss (greater than 60 ms) may occur when the active XTC is removed from the chassis while using the G1000-2. On rare occasions, permanent loss of traffic may occur. Do not remove the active XTC from the chassis to force a protection switch. Instead, perform a soft reset of the active XTC through the network management interface. Once the XTC is in standby mode, it can be removed from the chassis without inducing excessive traffic loss. This issue is resolved by ECO# E074040, which incorporates improved hardware PLL circuitry on the G1000-2 line card to allow an active XTC removal without causing excessive traffic loss. The caveat herein is for the previous hardware version.

BLSR Functionality

DDTS # CSCef52499

When creating DRI circuits both service and path selectors can either be revertive or non-revertive. To correct this, change the reversion of the selectors after creation of the circuit by editing the circuit. This issue will be resolved in a future release.

Path Protection Functionality

DDTS # CSCee53579

Traffic hits can occur in an unprotected to path protection topology upgrade in unidirectional routing. If you create an unprotected circuit, then upgrade the unprotected circuit to a path protection circuit using Unprotected to UPSR wizard, selecting unidirectional routing in the wizard, the circuit will be upgraded to a path protection circuit. However, during the conversion, traffic hits on the order of 300 ms should be expected. This issue will be resolved in a future release.

DDTS # CSCec15064

A path protection/SNCP circuit with a defect signal present (for example, AIS-P or AIS-V) on the protect path will produce RDI-P or RDI-V upstream of the detection point, but these signals will not be detected or indicated. This issue will be resolved in a future release.

DDTS # CSCeb37707

With a VT path protection circuit, if you inject signals with a thru-mode test set into one path of the circuit in a particular order, you may not see the appropriate alarms. This can occur when you first inject LOP-P, then clear, then inject LOP-V. This issue will not be resolved.

Performance Monitoring

DDTS # CSCeg62711

On DS1/E1 cards, PM TCAs fail to appear, or appear against a lower port number than expected. This issue will be resolved in a future release.

DDTS # CSCdt10886

The far-end STS PM counts do not accumulate on an OC-48 linear 1+1 circuit even though the near-end STS PM counts on the other end are increasing. To see this issue, connect two nodes with an OC-12 or OC-48 linear 1+1 protected span. Place a piece of test equipment in the middle of the span and inject B3 errors. The near-end STS PM counts accumulate, but the far-end STS PM counts do not accumulate. To work around this issue, Use the near-end STS PM count from the adjacent node to see the far-end STS PM count for the current node. This issue will be resolved in a future release.

TL1



Note

To be compatible with TL1 and DNS, all nodes must have valid names. Node names should contain alphanumeric characters or hyphens, but no special characters or spaces.

Resolved Software Caveats for Release 5.0.3

The following items are resolved in Release 5.0.x.

Maintenance and Administration

DDTS # CSCdy71653

A change of the alarm profile while alarms are present on a DS3 card is not correctly applied. The behavior is specific to DS3 ports on an ONS 15327 node. This issue is resolved in Release 5.0.

DDTS # CSCed13967

If you toggle CTC shell access mode from telnet to ssh while a telnet session is active, then attempt to login via ssh, the XTC locks up and eventually reboots. To avoid this issue, do not toggle shell access when the shell is already engaged. This issue is resolved in Release 5.0.

DDTS # CSCec17281

When the “Status” field for a circuit in the circuit table shows “INCOMPLETE,” this can be interpreted as an alarm or traffic-affecting condition on the circuit. On path protection and BLSR circuits, a circuit is shown as INCOMPLETE if either the working or protect path is missing a network span or connection, even if traffic is flowing without error on the other, redundant path. This can lead to confusion, since the meaning of “INCOMPLETE” is not well-defined. You can see this if you, for example, introduce LOS on a span in a BLSR network such that traffic is switched to another path around the ring. Ignore the INCOMPLETE circuit status in such cases and instead look for any alarms in the network. This issue is resolved in Release 5.0. The circuit Status is defined clearly in the Release 5.0 user documentation.

DDTS # CSCed76192

If a host on the same Ethernet as a given NE sends ARP requests to the NE, with a source address that is in a restricted address range (see below), the NE might reboot and other cards in the shelf reset. The NE might become unmanageable under these circumstances. The NE will install an ARP entry for the illegal IP address, with the MAC supplied in the ARP request, thereby misrouting important addresses.

Restricted addresses are those in the loopback network, 127.0.0.0/8, in the multicast networks, 224.0.0.0/4, and in the cell bus network, 192.168.100.0/24.

The workaround is to ensure that no legitimate hosts have addresses in the illegal networks, and that no compromised hosts that might generate ARP attacks are on the Ethernet. This issue is resolved in Releases 4.0.3, 4.6.2, 4.1.5, and 5.0.

Data IO Cards

DDTS # CSCdy47038

G1000-2 path alarm profiles applied on port 2 are not updated to reflect the correct alarm severities. This issue is resolved in Release 5.0.

BLSR Functionality

DDTS # CSCdw66416

Traffic along a running ring segment cannot be restored while a participating node is rebooting. To see this problem, in a two fiber BLSR with circuits created along a given ring segment, you must isolate that ring segment by powering down two or more nodes where one of the nodes powered down is at the edge of the segment and the others are outside of the segment. Then power up and reboot the node at the edge of the segment. The circuits along this segment will not be restored even though the nodes on the segment are both up and running. You must restore power to all nodes before the traffic is restored. This issue is resolved in Release 5.0.

TL1 Functionality

DDTS # CSCeg87471

Do not set the TID for an ENE to more than 19 characters. Setting the TID for an ENE to 20 characters or more and then issuing a TL1 command on the GNE to execute on the ENE will result in TL1 agent connectivity issues on the ENE. Specifically, if you set the TID on the ENE to 20 characters, reboot the TCC, then try to connect to that ENE from a GNE this will result in a loss of TL1 connectivity to the GNE. This issue is resolved in Releases 5.0.2 and 5.0.3.

DDTS # CSCec54538

The TL1 INIT-REG-OCn command doesn't work with OC48-IR cards. To work around this you can use OC-48 cards or use the Clear command. This issue is resolved in Release 5.0.

DDTS # CSCdz26071

The TL1 COPY-RFILE command, used for SW download, database backup, and database restore, currently does not allow a user-selected port parameter to make connections to the host. The command expects the default parameter of Port 21 and will only allow that number. This issue is resolved in Release 5.0

New Features and Functionality

This section highlights new features and functionality for Release 5.0.x. For detailed documentation of each of these features, consult the user documentation.

**Note**

CTM Version 5.0 supports Release 5.0.3.

New Software Features and Functionality

In-Service Topology Upgrades

In Release 5.0.x in-service topology upgrades are supported for unprotected to path protection, terminal to linear (add a node to a 1+1), and path protection to 2F-BLSR. Release 5.0.x provides both manual methods and CTC wizards for completing these upgrades.

**Note**

Traffic hits resulting from an in service topology upgrade are less than 50 ms; however, traffic might not be protected during certain upgrades: in the case where you are upgrading from unprotected to path protection, with unidirectional routing, traffic hits might be greater than 50 ms. Cisco recommends waiting for a maintenance window to perform the topology upgrade in this case.

CTC Topology Upgrade Wizards

The following CTC topology upgrade wizards have been added for Release 5.0.x to support in service topology upgrades.

Unprotected to Path Protection

With this feature you can convert an unprotected circuit to path protection, or you can convert unprotected segments of a partially protected circuit to path protection.

Path Protection to Two Fiber BLSR

This feature creates a two fiber BLSR and converts all path protection circuits on the selected ring to BLSR circuits.

Terminal to Linear—Add a Node to 1+1

The wizard for this feature is invoked by right-clicking on a 1+1 link and then selecting the “terminal to linear” option. The option adds a node between a two nodes connected by a 1+1.

Additional Support for In Service Topology Upgrades

Circuit Routing

With Release 5.0.x you can choose between manually or automatically routing path protection circuits for a topology upgrade.

The following circuit types are supported for topology upgrades.

- Synchronous transport signal (STS)
- Unidirectional and bidirectional
- Automatically routed and manually routed

- CTC-created and TL1-created
- Ethernet (unstitched)
- Multiple source and destination (both sources should be on one node and both drops on one node)

Circuit Merge and Reconfigure

The circuit merge and reconfigure features enable you to merge selected CTC or TL1 circuits into one or more discovered CTC circuits based on the alignment of the circuit cross-connects, rather than the circuit ID.

Circuit Merge merges *m* circuits into one circuit. This feature takes one master circuit and merges aligned circuits with the master.

Circuit Reconfigure merges *m* circuits into *n* circuits. This feature takes *m* circuits and reconfigures them based on cross-connect alignment. To merge circuits choose the Merge subtab of the Edit Circuits tab in CTC. To merge circuits choose the Merge subtab of the Edit Circuits tab in CTC. To reconfigure circuits, choose the CTC Tools > Circuits tab, and select “Reconfigure Circuits...”

Dual-ring Interconnect

Dual-ring interconnect (DRI) topology provides an extra level of path protection for circuits on interconnected rings. DRI allows users to interconnect BLSRs, path protection configurations, or a path protection with a BLSR, with additional protection provided at the transition nodes. In a DRI topology, ring interconnections occur at two or four nodes.

DRI Features

The following list provides supported BLSR DRI features at a glance.

- BLSR two fiber configurations
- BLSR with path protection supported at the STS level (VT level not supported)
- Traditional DRI and integrated (IDRI)
- Traditional four node interconnect
- Integrated two node interconnect
- BLSR path level protection
- Drop and continue included
- Circuit routing, both manual and automatic
- Same side, or opposite side interconnect
- Ring interconnect on protect (RIP)
- Interconnection with mixed OCn
- Open ended DRI (supported for multi-vendor)



Note

Interconnection links do not support 1+1, 1:1, or 1:n.



Note

Dual transmit is not supported for Release 5.0.x BLSR DRI.

BLSR DRI

Unlike BLSR automatic protection switching (APS) protocol, BLSR DRI is a path-level protection protocol at the circuit level. Drop-and-continue BLSR-DRI requires a service selector in the primary node for each circuit routing to the other ring. Service selectors monitor signal conditions from dual feed sources and select the one that has the best signal quality. Same-side routing drops the traffic at primary nodes set up on the same side of the connected rings, and opposite-side routing drops the traffic at primary nodes set up on the opposite sides of the connected rings. For BLSR DRI, primary and secondary nodes cannot be the circuit source or destination.

A DRI circuit cannot be created if an intermediate node exists on the interconnecting link. However, an intermediate node can be added on the interconnecting link after the DRI circuit is created.

DRI protection circuits act as protection channel access (PCA) circuits. In CTC, you set up DRI protection circuits by selecting the PCA option when setting up primary and secondary nodes during DRI circuit creation.

Path Protection to BLSR DRI Handoff Configurations

Path protection configurations and BLSRs can also be interconnected. In path protection to BLSR DRI handoff configurations, primary and secondary nodes can be the circuit source or destination, which is useful when non-DCC optical interconnecting links are present.

Open GNE

Release 5.0.x supports open GNE configurations, through which the ONS 15327 can communicate with non-ONS nodes that do not support point-to-point protocol (PPP) vendor extensions or OSPF type 10 opaque link-state advertisements (LSA), both of which are necessary for automatic node and link discovery. An open GNE configuration allows the DCC-based network to function as an IP network for non-ONS nodes. To support open GNE Release 5.0.x provides provisionable foreign DCC terminations, provisionable proxy server tunnels, and provisionable firewall tunnels.

Foreign DCC termination

To configure an open GNE network, you can provision SDCC, LDCC, and GCC terminations to include a far-end, non-ONS node using either the default IP address of 0.0.0.0 or a specified IP address. You provision a far-end, non-ONS node by checking the “Far End is Foreign” check box during SDCC, LDCC, and GCC creation. The default 0.0.0.0 IP address allows the far-end, non-ONS node to provide the IP address; if you set an IP address other than 0.0.0.0, a link is established only if the far-end node identifies itself with that IP address, providing an extra level of security.

Proxy Server Tunnels and Firewall Tunnels

By default, the SOCKS proxy server only allows connections to discovered ONS peers, and the firewall blocks all IP traffic between the DCC network and LAN. You can, however, provision proxy tunnels to allow up to 12 additional destinations for SOCKS version 5 connections to non-ONS nodes. You can also provision firewall tunnels to allow up to 12 additional destinations for direct IP connectivity between the DCC network and LAN. Proxy and firewall tunnels include both a source and destination subnet. The connection must originate within the source subnet and terminate within the destination subnet before either the SOCKS connection or IP packet flow is allowed.

To set up proxy and firewall subnets in CTC, use the Provisioning > Network > Proxy and Firewalls subtabs. The availability of proxy and/or firewall tunnels depends on the network access settings of the node. See the user documentation for further details.

1+1 VT Protection Support

With Release 5.0.x support for VT 1+1 protection increases from 224 to 336 VTs. The CTC Resource Allocation Usage screen is updated to display the working and protect allocation.

State Verification Scan Before Activation

Before allowing a software activation or reversion to proceed, Release 5.0.x nodes verify that their current state meets required activation criteria. Activation criteria must be met in order to avoid traffic hits. For ONS 15454, ONS 15454 SDH, ONS 15327, and ONS 15310 nodes, all BLSR spans on the node must be locked-out, and no 1:1, 1:N, 1+1 or Y-Cable protection switches can be in progress. For ONS 15600 nodes, all BLSR spans on the node must be locked-out.

Admin SSM

Synchronization status messaging (SSM) is a protocol that communicates information about the quality of the timing source. SSM messages enable nodes to automatically select the highest quality timing reference and to avoid timing loops. With Release 5.0.x you can configure an SSM value for a timing source (either BITS-IN or Optical Line) by selecting from the “ADMIN. SSM” selection box in the BITS Facilities subtab of the node view, Provisioning > Timing tabs. This feature is useful when the selected external timing source has no SSM information. When you select the Admin SSM value, all switching decisions are subsequently made based on your selection. The same SSM value is transmitted out of the interface configured for BITS Out, and in transmit Optical S1. The DS1 BITS type with framing type SF(D4) only supports Admin SSM. The 64KHz+8KHz clock (ONS 15454 SONET) also only supports Admin SSM. ESF Framing must have Sync Messaging turned off (uncheck the check box) in order to enable Admin SSM selection. SONET nodes use the SSM Generation II message set, as defined in Table 4 of ANSI T1.101-1999. SDH nodes support SDH generation 1 SSM and STU. SONET nodes support only SONET SSM (GR-253).

Linear Port-Mapped Ethernet Mode (8-port 10/100 Ethernet Linear Mapper)

Port-mapped mode, also referred to as linear mapper, configures the E-Series card to map a specific E-Series Ethernet port to one of the card’s specific STS/VC circuits. Port-mapped mode ensures that Layer 1 transport has low latency for unicast, multicast, and mixed traffic. Ethernet and Fast Ethernet on the E100T-G or E10/100-4 card operate at line-rate speed. Gigabit Ethernet transport is limited to a maximum of 600 Mbps because the E1000-2-G card has a maximum bandwidth of STS-12c/VC4-4c. Ethernet frame sizes up to 1522 bytes are also supported, which allow transport of IEEE 802.1Q tagged frames. The larger maximum frame size of Q-in-Q frames (IEEE 802.1Q in IEEE 802.1Q wrapped frames) is not supported.

E-Series Mapping Ethernet Ports to STS/VC Circuits

Port-mapped mode disables Layer 2 functions supported by the E-Series in single-card and multcard mode, including STP, VLANs, and MAC address learning. It significantly reduces the service-affecting time for cross-connect and TCC2/TCC2P/XTC card switches.

Port-mapped mode does not support VLANs in the same manner as multcard and single-card mode. The ports of E-Series cards in multcard and single-card mode can join specific VLANs. E-Series cards in port-mapped mode do not have this Layer 2 capability and only transparently transport external VLANs over the mapped connection between ports. An E-Series card in port-mapped mode does not inspect the tag of the transported VLAN, so a VLAN range of 1 through 4096 can be transported in port-mapped mode.

Port-mapped mode does not perform any inspection or validation of the Ethernet frame header. The Ethernet CRC is validated, and any frame with an invalid Ethernet CRC is discarded.

Port-mapped mode also allows the creation of STS/VC circuits between any two E-Series cards, including the E100T-G, E1000-2-G, and the E10/100-4 (the ONS 15327 E-Series card). Port-mapped mode does not allow ONS 15454 E-Series cards to connect to the ML-Series or G-Series cards, but does allow an ONS 15327 E10/100-4 card provisioned with LEX encapsulation to connect to the ML-Series or G-Series cards.

SNMP

High Capacity RMON

Remote Network Monitoring (RMON) is a feature commonly used to monitor the health of a network. The Internet Engineering Task Force (IETF) specifies a standard MIB, RFC 2819 [1], to be deployed for this purpose. Release 5.0.x adds enhancements to the SNMP agent on the ONS 15454, ONS 15454 SDH, and ONS 15327 platforms to supplement existing RMON SNMP support. This enhancement includes support for the HC-RMON-MIB. High Capacity RMON (HC-RMON) is an extension of RMON. RMON counters are 32-bit while HC-RMON counters are 32-bit and 64-bit as defined in the MIB. Release 5.0.x supports the following HC-RMON tables.

- mediaIndependentTable
- etherStatsHighCapacityTable
- etherHistoryHighCapacityTable

The MIB variable hcRMONCapabilities is supported along with these tables.

STS Around Ring

Release 5.0.x supports manual provisioning of contiguous concatenation (CCAT) STS circuits around the ring (traffic travels around the ring, starting and ending at the same node). In previous releases, if you selected the circuit source and destination as starting and ending on different I/O ports of the same node, the result would be an intra-node circuit only. With Release 5.0.x, you can manually route this type of circuit all the way around the ring. STS around the ring is supported for an unprotected path, in an unprotected ring, unless the underlying topology is line protected, in which case the around the ring circuit will also be line protected. STS around the ring is supported for all circuit sizes, starting with STS1 (SONET), or STM1 (SDH), and for all supported management interfaces.

Provisionable Patchcords

A provisionable patchcord is a user-provisioned link that is advertised by OSPF throughout the network. Provisionable patchcords, also called virtual links, are needed if an ONS 15327 optical port is connected to an ONS 15454 transponder or muxponder client port provisioned in transparent mode. Provisionable patchcords are required on both ends of a physical link. The provisioning at each end includes a local patchcord ID, slot and port information, remote IP address, and remote patchcord ID. Patchcords appear as dashed lines in CTC network view.

For supported combinations for ONS 15327 optical cards and the ONS 15454 transponder/muxponder cards used in a provisionable patchcord, refer to the *Cisco ONS 15327 Reference Manual*. For more information about the ONS 15454 transponder and muxponder cards, refer to the *Cisco ONS 15454 Reference Manual*.

Optical ports have the following requirements when used in a provisionable patchcord:

- An optical port connected to an ONS 15454 transponder or muxponder port requires an SDCC or LDCC termination.
- If the optical port is the protection port in a 1+1 group, the working port must have an SDCC or LDCC termination provisioned.
- If a remote end (ONS 15454) of a provisionable patchcord is Y-cable protected, an optical port requires two patchcords.

Enhanced State Model

Release 5.0.x introduces new administrative and service states for Cisco ONS 15327 cards, ports, and cross-connects. Administrative and service states are based on the generic state model defined in Telcordia GR-1093 Core, Issue 2 and ITU-T X.731 and are available for all support management interfaces. The following state types and state transition types are defined for Release 5.0.x. Consult the *Cisco ONS 15327 Reference Manual* for specific states and their applications.

Service States

Service states include a Primary State (PST), a Primary State Qualifier (PSTQ), and one or more Secondary States (SST).

Administrative States

Administrative states are used to manage service states. Administrative states consist of a PST and an SST. A change in the administrative state of an entity does not change the service state of supporting or supported entities.

Service State Transitions

The possible transitions from one service state to the next state for cards, ports, and cross-connects. A service state transition is based on the action performed on the entity and any autonomous activity.

Card Service State Transitions

The service state transitions for cards.

Port and Cross-Connect Service State Transitions

Port states do not impact cross-connect states with one exception. A cross-connect in the OOS-AU,AINS service state cannot transition autonomously into the IS-NR service state until the parent port is IS-NR.

Circuit State Model

Release 5.0.x adds support for circuit service and administrative states in CTC. For more information consult the user documentation.

CTC Enhancements

CTC Circuits State Default

The Release 5.0.x circuit creation wizard uses the new node default value, `CTC.circuits.state`, as the default circuit state when creating a circuit. This default can be set in the NE Defaults window, and will not be overridden by the “sticky” command feature, which caused the default value to be abandoned when using the wizard in previous releases.

Shell Login Challenge

Release 5.0.x supports the requirement of a specific shell password, set initially by the first shell user and then required of subsequent shell users at login. When this feature is enabled, the password is required of all shell users (rather than each user having a separate account) from the time it is set or changed. In the CTC node view, Provisioning > Security > Access tabs, check the “Enable Shell Password” check box to enable the shell password feature. The password can then be set or changed in a telnet or SSH shell session using the “passwd” command.



Note

The password should be 8 characters or less to avoid possible conflicts with certain FTP clients.

CTC ENE Launch

With Release 5.0.x, Cisco Transport Manager (CTM) can now display the node view of an end network element (ENE) without first displaying the node view of the associated gateway network element (GNE) when launching the CTC client.

Date Format Selection

Release 5.0.x adds a date format option to CTC, enabling you to choose between U.S. (MM/DD/YY) and European (DD/MM/YY) date formats. To choose the date format, click the Edit menu and choose Preferences. Select the desired date format (the default is MM/DD/YY) and click OK. The name/value pair (“`ctc.dateFormat=DD/MM/YY`” or “`ctc.dateFormat=MM/DD/YY`”) will be updated in the `ctc.ini` (Windows), or `.ctcrc` (UNIX) file, where preferences are stored. Subsequently, the date format used in all tables, dialogs, and tabs will be changed to the format you selected in the Preferences dialog.

Provisionable Patchcord Tab

Provisionable patchcords, also called virtual links, are needed if an ONS 15327 optical port is connected to an ONS 15454 transponder or muxponder client port provisioned in transparent mode. Release 5.0.x features a Provisionable Patchcord subtab in CTC that displays physical links and their associated protection types, so that, when a control channel cannot be terminated on either end of a physical link, and as a result, the physical link cannot be automatically discovered by OSPF, you can still view the physical link and its protection type in the management software interface. You can view the physical links and their terminations from the CTC network view > Provisioning > Provisionable Patchcords tabs; or from the CTC node view > Provisioning > Comm Channels > Provisionable Patchcords tabs. To provision the patchcord, you select the Node Name, Slot, Port, and ID for both ends of the physical link. The ID is a unique 16-bit number used to identify a virtual link on a node. IDs are only unique for the particular node.

TL1-CTC Circuit Unification

In Release 5.0.x CTC fully supports TL1-created circuits and TL1 fully supports CTC-created circuits. Release 5.0.x circuit behavior and appearance is unified across both management interfaces, and you can easily alternate between the two. It is also no longer necessary to upgrade a TL1 circuit for CTC, or to downgrade a CTC circuit for TL1. The following circuit unification enhancements are supported with Release 5.0.x.

- Release 5.0.x cross-connects can be given names via TL1 using ENT-CRS and ED-CRS (use the “CKTID” parameter).
- CTC-created circuits can now be fully deleted if all cross-connects are deleted via TL1. (Deleting a source node cross-connect automatically deletes the CTC “circuitInfo” database object.)
- TL1 circuits now have names (like CTC circuits).
- You can use TL1 to change the name of any circuit, TL1-created or CTC-created.
- Low order (LO) tunnels and LO aggregation point circuits created via TL1 are now recognized and displayed in CTC.
- You can use TL1 to add cross-connects to a CTC-created circuit.
- You can edit TL1 circuits using CTC. (No need for upgrading the circuit first.)
- Circuit “upgrade” and “downgrade” functions have been removed.
- You can merge two or more CTC circuits into a single CTC circuit. (Circuit Merge and Circuit Reconfigure.)
- “ACTIVE” circuits are now called “DISCOVERED.”
- “INCOMPLETE” circuits are now called “PARTIAL.”
- “UPGRADABLE” circuits are now called “DISCOVERED_TL1.”
- “INCOMPLETE_UPGRADABLE” circuits are now called “PARTIAL_TL1.”

TL1

High Level Functional Differences

The following high level support is added for Release 5.0.x.

Enhanced State Model Support

In Release 5.0.x, equipment, ports and circuits support additional Primary and Secondary states. Messages of the form REPT^DBCHG^MSG contain new Enhanced State Model (ESM) states in Release 5.0.x. The following are the new SONET states in ESM, as defined for TL1.

PST-PSTQ

[Table 1](#) describes each service state of the entity described by the Primary State (PST) and a Primary State Qualifier (PSTQ).

Table 1 Primary States

PST_PSTQ Values	Description
IS-NR	In Service - Normal
OOS-AU	Out of Service - Autonomous
OOS-AUMA	Out of Service - Autonomous and Management
OOS-MA	Out of Service - Management

SST

[Table 2](#) describes the Secondary States (SST). This parameter provides additional information pertaining to PST and PSTQ.

Table 2 Secondary States

SST Values	Description
AINS	AutoInService
DSBLD	Disabled
LPBK	Loopback
MEA	Mismatch of Equipment Alarm
MT	Maintenance
OOG	OutOfGroup
SWDL	Software Download
UAS	UnAssigned
UEQ	UnEquipped

Remote Monitoring

TL1 support for Remote Monitoring (RMON) is added in Release 5.0.x. All the “8B10B” related SONET PMs (VPC, IPC, CGV, IOS, NIOS, DCG) in Release 4.6.x have been changed and are supported by RMON-managed PMs in Release 5.0.x.

Additional Functional Support

The following additional high level features add functional support in Release 5.0.x TL1.

- Naming TL1 Cross-Connect feature is added to Release 5.0.x.
- Port naming support is added in Release 5.0.x.
- TL1 support for static routes is added in Release 5.0.x.
- TL1 support for SNMP configuration is added in Release 5.0.x.
- The “CLNT” (Client) modifier is removed from Release 5.0.x. The new commands, ENT-<MOD1PAYLOAD> and <DLT-MOD1PAYLOAD>, are introduced instead.
- Support for a RTRV-NETYPE command is added over all platforms. This command is used to retrieve equipment-related information for the NE.
- TL1 BLSR DRI support is added in Release 5.0.x.

- HDLC support is added in Release 5.0.x TL1 for the G1000-2 card.
- Provisionable Patch Cord support is added in Release 5.0.x.
- Separation of Flow Control and Auto Negotiation support is added in Release 5.0.x.
- For DS3 type cards, Port Layer is added in STS and VT aids.
- SSM Selectable Feature (ADMIN SSM) support is added to Release 5.0.x TL1.

TL1 Command Changes

New Commands

The following commands are added in Release 5.0.x.

- DLT-<MOD1PAYLOAD>
- DLT-RMONTH-<MOD2>
- DLT-ROUTE
- ED-10GIGE
- ED-ALS
- ED-APC
- ED-FSTE
- ED-GIGE
- ED-HDLC
- ED-LNKTERM
- ED-<MOD1FCPAYLOAD>ED-<MOD1FICONPAYLOAD>
- ED-<MOD2DWDMPAYLOAD>
- ED-POS
- ED-SLV-WDMANS
- ED-TRAPTABLE
- ED-VCG
- ENT-LNKTERM
- ENT-<MOD1PAYLOAD>
- ENT-RMONTH-<MOD2>
- ENT-ROUTE
- ENT-TRAPTABLE
- OPR-APC
- OPR-SLV-WDMANS
- RMV-EQPT
- RST-EQPT
- RTRV-10GIGE
- RTRV-APC
- RTRV-LNKTERM

- RTRV-<MOD1FCPAYLOAD>
- RTRV-<MOD1FICONPAYLOAD>
- RTRV-<MOD2DWDMPAYLOAD>
- RTRV-NE-APC
- RTRV-OPM
- RTRV-RMONTH-<MOD2>
- RTRV-ROUTE
- RTRV-SLV-WDMANS
- RTRV-NETTYPE

Commands No Longer Supported

The following commands are no longer supported in Release 5.0.x.

- DLT-FFP-CLNT
- ED-CLNT
- ED-FC
- ED-FFP-CLNT
- ED-TRC-CLNT
- ED-VCM
- ENT-FFP-CLNT
- INIT-REG-CLNT
- OPR-LASER-OTS
- OPR-LPBK-CLNT
- OPR-PROTNSW-CLNT
- RLS-LASER-OTS
- RLS-LPBK-CLNT
- RLS-PROTNSW-CLNT
- RMV-CLNT
- RST-CLNT
- RTRV-ALM-CLNT
- RTRV-ALM-VCM
- RTRV-ALMTH-CLNT
- RTRV-CLNT
- RTRV-COND-CLNT
- RTRV-COND-VCM
- RTRV-DWDM
- RTRV-FC
- RTRV-FFP-CLNT
- RTRV-PM-CLNT

- RTRV-PMSCHED-CLNT
- RTRV-PROTNSW-CLNT
- RTRV-TH-CLNT
- RTRV-TRC-CLNT
- RTRV-VCM
- SCHED-PMREPT-CLNT
- SET-ALMTH-CLNT
- SET-TH-CLNT

Command Syntax Changes

The syntax of the following commands is changed in Release 5.0.x.

ALW-MSG-ALL syntax:

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

Is changed to:

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

DLT-WLEN syntax:

DLT-WLEN:[<TID>]:<aid>:<CTAG>:::[CMDMDE=<cmdmde>];

Is changed to:

DLT-WLEN:[<TID>]:<aid>:<CTAG>:::[CMDMDE=<cmdmde>],[CKTID=<cktId>];

ED-BITS syntax:

ED-BITS:[<TID>]:<aid>:<CTAG>:::[LINECDE=<linecde>],[FMT=<fmt>],[SABIT=<sabit>],[IMPEDANCE=<impedance>],[LBO=<lbo>],[SYNCMSG=<syncmsg>],[AISTHRSHLD=<ai
isthrshld>][:<pst>];

Is changed to:

ED-BITS:[<TID>]:<aid>:<CTAG>:::[LINECDE=<linecde>],[FMT=<fmt>],[SABIT=<sabit>],[IMPEDANCE=<impedance>],[LBO=<lbo>],[SYNCMSG=<syncmsg>],[AISTHRSHLD=<a
isthrshld>],[BITSFAC=<bitsfac>],[ADMSSM=<admssm>][:<pst>];

ED-CRS-STS-PATH syntax:

ED-CRS-STS-PATH:[<TID>]:<src>,<dst>:<CTAG>:::[<cct>]:[ADD=<add>],[REMOVE=<re
move>][:<pst>],[<sst>];

Is changed to:

ED-CRS-STS-PATH:[<TID>]:<src>,<dst>:<CTAG>:::[<cct>]:[ADD=<add>],[REMOVE=<re
move>],[CKTID=<cktid>],[CMDMDE=<cmdmde>][:<pst>],[<sst>];

ED-CRS-VT-PATH syntax:

ED-CRS-VT-PATH:[<TID>]:<src>,<dst>:<CTAG>:::[ADD=<add>],[REMOVE=<remove>]:<
pst>,[<sst>];

Is changed to:

ED-CRS-VT-PATH:[<TID>]:<src>,<dst>:<CTAG>:::[ADD=<add>],[REMOVE=<remove>],[
CKTID=<cktid>],[CMDMDE=<cmdmde>]:<pst>,[<sst>];

ED-DS1 syntax:

```
ED-DS1:[<TID>]:<aid>:<CTAG>:::[TACC=<tacc>],[TAPTYPE=<tatype>];
```

Is changed to:

```
ED-DS1:[<TID>]:<aid>:<CTAG>:::[TACC=<tacc>],[TAPTYPE=<tatype>],[MODE=<mode>],[FMT=<fmt>];
```

ED-DS3I syntax:

```
ED-DS3I:[<TID>]:<aid>:<CTAG>:::[FMT=<fmt>],[LINECDE=<linecde>],[LBO=<lbo>],[I  
NHFELPBK=<inhfelpbk>],[TACC=<tacc>],[TAPTYPE=<tatype>],[SFBER=<sfber>],[SDB  
ER=<sdber>],[SOAK=<soak>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-DS3I:[<TID>]:<aid>:<CTAG>:::[FMT=<fmt>],[LINECDE=<linecde>],[LBO=<lbo>],[I  
NHFELPBK=<inhfelpbk>],[TACC=<tacc>],[TAPTYPE=<tatype>],[SFBER=<sfber>],[SDB  
ER=<sdber>],[SOAK=<soak>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-E1 syntax:

```
ED-E1:[<TID>]:<aid>:<CTAG>:::[LINECDE=<linecde>],[FMT=<fmt>],[TACC=<tacc>],[T  
APTYPE=<tatype>],[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>]:[<pst>],[<sst>]  
;
```

Is changed to:

```
ED-E1:[TID]:<aid>:[CTAG]:::[LINECDE=<linecde>],[FMT=<fmt>],[TACC=<tacc>],[TAP  
TYPE=<tatype>],[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>],[NAME=<name>],[  
CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-E3 syntax:

```
ED-E3:[<TID>]:<aid>:<CTAG>:::[TACC=<tacc>],[TAPTYPE=<tatype>],[SFBER=<sfber>,  
][SDBER=<sdber>],[SOAK=<soak>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-E3:[TID]:<aid>:[CTAG]:::[TACC=<tacc>],[TAPTYPE=<tatype>],[SFBER=<sfber>],[S  
DBER=<sdber>],[SOAK=<soak>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst  
>];
```

ED-E4 syntax:

```
ED-E4:[<TID>]:<src>:<CTAG>:::[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>]:[<  
pst>],[<sst>];
```

Is changed to:

```
ED-E4:[TID]:<src>:[CTAG]:::[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>],[NAM  
E=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-EC1 syntax:

```
ED-EC1:[<TID>]:<aid>:<CTAG>:::[PJMON=<pjmon>],[LBO=<lbo>],[SOAK=<soak>],[SF  
BER=<sfber>],[SDBER=<sdber>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-EC1:[<TID>]:<aid>:<CTAG>:::[PJMON=<pjmon>],[LBO=<lbo>],[SOAK=<soak>],[SF  
BER=<sfber>],[SDBER=<sdber>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst  
>];
```

ED-EQPT syntax:

```
ED-EQPT:[<TID>]:<aid>:<CTAG>:::[PROTID=<protid>],[PRTYPE=<prtype>],[RVRTV=<r
vrtv>],[RVTM=<rvtm>],[CMDMDE=<cmdmde>][:];
```

Is changed to:

```
ED-EQPT:[<TID>]:<aid>:<CTAG>:::[PROTID=<protid>],[PRTYPE=<prtype>],[RVRTV=<r
vrtv>],[RVTM=<rvtm>],[CARDMODE=<cardmode>],[PEERID=<protid>],[REGENNAME=
<regenname>],[PWL=<pw1>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-G1000 syntax:

```
ED-G1000:[<TID>]:<aid>:<CTAG>:::[MFS=<mfs>],[FLOW=<flow>],[LOWMRK=<int>],[
HIWMRK=<int>],[<pst>],[<sst>];
```

Is changed to:

```
ED-G1000:[<TID>]:<aid>:<CTAG>:::[MFS=<mfs>],[FLOW=<flow>],[LOWMRK=<int>],[
HIWMRK=<int>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-OCH syntax:

```
ED-OCH:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[EXPWLEN=<expwlen>],[VOAATT
N=<voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>],[
NAME=<portname>],[SFBER=<sfber>],[SDBER=<sdber>],[OSDBER=<sdber>],[ALSMOD
E=<alsmode>],[ALSRCINT=<alsrcint>],[ALSRCPW=<alsrcpw>],[COMM=<comm>],[GCC
RATE=<gccrate>],[DWRAP=<drwap>],[FEC=<fec>],[MACADDR=<macaddr>],[SYNCMS
G=<syncmsg>],[SENDDUS=<senddus>],[RLASER=<rlaser>],[SOAK=<soak>],[OSPF=<osp
f>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-OCH:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[EXPWLEN=<expwlen>],[VOAATT
N=<voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>],[
NAME=<portname>],[SFBER=<sfber>],[SDBER=<sdber>],[OSDBER=<sdber>],[COMM=<
comm>],[GCCRATE=<gccrate>],[DWRAP=<drwap>],[FEC=<fec>],[PAYLOADMAP=<payl
oadmap>],[MACADDR=<macaddr>],[SYNCMSG=<syncmsg>],[SENDDUS=<senddus>],[S
OAK=<soak>],[OSPF=<ospf>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-OMS syntax:

```
ED-OMS:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[EXPBAND=<expband>],[VOAATT
N=<voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>]:[
<pst>],[<sst>];
```

Is changed to:

```
ED-OMS:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[EXPBAND=<expband>],[VOAATT
N=<voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>],[
NAME=<name>],[SOAK=<soak>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];
```

ED-OTS syntax:

ED-OTS:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[VOAATTN=<voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CALTILT=<caltilt>],[OSRI=<osri>],[ALSMODE=<alsmode>],[ALSRCINT=<alsrcint>],[ALSRCPW=<alsrcpw>],[EXPGAIN=<gain>]:[<pst>],[<sst>];

Is changed to:

ED-OTS:[<TID>]:<aid>:<CTAG>:::[RDIRN=<rdirn>],[VOAATTN=<voaattn>],[VOAPWR=<voapwr>],[OFFSET=<offset>],[CALTILT=<caltilt>],[OSRI=<osri>],[AMPLMODE=<amplmode>],[CHPOWER=<chpower>],[EXPGAIN=<expgain>],[NAME=<name>],[SOAK=<soak>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];

ED-STM1E syntax:

ED-STM1E:[<TID>]:<src>:<CTAG>:::[SYNCMSG=<syncmsg>],[SENDDUS=<senddus>],[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>]:[<pst>],[<sst>];

Is changed to:

ED-STM1E:[<TID>]:<src>:<CTAG>:::[SYNCMSG=<syncmsg>],[SENDDUS=<senddus>],[SFBER=<sfber>],[SDBER=<sdber>],[SOAK=<soak>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];

ED-T1 syntax:

ED-T1:[<TID>]:<aid>:<CTAG>:::[LINECDE=<linecde>],[FMT=<fmt>],[LBO=<lbo>],[TACC=<tacc>],[TAPTYPE=<taptype>],[SOAK=<soak>],[SFBER=<sfber>],[SDBER=<sdber>]:[<pst>],[<sst>];

Is changed to:

ED-T1:[<TID>]:<aid>:<CTAG>:::[LINECDE=<linecde>],[FMT=<fmt>],[LBO=<lbo>],[TACC=<tacc>],[TAPTYPE=<taptype>],[SOAK=<soak>],[SFBER=<sfber>],[SDBER=<sdber>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];

ED-T3 syntax:

ED-T3:[<TID>]:<aid>:<CTAG>:::[FMT=<fmt>],[LINECDE=<linecde>],[LBO=<lbo>],[INH FELPBK=<inhfelpbk>],[TACC=<tacc>],[TAPTYPE=<taptype>],[SOAK=<soak>],[SFBER=<sfber>],[SDBER=<sdber>]:[<pst>],[<sst>];

Is changed to:

ED-T3:[<TID>]:<aid>:<CTAG>:::[FMT=<fmt>],[LINECDE=<linecde>],[LBO=<lbo>],[INH FELPBK=<inhfelpbk>],[TACC=<tacc>],[TAPTYPE=<taptype>],[SOAK=<soak>],[SFBER=<sfber>],[SDBER=<sdber>],[NAME=<name>],[CMDMDE=<cmdmde>]:[<pst>],[<sst>];

ED-VC3 syntax:

ED-VC3:[<TID>]:<src>:<CTAG>:::[RVRTV=<rvrtv>],[RVTM=<rvtm>],[HOLDOFFTIMER=<holdofftimer>],[TACC=<tacc>],[TAPTYPE=<taptype>]:[<pst>],[<sst>];

Is changed to:

ED-VC3:[<TID>]:<src>:<CTAG>:::[RVRTV=<rvrtv>],[RVTM=<rvtm>],[HOLDOFFTIMER=<holdofftimer>],[TACC=<tacc>],[TAPTYPE=<taptype>],[CMDMDE=<cmdmde>],[EXPTRC=<exptrc>],[TRC=<trc>],[TRCMODE=<trcmode>]:[<pst>],[<sst>];

ED-VT1 syntax:

```
ED-VT1:[<TID>]:<aid>:<CTAG>:::[RVRTV=<rvrtv>],[RVTM=<rvtm>],[HOLDOFFTIMER
=<holdofftimer>],[TACC=<tacc>],[TAPTYPE=<tatype>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-VT1:[<TID>]:<aid>:<CTAG>:::[RVRTV=<rvrtv>],[RVTM=<rvtm>],[HOLDOFFTIMER
=<holdofftimer>],[TACC=<tacc>],[TAPTYPE=<tatype>],[CMDMDE=<cmdmde>],[EXPTR
C=<exptrc>],[TRC=<trc>],[TRCMODE=<trcmode>]:[<pst>],[<sst>];
```

ED-WDMANS syntax:

```
ED-WDMANS:[<TID>]:<aid>:<CTAG>:::[POWER-IN=<powerIn>],[POWER-OUT=<power
Out>],[POWER-EXP=<powerExp>],[POWER-DROP=<powerDrop>],[SYS-TYPE=<sysType
>],[NTW-TYPE=<ringType>];
```

Is changed to:

```
ED-WDMANS:[<TID>]:<aid>:<CTAG>:::[POWERIN=<powerIn>],[POWEROUT=<powerO
ut>],[POWEREXP=<powerExp>],[NTWTYPE=<ringType>];
```

ED-WLEN syntax:

```
ED-WLEN:[<TID>]:<aid>:<CTAG>:::[SIZE=<size>]:[<pst>],[<sst>];
```

Is changed to:

```
ED-WLEN:[<TID>]:<aid>:<CTAG>:::[SIZE=<size>],[CKTID=<cktId>],[CMDMDE=<cmd
mde>]:[<pst>],[<sst>];
```

ENT-EQPT syntax:

```
ENT-EQPT:[<TID>]:<aid>:<CTAG>:::<aidtype>:[PROTID=<protid>],[PRTYPE=<prtype>],[
RVRTV=<rvrtv>],[RVTM=<rvtm>],[CMDMDE=<cmdmde>][:];
```

Is changed to:

```
ENT-EQPT:[<TID>]:<aid>:<CTAG>:::<aidtype>:[PROTID=<protid>],[PRTYPE=<prtype>],[
RVRTV=<rvrtv>],[RVTM=<rvtm>],[CARDMODE=<cardmode>],[PEERID=<protid>],[REG
ENNAME=<regenname>],[PWL=<pwl>],[CMDMDE=<cmdmde>][:];
```

ENT-VCG syntax:

```
ENT-VCG:[<TID>]:<src>:<CTAG>:::TYPE=<type>,TXCOUNT=<txcount>,[CCT=<cct>],[LCA
S=<lcas>];;
```

Is changed to:

```
ENT-VCG:[TID]:<src>:[CTAG]:::TYPE=<type>,TXCOUNT=<txcount>,[CCT=<cct>],[LCA
S=<lcas>],[BUFFERS=<buffers>],[NAME=<name>][:];
```

ENT-WLEN syntax:

```
ENT-WLEN:[<TID>]:<aid>:<CTAG>:::[SIZE=<size>]:[<pst>],[<sst>];
```

Is changed to:

```
ENT-WLEN:[<TID>]:<aid>:<CTAG>:::[<wct>]:[SIZE=<size>],[CKTID=<cktId>]:[<pst>],[<
sst>];
```

RTRV-ALM-ALL syntax:

```
RTRV-ALM-ALL:[<TID>]:<CTAG>:::<ntfcncde>,[<condtype>],[<srveff>][,.,,];
```

Is changed to:

```
RTRV-ALM-ALL:[<TID>]:[<aid>]:<CTAG>:::[<ntfcncde>],[<condtype>],[<srveff>][,.,,];
```

RTRV-COND-ALL syntax:

RTRV-COND-ALL:[<TID>]:<CTAG>::<typereq>[,,,];

Is changed to:

RTRV-COND-ALL:[<TID>]:<aid>:<CTAG>::<typereq>[,,,];

RTRV-CRS syntax:

RTRV-CRS:[<TID>]:<aid>:<CTAG>[::CRSTYPE=<crstype>][:];

Is changed to:

RTRV-CRS:[<TID>]:<aid>:<CTAG>[::CRSTYPE=<crstype>][:];

RTRV-GIGE syntax:

RTRV-GIGE:[<TID>]:<aid>:<CTAG>;

Is changed to:

RTRV-GIGE:[<TID>]:<aid>:<CTAG>[::::];

RTRV-NE-WDMANS syntax:

RTRV-NE-WDMANS:[<TID>]:<aid>:<CTAG>;

Is changed to:

RTRV-NE-WDMANS:[<TID>]:<aid>:<CTAG>[::::];

RTRV-WDMANS syntax:

RTRV-WDMANS[<TID>]:<aid>:<CTAG>;

Is changed to:

RTRV-WDMANS[<TID>]:<aid>:<CTAG>[::::];

TL1 Response Changes

The following TL1 responses have changed in Release 5.0.x.

RTRV-BITS response:

<aid>::<linecde>],[<fmt>],[<lbo>],[<syncmsg>],[<aisthrshld>],[<saBit>]:<pst>]

Is changed to:

<aid>::<linecde>],[<fmt>],[<lbo>],[<syncmsg>],[<aisthrshld>],[<saBit>],[<bitsfac>],[<admssm>]:<pst>]

RTRV-CRS response:

<from>,<to>:<cct>,<level>::<pst>,[<sst>]

Is changed to:

<from>,<to>:<cct>,<level>::<dritype>],[<drinode>],[<cktId>]:<pst>-<pstq>,[<sst>[&<sst> *]]

RTRV-DS1 response:

<aid>::<tacc>],[<tatype>]

Is changed to:

<aid>::<tacc>],[<tatype>],[<mode>],[<fmt>]

RTRV-DS3I response:

```
<aid>::<fmt>,<linecde>,<lbo>,<tacc>,<taptype>,<sfber>,<sdber>,<soak>:<pst>,<sst>]
```

Is changed to:

```
<aid>::<fmt>,<linecde>,<lbo>,<tacc>,<taptype>,<sfber>,<sdber>,<soak>,<name>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-E1 response:

```
<aid>::<linecde>,<fmt>,<tacc>,<taptype>,<sfber>,<sdber>,<soak>:<pst>,<sst>]
```

Is changed to:

```
<aid>::<linecde>,<fmt>,<tacc>,<taptype>,<sfber>,<sdber>,<soak>,<name>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-E4 response:

```
<aid>::<payload>,<sfber>,<sdber>,<soak>:<pst>,<sst>]
```

Is changed to:

```
<aid>::<payload>,<sfber>,<sdber>,<soak>,<name>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-EC1 response:

```
<aid>::<pjmon>,<lbo>,<rxequal>,<soak>,<soakleft>,<sfber>,<sdber>:<pst>,<sst>]
```

Is changed to:

```
<aid>::<pjmon>,<lbo>,<rxequal>,<soak>,<soakleft>,<sfber>,<sdber>,<name>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-EQPT response:

```
<aid>:<aidtype>,<equip>,<role>,<status>:<protid>,<prtype>,<rvrtv>,<rvtm>,<cardname>,<ioscfg>:<pst>,<sst>]
```

Is changed to:

```
<aid>:<aidtype>,<equip>,<role>,<status>:<protid>,<prtype>,<rvrtv>,<rvtm>,<cardname>,<ioscfg>,<cardmode>,<peerid>,<regenname>,<pw1>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-FSTE response:

```
<aid>::<adminstate>,<linkstate>,<mtu>,<flowctrl>,<duplex>,<speed>]
```

Is changed to:

```
<aid>::<adminstate>,<linkstate>,<mtu>,<flowctrl>,<duplex>,<speed>,<flow>,<expduplex>,<expspeed>,<vlancosthreshold>,<iptosthreshold>,<name>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-G1000 response:

```
<aid>::<mfs>,<flow>,<lan>,<optics>,<soak>,<als>,<trans>,<tport>,<lwmrk>,<hiwmrk>,<buff>:<soakleft>:<pst>,<sst>]
```

Is changed to:

```
<aid>::<mfs>,<flow>,<lan>,<optics>,<soak>,<trans>,<tport>,<lwmrk>,<hiwmrk>,<buff>:<soakleft>,<autoneg>,<name>,<encap>:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-GIGE response:

```
<aid>::[<adminstate>],[<linkstate>],[<mtu>],[<flowctrl>],[<optics>],[<duplex>],[<speed>]
```

Is changed to:

```
<aid>::[<adminstate>],[<linkstate>],[<mtu>],[<flowctrl>],[<optics>],[<duplex>],[<speed>],[  
<name>]:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-NE-WDMANS response:

```
<aid>,<aidtype>::[<regulated>]
```

Is changed to:

```
<aid>,<aidtype>::[<regulated>],[<param>]:
```

RTRV-OCH response:

```
<aid>:,[<role>],[<status>]:[<rdirn>],[<opticalPortType>],[<power>],[<expWlen>],[<actWle  
n>],[<iloss>],[<voamode>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr  
>],[<calopwr>],[<chpower>],[<portname>],[<sfber>],[<sdber>],[<alsmode>],[<alsrcint>],[<a  
lsrcpw>],[<comm>],[<gccrate>],[<dwrap>],[<fec>],[<osfber>],[<osdber>],[<macaddr>],[<sy  
ncmsg>],[<senddus>],[<lsrstat>],[<soak>],[<soakleft>],[<ospf>]:<pst>,<sst>
```

Is changed to:

```
<aid>:,[<role>],[<status>]:[<rdirn>],[<opticalPortType>],[<power>],[<expWlen>],[<actWle  
n>],[<iloss>],[<voamode>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr  
>],[<calopwr>],[<chpower>],[<portname>],[<sfber>],[<sdber>],[<comm>],[<gccrate>],[<dwr  
ap>],[<fec>],[<payloadmap>],[<lbclcurr>],[<optcurr>],[<oprcurr>],[<osfber>],[<osdber>],[<  
macaddr>],[<syncmsg>],[<senddus>],[<soak>],[<soakleft>],[<ospf>]:<pst>-<pstq>[,<sst>[&  
<sst>]*]
```

RTRV-OCN-TYPE response:

```
<aid>:[<stringValue>],[<role>],[<status>]:[<dcc>],[<area>],[<tmgref>],[<syncmsg>],[<send  
dus>],[<pjmon>],[<sfber>],[<sdber>],[<mode>],[<wvlen>],[<ringid>],[<blsrtype>],[<mux>],  
[<unic>],[<ccid>],[<nbrix>],[<soak>],[<soakleft>],[<ssmrcv>],[<ospf>],[<ldcc>],[<alsmode  
>],[<alsrcint>],[<alsrcpw>],[<lsrstat>]:<pst>,<sst>
```

Is changed to:

```
<aid>:[<stringValue>],[<role>],[<status>]:[<dcc>],[<area>],[<tmgref>],[<syncmsg>],[<send  
dus>],[<pjmon>],[<sfber>],[<sdber>],[<mode>],[<wvlen>],[<ringid>],[<blsrtype>],[<mux>],  
[<unic>],[<ccid>],[<nbrix>],[<soak>],[<soakleft>],[<ssmrcv>],[<ospf>],[<ldcc>],[<lbclcurr  
>],[<optcurr>],[<oprcurr>],[<name>],[<exptrc>],[<trc>],[<inctrc>],[<trcmode>],[<trcformat>],  
[<admssm>],[<senddusff>]:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-OMS response:

```
<aid>::<rdirn>,<opticalPortType>,<power>,<expBand>,<actBand>,[<iloss>],[<voamode>  
>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr>],[<calopwr>],[<chpower  
>]:<pst>,<sst>
```

Is changed to:

```
<aid>::<rdirn>,<opticalPortType>,<power>,<expBand>,<actBand>,[<iloss>],[<voamode>  
>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr>],[<calopwr>],[<chpower  
>],[<name>],[<soak>],[<soakleft>]:<pst>-<pstq>[,<sst>[&<sst>]*]
```

RTRV-OSC response:

```
<aid>::<ringId>,<nodeId>,<east>,<west>
```

Is changed to:

```
<aid>::<ringId>,<nodeId>,<east>,<west>,<name>
```

RTRV-OTS response:

```
<aid>::<rdirn>,<opticalPortType>,<power>,<iloss>,<voamode>,<voaattn>,<voapwr>
,<voarefattn>,<voarefpwr>,<laserst>,<osri>,<alsmode>,<alsrcint>,<alsrcpw>,<amplmode>
,<gain>,<expgain>,<refopwr>,<calopwr>,<refilt>,<caltilt>,<dculoss>
,<awgst>,<heatst>:<pst>,<sst>
```

Is changed to:

```
<aid>::<rdirn>,<opticalPortType>,<power>,<iloss>,<voamode>,<voaattn>,<voapwr>
,<voarefattn>,<voarefpwr>,<osri>,<amplmode>,<chpower>,<gain>,<expgain>,<refopwr>
,<offset>,<refilt>,<caltilt>,<aseopwr>,<dculoss>,<awgst>,<heatst>,<name>
,<soak>,<soakleft>:<pst>-<pstq>,<sst>[&<sst>]*]
```

RTRV-POS response:

```
<aid>::<adminstate>,<linkstate>,<mtu>
```

Is changed to:

```
<aid>::<adminstate>,<linkstate>,<mtu>,<encap>,<name>:<pst>-<pstq>,<sst>[&<sst>
>]*]
```

RTRV-STM1E response:

```
<aid>::<payload>,<syncmsg>,<senddus>,<sfber>,<sdber>,<soak>:<pst>,<sst>
```

Is changed to:

```
<aid>::<payload>,<syncmsg>,<senddus>,<sfber>,<sdber>,<soak>,<name>:<pst>-
<pstq>,<sst>[&<sst>]*]
```

RTRV-T1 response:

```
<aid>::<linecde>,<fmt>,<lbo>,<tacc>,<taptype>,<soak>,<soakleft>,<sfber>,<sdber>:<pst>,<sst>
```

Is changed to:

```
<aid>::<linecde>,<fmt>,<lbo>,<tacc>,<taptype>,<soak>,<soakleft>,<sfber>,<sdber>
,<name>,<syncmsg>,<senddus>,<retime>:<pst>-<pstq>,<sst>[&<sst>]*]
```

RTRV-T3 response:

```
<aid>::<fmt>,<linecde>,<lbo>,<inhfelpbk>,<tacc>,<taptype>,<soak>,<soakleft>
,<sfber>,<sdber>:<pst>,<sst>
```

Is changed to:

```
<aid>::<fmt>,<linecde>,<lbo>,<inhfelpbk>,<tacc>,<taptype>,<soak>,<soakleft>
,<sfber>,<sdber>,<name>:<pst>-<pstq>,<sst>[&<sst>]*]
```

RTRV-VCG response:

```
<src>::<type>,<txcount>,<cct>,<lcas>
```

Is changed to:

```
<src>::<type>,<txcount>,<cct>,<lcas>,<buffers>,<name>:<pst>
```

RTRV-WDMANS response:

```
<aid>::[<powerIn>],[<powerOut>],[<powerExp>],[<powerDrop>],[<sysType>],[<apcEnable>],
[<ringType>]
```

Is changed to:

```
<aid>::[<powerIn>],[<powerOut>],[<powerExp>],[<ringType>],[<_opticalNodeType>],[<last
rundat>],[<lastruntm>]
```

RTRV-WLEN response:

```
<aid>::[<mode>],[<size>]:[<pst>],[<sst>]
```

Is changed to:

```
<aid>::[<wct>]:[<size>],[<cktId>]:<pst>-<pstq>[,<sst>[&<sst>]*]
```

TL1 ENUM Changes

The following section, including [Table 3](#) through [Table 62](#), highlights ENUM items changed (added or removed) for Release 5.0.x, by ENUM type.

Table 3 *APC_STATE enum items added to Release 5.0.x*

Enum Name	Enum Value
APC_STATE_DISABLE	“DISABLE”
APC_STATE_FORCED_DISABLE	“FORCED-DISABLE”
APC_STATE_WORKING	“WORKING”

APC_STATE is used in the following commands:

- RTRV-APC

Table 4 *BITS_FAC enum items added to Release 5.0.x*

Enum Name	Enum Value
RATE_2MHZ	“2M”
RATE_64K	“64K”
RATE_6MHZ	“6M”
RATE_E1	“E1”
RATE_T1	“T1”

BITS_FAC is used in the following commands:

- ED-BITS
- RTRV-BITS

Table 5 *BUFFERS enum items added to Release 5.0.x*

Enum Name	Enum Value
BUFFERS_DEFAULT	“DEFAULT”
BUFFERS_EXPANDED	“EXPANDED”

BUFFERS is used in the following commands:

- ENT-VCG
- RTRV-VCG

Table 6 *CARDMODE enum items added to Release 5.0.x*

Enum Name	Enum Value
CARDMODE_DS3XM12_STS12	“DS3XM12-STS12”
CARDMODE_DS3XM12_STS48	“DS3XM12-STS48”
CARDMODE_DWDM_LINE	“DWDM-LINE”
CARDMODE_DWDM_SECTION	“DWDM-SECTION”
CARDMODE_DWDM_TRANS_AIS	“DWDM-TRANS-AIS”
CARDMODE_DWDM_TRANS_SQUELCH	“DWDM-TRANS-SQUELCH”
CARDMODE_FCMR_DISTANCE_EXTENSIO N	“FCMR-DISTEXTN”
CARDMODE_FCMR_LINERATE_ONLY	“FCMR-LINERATE”
CARDMODE_ML_HDLC	“ML-HDLC”
CARDMODE_MXPMR25G_ESCON	“MXPMR25G-ESCON”
CARDMODE_MXPMR25G_FCGE	“MXPMR25G-FCGE”
CARDMODE_MXPMR25G_MIXED	“MXPMR25G-MIXED”
CARDMODE_UNKNOWN	“UNKNOWN”

CARDMODE is used in the following commands:

- ED-EQPTENT-EQPT
- RTRV-EQPT

Table 7 *CCT enum items added to Release 5.0.x*

Enum Name	Enum Value
CCT_CCT_BERT	“DIAG”

CCT is used in the following commands:

- ED-CRS-STS-PATH
- ENT-CRS-MOD2-PATH
- ENT-CRS-STS-PATH
- ENT-CRS-VT-PATH

- ENT-VCG
- RTRV-CRS
- RTRV-VCG

Table 8 *COMM_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
COMM_TYPE_CT_LDCC	"LDCC"

COMM_TYPE is used in the following commands:

- ED-CLNTED-OCH
- RTRV-CLNT
- RTRV-OCH

Table 9 *CRS_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
CRS_TYPE_STS18C	"STS18C"
CRS_TYPE_STS36C	"STS36C"

CRS_TYPE is used in the following commands:

- RTRV-CRS

Table 10 *DETECTION_GUARD_TIMER enum items added to Release 5.0.x*

Enum Name	Enum Value
DETECTION_GUARD_TIMER_0	"0.0"
DETECTION_GUARD_TIMER_1	"1.0"
DETECTION_GUARD_TIMER_100	"0.1"
DETECTION_GUARD_TIMER_2	"2.0"
DETECTION_GUARD_TIMER_3	"3.0"
DETECTION_GUARD_TIMER_4	"4.0"
DETECTION_GUARD_TIMER_5	"5.0"
DETECTION_GUARD_TIMER_50	"0.05"
DETECTION_GUARD_TIMER_500	"0.5"

DETECTION_GUARD_TIMER is used in the following commands:

- ED-FFP-MOD2
- ENT-FFP-MOD2
- RTRV-FFP-MOD2

Table 11 *DIAGTYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
DIAGTYPE_ASIC	“ASIC”
DIAGTYPE_BERT	“BERT”
DIAGTYPE_CLOCK	“CLOCK”
DIAGTYPE_CPU	“CPU”
DIAGTYPE_INTERCARD	“INTERCARD”
DIAGTYPE_MEMORY	“MEMORY”
DIAGTYPE_RAM	“RAM”
DIAGTYPE_ROM	“ROM”
DIAGTYPE_TEMP	“TEMP”
DIAGTYPE_VOLTAGE	“VOLTAGE”

DIAGTYPE is used in the following commands:

- DGN-EQPT

Table 12 *DRINODE enum items added to Release 5.0.x*

Enum Name	Enum Value
DRINODE_INT	“INT”
DRINODE_NA	“NA”
DRINODE_PRI	“PRI”
DRINODE_SEC	“SEC”

DRINODE is used in the following commands:

- ENT-CRS-MOD2-PATH
- RTRV-CRS

Table 13 *DRITYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
DRITYPE_BLSR	“BLSR”
DRITYPE_BLSR_SDH	“MSSPR”
DRITYPE_UPSR	“UPSR”
DRITYPE_UPSR_BLSR	“UPSR-BLSR”
DRITYPE_UPSR_BLSR_SDH	“SNCP-MSSPR”
DRITYPE_UPSR_SDH	“SNCP”

DRITYPE is used in the following commands:

- ENT-CRS-MOD2-PATH

- RTRV-CRS

Table 14 DS1MODE enum items added to Release 5.0.x

Enum Name	Enum Value
DS1MODE_BFDL	“BFDL”
DS1MODE_FDL	“FDL”

DS1MODE is used in the following commands:

- ED-DS1
- RTRV-DS1

Table 15 ENCAP enum items added to Release 5.0.x

Enum Name	Enum Value
ENCAP_HDLC	“HDLC”
ENCAP_HDLC_LEX	“HDLC-LEX”
ENCAP_HDLC_X86	“HDLC-X86”
ENCAP_UNKNOWN	“UNKNOWN”

ENCAP is used in the following commands:

- ED-G1000
- ED-POS
- RTRV-G1000
- RTRV-POS

Table 16 EQPT_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
EQPT_TYPE_EQPT_ID_32_DMX	“32-DMX”
EQPT_TYPE_EQPT_ID_32_DMX_O	“32-DMX-O”
EQPT_TYPE_EQPT_ID_32_MUX_O	“32-MUX-O”
EQPT_TYPE_EQPT_ID_32_WSS	“32-WSS”
EQPT_TYPE_EQPT_ID_CTX	“CTX”
EQPT_TYPE_EQPT_ID_CTX_CL_DS1	“CTX-CL-DS1”
EQPT_TYPE_EQPT_ID_CTX_CL_DS3	“CTX-CL-DS3”
EQPT_TYPE_EQPT_ID_CTX_CL_EC1	“CTX-CL-EC1”
EQPT_TYPE_EQPT_ID_CTX_CL_OC12	“CTX-CL-OC12”
EQPT_TYPE_EQPT_ID_CTX_CL_OC3	“CTX-CL-OC3”
EQPT_TYPE_EQPT_ID_DS3XM_12	“DS3XM-12”
EQPT_TYPE_EQPT_ID_DS3_EC1_48	“DS3-EC1-48”

Table 16 EQPT_TYPE enum items added to Release 5.0.x (Continued)

Enum Name	Enum Value
EQPT_TYPE_EQPT_ID_ML2_EXIGE_MAPPER_CARD	“CE-100T-8”
EQPT_TYPE_EQPT_ID_ML2_L2L3	“ML-100T-8”
EQPT_TYPE_EQPT_ID_ML2_MAPPER	“CE-100T-8”
EQPT_TYPE_EQPT_ID_MUX2G	“MXP-MR-2.5G”
EQPT_TYPE_EQPT_ID_MUX2G_P	“MXPP-MR-2.5G”
EQPT_TYPE_EQPT_ID_MXP_2_5G_10E	“MXP-2.5G-10E”
EQPT_TYPE_EQPT_ID_PPM_1_PORT	“PPM-1”
EQPT_TYPE_EQPT_ID_TXP_MR_10E	“TXP-MR-10E”
EQPT_TYPE_EQPT_ID_XTC_DS1_STS	“DS1-STS”
EQPT_TYPE_EQPT_ID_XTC_DS3_STS	“DS3-STS”

EQPT_TYPE is used in the following commands:

- REPT-ALM-<MOD2ALM>
- REPT-ALM-EQPT
- REPT-EVT-<MOD2ALM>
- REPT-EVT-EQPT
- REPT-EVT-SYNCN

Table 17 EQUIPMENT_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
EQUIPMENT_TYPE_ET_32_DMX	IDL_ET_32_DMX
EQUIPMENT_TYPE_ET_32_DMX_O	IDL_ET_32_DMX_O
EQUIPMENT_TYPE_ET_32_MUX_O	IDL_ET_32_MUX_O
EQUIPMENT_TYPE_ET_32_WSS	IDL_ET_32_WSS
EQUIPMENT_TYPE_ET_CTX	IDL_ET_CTX
EQUIPMENT_TYPE_ET_DS3_EC1_48	IDL_ET_DS3_EC1_48
EQUIPMENT_TYPE_ET_DS3XM12	IDL_ET_DS3XM12
EQUIPMENT_TYPE_ET_ML2_EXIGE_MAPPER_CARD	IDL_ET_ML2_EXIGE_MAPPER_CARD
EQUIPMENT_TYPE_ET_ML2_L2L3	IDL_ET_ML2_L2L3
EQUIPMENT_TYPE_ET_ML2_MAPPER	IDL_ET_ML2_MAPPER
EQUIPMENT_TYPE_ET_MUX2G	IDL_ET_MUX2G
EQUIPMENT_TYPE_ET_MUX2G_P	IDL_ET_MUX2G_P
EQUIPMENT_TYPE_ET_MXP_2_5G_10E	IDL_ET_MXP_2_5G_10E
EQUIPMENT_TYPE_ET_PPM_1_PORT	IDL_ET_PPM_1_PORT
EQUIPMENT_TYPE_ET_TXP_MR_10E	IDL_ET_TXP_MR_10E

EQUIPMENT_TYPE is used in the following commands:

- ENT-EQPT

Table 18 FCS enum items added to Release 5.0.x

Enum Name	Enum Value
FCS_16	“FCS-16”
FCS_32	“FCS-32”
FCS_NONE	“NONE”

FCS is used in the following commands:

- ED-HDLC
- RTRV-HDLC

Table 19 FEC_MODE enum items added to Release 5.0.x

Enum Name	Enum Value
FEC_ENH	“ENH”
FEC_OFF	“OFF”
FEC_STD	“STD”

FEC_MODE is used in the following commands:

- ED-OCH
- RTRV-OCH

Table 20 LASER_STATUS enum items no longer supported in Release 5.0.x

Enum Name	Enum Value
LASER_STATUS_LASER_OFF	“OFF”
LASER_STATUS_LASER_ON	“ON”

LASER_STATUS is used in the following commands:

- RTRV-OTS

Table 21 LASER_STATUS enum items added to Release 5.0.x

Enum Name	Enum Value
LASER_STATUS_LASER_DOWN	“DOWN”
LASER_STATUS_LASER_UP	“UP”

LASER_STATUS is used in the following commands:

- RTRV-OTS

Table 22 LPBK_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
LPBK_TYPE_FE_CMD_ESF_PAYLD_LPBK	"PAYLOAD"

LPBK_TYPE is used in the following commands:

- OPR-LPBK-MOD2
- RLS-LPBK-MOD2

Table 23 MFS_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
MFS_TYPE_FC_2149	"2149"
MFS_TYPE_FC_2150	"2150"
MFS_TYPE_FC_2151	"2151"
MFS_TYPE_FC_2152	"2152"
MFS_TYPE_FC_2153	"2153"
MFS_TYPE_FC_2154	"2154"
MFS_TYPE_FC_2155	"2155"
MFS_TYPE_FC_2156	"2156"
MFS_TYPE_FC_2157	"2157"
MFS_TYPE_FC_2158	"2158"
MFS_TYPE_FC_2159	"2159"
MFS_TYPE_FC_2160	"2160"
MFS_TYPE_FC_2161	"2161"
MFS_TYPE_FC_2162	"2162"
MFS_TYPE_FC_2163	"2163"
MFS_TYPE_FC_2164	"2164"
MFS_TYPE_FC_2165	"2165"
MFS_TYPE_FC_2166	"2166"
MFS_TYPE_FC_2167	"2167"
MFS_TYPE_FC_2168	"2168"
MFS_TYPE_FC_2169	"2169"
MFS_TYPE_FC_2170	"2170"
MFS_TYPE_FC_2171	"2171"
MFS_TYPE_FC_2172	"2172"
MFS_TYPE_FC_DEFAULT	"2148"

MFS_TYPE is used in the following commands:

- ED-G1000

- RTRV-G1000

Table 24 *MOD1PAYLOAD enum items added to Release 5.0.x*

Enum Name	Enum Value
MOD1PAYLOAD_10GFC	“10GFC”
MOD1PAYLOAD_10GIGE	“10GIGE”
MOD1PAYLOAD_1GFC	“1GFC”
MOD1PAYLOAD_1GFICON	“1GFICON”
MOD1PAYLOAD_2GFC	“2GFC”
MOD1PAYLOAD_2GFICON	“2GFICON”
MOD1PAYLOAD_D1VIDEO	“D1VIDEO”
MOD1PAYLOAD_DV6000	“DV6000”
MOD1PAYLOAD_EC1	“EC1”
MOD1PAYLOAD_ESCON	“ESCON”
MOD1PAYLOAD_ETRCLO	“ETRCLO”
MOD1PAYLOAD_GIGE	“GIGE”
MOD1PAYLOAD_HDTV	“HDTV”
MOD1PAYLOAD_ISC1	“ISC1”
MOD1PAYLOAD_ISC3	“ISC3”
MOD1PAYLOAD_OC12	“OC12”
MOD1PAYLOAD_OC192	“OC192”
MOD1PAYLOAD_OC3	“OC3”
MOD1PAYLOAD_OC48	“OC48”
MOD1PAYLOAD_PASSTHRU	“PASSTHRU”
MOD1PAYLOAD_T1	“T1”
MOD1PAYLOAD_T3	“T3”
MOD1PAYLOAD_UNKNOWN	“UNKNOWN”

MOD1PAYLOAD is used in the following commands:

- ENT-<MOD1PAYLOAD>
- DLT-<MOD1PAYLOAD>

Table 25 *MOD2 enum items no longer supported in Release 5.0.x*

Enum Name	Enum Value
MOD2_M2_CLNT	“CLNT”
MOD2_M2_OSC	“OSC”

MOD2 is used in the following commands:

- REPT-PM-<MOD2>

- RTRV-LNK-MOD2LNK
- RTRV-NE-WDMANS
- RTRV-PMSCHED-ALL
- RTRV-PMSCHED-<MOD2>
- RTRV-TH-<MOD2>
- RTRV-TRC-CLNT
- RTRV-TRC-OCH

Table 26 MOD2 enum items added to Release 5.0.x

Enum Name	Enum Value
MOD2_M2_10GFC	“10GFC”
MOD2_M2_10GIGE	“10GIGE”
MOD2_M2_1GFC	“1GFC”
MOD2_M2_1GFICON	“1GFICON”
MOD2_M2_2GFC	“2GFC”
MOD2_M2_2GFICON	“2GFICON”
MOD2_M2_D1VIDEO	“D1VIDEO”
MOD2_M2_DV6000	“DV6000”
MOD2_M2_E100	“E100”
MOD2_M2_E1000	“E1000”
MOD2_M2_ESCON	“ESCON”
MOD2_M2_ETRCLO	“ETRCLO”
MOD2_M2_FSTE	“FSTE”
MOD2_M2_HDTV	“HDTV”
MOD2_M2_ISC1	“ISC1”
MOD2_M2_ISC3	“ISC3”
MOD2_M2_PASSTHRU	“PASSTHRU”
MOD2_M2_POS	“POS”
MOD2_M2_STS18C	“STS18C”
MOD2_M2_STS36C	“STS36C”

MOD2 is used in the following commands:

- INIT-REG-<MOD2>
- OPR-LPBK-<MOD2>
- REPT-PM-<MOD2>
- RLS-LPBK-<MOD2>
- RMV-<MOD2>
- RST-<MOD2>
- RTRV-ALMTH-<MOD2>

- RTRV-LNK-MOD2LNK
- RTRV-NE-WDMANS
- RTRV-PM-<MOD2>
- RTRV-PMSCHED-ALL
- RTRV-PMSCHED-<MOD2>
- RTRV-TH-<MOD2>
- RTRV-TRC-OCH
- SCHED-PMREPT-<MOD2>
- SET-ALMTH-<MOD2>
- SET-TH-<MOD2>

Table 27 MOD2ALM enum items no longer supported in Release 5.0.x

Enum Name	Enum Value
MOD2ALM_M2_CLNT	“CLNT”
MOD2ALM_M2_OSC	“OSC”

MOD2ALM is used in the following commands:

- REPT-ALM-MOD2ALM
- REPT-EVT-MOD2ALM
- RTRV-ALM-MOD2ALM
- RTRV-COND-MOD2ALM

Table 28 MOD2ALM enum items added to Release 5.0.x

Enum Name	Enum Value
MOD2ALM_M2_10GFC	“10GFC”
MOD2ALM_M2_10GIGE	“10GIGE”
MOD2ALM_M2_1GFC	“1GFC”
MOD2ALM_M2_1GFICON	“1GFICON”
MOD2ALM_M2_2GFC	“2GFC”
MOD2ALM_M2_2GFICON	“2GFICON”
MOD2ALM_M2_D1VIDEO	“D1VIDEO”
MOD2ALM_M2_DV6000	“DV6000”
MOD2ALM_M2_ESCON	“ESCON”
MOD2ALM_M2_ETRCLO	“ETRCLO”
MOD2ALM_M2_HDTV	“HDTV”
MOD2ALM_M2_ISC1	“ISC1”
MOD2ALM_M2_ISC3	“ISC3”
MOD2ALM_M2_PASSTHRU	“PASSTHRU”

Table 28 *MOD2ALM enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
MOD2ALM_M2_STS18C	“STS18C”
MOD2ALM_M2_STS36C	“STS36C”

MOD2ALM is used in the following commands:

- RTRV-ALM-MOD2ALM
- RTRV-ALM-WLEN
- RTRV-COND-MOD2ALM
- RTRV-COND-VT2

Table 29 *MOD2B enum items no longer supported in Release 5.0.x*

Enum Name	Enum Value
MOD2B_M2_CLNT	“CLNT”
MOD2B_M2_FC	“FC”

MOD2B is used in the following commands:

- RTRV-ALM-ALL
- RTRV-ALM-BITS
- RTRV-ALM-EQPT
- RTRV-ALM-SYNCN
- RTRV-COND-ALL
- RTRV-COND-BITS
- RTRV-COND-EQPT
- RTRV-COND-SYNCN
- RTRV-PM-MOD2
- RTRV-TH-ALL
- RTRV-TH-MOD2

Table 30 *MOD2B enum items added to Release 5.0.x*

Enum Name	Enum Value
MOD2B_M2_10GFC	“10GFC”
MOD2B_M2_10GIGE	“10GIGE”
MOD2B_M2_1GFC	“1GFC”
MOD2B_M2_1GFICON	“1GFICON”
MOD2B_M2_2GFC	“2GFC”
MOD2B_M2_2GFICON	“2GFICON”
MOD2B_M2_D1VIDEO	“D1VIDEO”

Table 30 *MOD2B enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
MOD2B_M2_DV6000	“DV6000”
MOD2B_M2_ESCON	“ESCON”
MOD2B_M2_ETRCLO	“ETRCLO”
MOD2B_M2_HDTV	“HDTV”
MOD2B_M2_ISC1	“ISC1”
MOD2B_M2_ISC3	“ISC3”
MOD2B_M2_PASSTHRU	“PASSTHRU”
MOD2B_M2_STS18C	“STS18C”
MOD2B_M2_STS36C	“STS36C”

MOD2B is used in the following commands:

- RTRV-ALS
- RTRV-ALM-ALL
- RTRV-ALM-BITS
- RTRV-ALM-EQPT
- RTRV-ALM-SYNCN
- RTRV-COND-ALL
- RTRV-COND-BITS
- RTRV-COND-EQPT
- RTRV-COND-SYNCN
- RTRV-PM-MOD2
- RTRV-TH-ALL
- RTRV-TH-MOD2

Table 31 *MOD2O enum items no longer supported in Release 5.0.x*

Enum Name	Enum Value
MOD2O_M2_CLNT	“CLNT”

Table 32 *MOD2O enum items added to Release 5.0.x*

Enum Name	Enum Value
MOD2O_M2_10GFC	“10GFC”
MOD2O_M2_10GIGE	“10GIGE”
MOD2O_M2_D1VIDEO	“D1VIDEO”
MOD2O_M2_DV6000	“DV6000”
MOD2O_M2_ETRCLO	“ETRCLO”

Table 32 *MOD2O enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
MOD2O_M2_GIGE	“GIGE”
MOD2O_M2_HDTV	“HDTV”
MOD2O_M2_ISC1	“ISC1”
MOD2O_M2_ISC3	“ISC3”
MOD2O_M2_OC12	“OC12”
MOD2O_M2_OC192	“OC192”
MOD2O_M2_OC3	“OC3”
MOD2O_M2_OC48	“OC48”
MOD2O_M2_PASSTHRU	“PASSTHRU”

MOD2O is used in the following commands:

- RTRV-ALMTH-EQPT
- RTRV-ALMTH-MOD2O

Table 33 *MOD2_DATA enum items added to Release 5.0.x*

Enum Name	Enum Value
MOD2_DATA_M2_10GFC	“10GFC”
MOD2_DATA_M2_10GIGE	“10GIGE”
MOD2_DATA_M2_1GFC	“1GFC”
MOD2_DATA_M2_1GFICON	“1GFICON”
MOD2_DATA_M2_2GFC	“2GFC”
MOD2_DATA_M2_2GFICON	“2GFICON”
MOD2_DATA_M2_FSTE	“FSTE”
MOD2_DATA_M2_G1000	“G1000”
MOD2_DATA_M2_GIGE	“GIGE”
MOD2_DATA_M2_OCH	“OCH”
MOD2_DATA_M2_POS	“POS”

MOD2_DATA is used in the following commands:

- ENT-RMONTH-<MOD2-DATA>
- DLT-RMONTH-<MOD2-DATA>
- RTRV-RMONTH-<MOD2-DATA>

Table 34 *MOD_PATH enum items added to Release 5.0.x*

Enum Name	Enum Value
MOD_PATH_M2_STS18C	“STS18C”
MOD_PATH_M2_STS36C	“STS36C”

MOD_PATH is used in the following commands:

- ENT-CKT-ORIG
- ENT-CKT-TERM
- ENT-VCG
- RTRV-CKT-ORIG
- RTRV-CKT-TERM
- RTRV-CRS
- RTRV-PATH
- RTRV-STS9C
- RTRV-TRC-OC48
- RTRV-VCG

Table 35 NE_SECU_MODE enum items added to Release 5.0.x

Enum Name	Enum Value
NE_SECU_MODE_REPEATER	“REPEATER”
NE_SECU_MODE_SECURE	“SECURE”

NE_SECU_MODE is used in the following commands:

- RTRV-NE-GEN

Table 36 ONE_PLUS_ONE enum items added to Release 5.0.x

Enum Name	Enum Value
OPTIMIZED_ONEPLUSONE	“OPTIMIZED”
STANDARD_ONEPLUSONE	“STANDARD”

ONE_PLUS_ONE is used in the following commands:

- ENT-FFP-MOD2
- RTRV-FFP-MOD2

Table 37 OPTICAL_NODE_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
OPTICAL_NODE_HUB	“HUB”
OPTICAL_NODE_LINE_AMPLIFIED	“LINE-AMPLIFIED”
OPTICAL_NODE_OADM	“OADM”
OPTICAL_NODE_OSC_REG	“OSC-REG”
OPTICAL_NODE_ROADM	“ROADM”
OPTICAL_NODE_TDM_HYBRID	“TDM-HYBRID”
OPTICAL_NODE_UNKNOWN	“UNKNOWN”

OPTICAL_NODE_TYPE is used in the following commands:

- RTRV-WDMANS

Table 38 OPTICAL_PORT_TYPE enum items added to Release 5.0.x

Enum Name	Enum Value
OPTICAL_PORT_TYPE_OPT_PORT_IN_PT	“IN-PT”
OPTICAL_PORT_TYPE_OPT_PORT_OUT_PT	“OUT-PT”

OPTICAL_PORT_TYPE is used in the following commands:

- RTRV-OCH
- RTRV-OMS
- RTRV-OTS

Table 39 OPTICAL_WLEN enum items no longer supported in Release 5.0.x

Enum Name	Enum Value
OPTICAL_WLEN_WL_UNKNOWN	“USE-TWL1”

OPTICAL_WLEN is used in the following commands:

- ED-DWDMED-OCH
- RTRV-DWDM
- RTRV-LNK-MOD2LNK
- RTRV-OCH

Table 40 OPTICAL_WLEN enum items added to Release 5.0.x

Enum Name	Enum Value
OPTICAL_WLEN_WL_USETWL1	“USE-TWL1”

OPTICAL_WLEN is used in the following commands:

- ED-DWDMED-EQPT
- ED-OCH
- ENT-EQPT
- RTRV-DWDM
- RTRV-EQPT
- RTRV-LNK-MOD2LNK
- RTRV-LNK-OTS
- RTRV-OCH

Table 41 *PAYLOAD enum items no longer supported in Release 5.0.x*

Enum Name	Enum Value
PAYLOAD_PT_10GE	“10GE”
PAYLOAD_PT_1GE	“1GE”
PAYLOAD_PT_SDI_D1_VIDEO	“SDI-D1-VIDEO”

PAYLOAD is used in the following commands:

- ED-DWDM
- ED-FAC
- RTRV-DWDM
- RTRV-E4
- RTRV-STM1E

Table 42 *PAYLOAD enum items added to Release 5.0.x*

Enum Name	Enum Value
PAYLOAD_PT_10GE	“10GIGE”
PAYLOAD_PT_10GFC	“10GFC”
PAYLOAD_PT_1GE	“GIGE”
PAYLOAD_PT_1GFICON	“1GFICON”
PAYLOAD_PT_2GFICON	“2GFICON”
PAYLOAD_PT_DS1VTMAPPED	“DS1”
PAYLOAD_PT_DS3	“DS3”
PAYLOAD_PT_DS3I	“DS3I”
PAYLOAD_PT_DS3XM	“DS3XM”
PAYLOAD_PT_E1	“E1”
PAYLOAD_PT_E3	“E3”
PAYLOAD_PT_EC1	“EC1”
PAYLOAD_PT_ETHER	“ETHERNET”
PAYLOAD_PT_ETRCLO	“ETRCLO”
PAYLOAD_PT_FSTE	“FSTE”
PAYLOAD_PT_ISC1	“ISC1”
PAYLOAD_PT_ISC3	“ISC3”
PAYLOAD_PT_PASS_THRU	“PASSTHRU”
PAYLOAD_PT_POS	“POS”
PAYLOAD_PT_SDI_D1_VIDEO	“D1VIDEO”
PAYLOAD_PT_UNKNOWN	“UNKNOWN”
PAYLOAD_PT_UNPROVISIONED	“UNPROVISIONED”

Table 42 *PAYLOAD enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
PAYLOAD_PT_UNSUPPORTED	“UNPROVISIONED”
PAYLOAD_PT_UNSUPPORTED	“UNSUPPORTED”

PAYLOAD is used in the following commands:

- ED-DWDM
- ED-FAC
- RTRV-DWDM
- RTRV-E4
- RTRV-STM1E

Table 43 *PAYLOAD_MAPPING enum items added to Release 5.0.x*

Enum Name	Enum Value
PAYLOAD_MAPPING_ASYNCH	“ASYNCH”
PAYLOAD_MAPPING_ODU	“ODU”
PAYLOAD_MAPPING_SYNCH	“SYNCH”

PAYLOAD_MAPPING is used in the following commands:

- ED-OCH
- RTRV-OCH

Table 44 *PORT_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
PORT_TYPE_TRANSMUX	“TRANSMUX”

PORT_TYPE is used in the following commands:

- ENT-MOD1PAYLOAD

Table 45 *PRODUCT_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
PRODUCT_TYPE_NE_15310_CL	“ONS15310-CL”

PRODUCT_TYPE is used in the following commands:

- RTRV-CRS-PATH

Table 46 PST enum items added to Release 5.0.x

Enum Name	Enum Value
PST_SS_IS_SDH	“unlocked”
PST_SS_OOS_SDH	“locked”
PST_SS_UNKNOWN	“UNKNOWN”

PST is used in the following commands:

- ED-10GIGE
- ED-APC
- ED-BITS
- ED-CLNT
- ED-CRS-STP-PATH
- ED-CRS-VT-PATH
- ED-DS3I
- ED-DWDM-CLNT
- ED-E1ED-E3
- ED-E4
- ED-EC1
- ED-EQPT
- ED-FAC
- ED-FSTE
- ED-G1000
- ED-GIGE
- ED-LNK-MOD2LNK
- ED-OCH
- ED-OCN-TYPE
- ED-OMS
- ED-OTS
- ED-POS
- ED-STM1E
- ED-STP-PATH
- ED-T1
- ED-T3
- ED-VCN
- ED-VT-PATH
- ED-WLEN
- ENT-CRS-MOD2-PATH

- ENT-CRS-STS-PATH
- ENT-CRS-VT-PATH
- ENT-LNK-MOD2LNK
- ENT-WLEN
- RMV-MOD2
- RST-MOD2
- RST-STS-PATH
- RST-VT-PATH
- RTRV-BITS
- RTRV-CLNT
- RTRV-CRS
- RTRV-DS3I
- RTRV-DWDM
- RTRV-E1
- RTRV-E3
- RTRV-E4
- RTRV-EC1
- RTRV-EQPT
- RTRV-G1000
- RTRV-LNK-OTS
- RTRV-OCH
- RTRV-OCN-TYPE
- RTRV-OMS
- RTRV-OTS
- RTRV-STM1E
- RTRV-STS9C
- RTRV-T1
- RTRV-T3
- RTRV-VCG
- RTRV-VCM
- RTRV-VT2
- RTRV-WLEN

Table 47 RECOVERY_GUARD_TIMER enum items added to Release 5.0.x

Enum Name	Enum Value
RECOVERY_GUARD_TIMER_0	“0.0”
RECOVERY_GUARD_TIMER_1	“1.0”
RECOVERY_GUARD_TIMER_10	“10.0”

Table 47 *RECOVERY_GUARD_TIMER enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
RECOVERY_GUARD_TIMER_100	“0.1”
RECOVERY_GUARD_TIMER_2	“2.0”
RECOVERY_GUARD_TIMER_3	“3.0”
RECOVERY_GUARD_TIMER_4	“4.0”
RECOVERY_GUARD_TIMER_5	“5.0”
RECOVERY_GUARD_TIMER_50	“0.05”
RECOVERY_GUARD_TIMER_500	“0.5”
RECOVERY_GUARD_TIMER_6	“6.0”
RECOVERY_GUARD_TIMER_7	“7.0”
RECOVERY_GUARD_TIMER_8	“8.0”
RECOVERY_GUARD_TIMER_9	“9.0”

RECOVERY_GUARD_TIMER is used in the following commands:

- ED-FFP-MOD2
- ENT-FFP-MOD2
- RTRV-FFP-MOD2

Table 48 *REGULATED_PARAM_NAME enum items added to Release 5.0.x*

Enum Name	Enum Value
REGULATED_PARAM_NAME_AMPLMODE	“AMPLMODE”
REGULATED_PARAM_NAME_CHPOWER	“CHPOWER”
REGULATED_PARAM_NAME_GAIN	“GAIN”
REGULATED_PARAM_NAME_OPWR_LFAIL	“OPWR-LFAIL”
REGULATED_PARAM_NAME_REFTILT	“REFTILT”
REGULATED_PARAM_NAME_VOAREFATTN	“VOAREFATTN”
REGULATED_PARAM_NAME_VOAREFPWR	“VOAREFPWR”

REGULATED_PARAM_NAME is used in the following commands:

- RTRV-NE-WDMANS

Table 49 *REGULATED_PORT_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
REGULATED_PORT_FAILED	“FAILED”
REGULATED_PORT_NOT_APPLICABLE	“NOT-APPLICABLE”
REGULATED_PORT_OUT_OF_RANGE	“OUT-OF-RANGE”
REGULATED_PORT_PORT_IN_SERVICE	“PORT-IN-SERVICE”

Table 49 *REGULATED_PORT_TYPE enum items added to Release 5.0.x (Continued)*

Enum Name	Enum Value
REGULATED_PORT_REGULATED	“REGULATED”
REGULATED_PORT_UNCHANGED	“UNCHANGED”

REGULATED_PORT_TYPE is used in the following commands:

- RTRV-NE-WDMANS

Table 50 *SAMPLE_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
SAMPLE_TYPE_ABSOLUTE	“ABSOLUTE”
SAMPLE_TYPE_DELTA	“DELTA”

SAMPLE_TYPE is used in the following commands:

- DLT-RMONTH-MOD2-DATA

Table 51 *SNMP_VERSION enum items added to Release 5.0.x*

Enum Name	Enum Value
SNMP_VERSION_SNMPV1	“SNMPV1”
SNMP_VERSION_SNMPV2	“SNMPV2”

SNMP_VERSION is used in the following commands:

- ED-TRAPTABLE
- ENT-TRAPTABLE

Table 52 *SST enum items added to Release 5.0.x*

Enum Name	Enum Value
SST_SS_AINS_SDH	“automaticInservice”
SST_SS_DSBLD	“DSBLD”
SST_SS_DSBLD_SDH	“disabled”
SST_SS_MT_SDH	“maintenance”
SST_SS_OOG	“OOG”
SST_SS_OOG_SDH	“outOfGroup”
SST_SS_UAS_SDH	“unassigned”

SST is used in the following commands:

- ED-10GIGE
- ED-CLNT
- ED-CRS-STS-PATH

- ED-CRS-VT-PATH
- ED-DS3I
- ED-DWDM-CLNT
- ED-E1
- ED-E3
- ED-E4
- ED-EC1
- ED-EQPT
- ED-FAC
- ED-FSTE
- ED-G1000
- ED-GIGE
- ED-LNK-MOD2LNK
- ED-OCH
- ED-OCN-TYPE
- ED-OMS
- ED-OTS
- ED-POS
- ED-STM1E
- ED-STS-PATH
- ED-T1
- ED-T3
- ED-VCM
- ED-VT-PATH
- ED-WLEN
- ENT-CRS-MOD2-PATH
- ENT-CRS-STS-PATH
- ENT-CRS-VT-PATH
- ENT-LNK-MOD2LNK
- ENT-WLEN
- RMV-MOD2
- RST-MOD2
- RST-STS-PATH
- RST-VT-PATH
- RTRV-CLNT
- RTRV-CRS
- RTRV-DS3I
- RTRV-DWDM

- RTRV-E1
- RTRV-E3
- RTRV-E4
- RTRV-EC1
- RTRV-EQPT
- RTRV-G1000
- RTRV-LNK-OTS
- RTRV-OCH
- RTRV-OCN-TYPE
- RTRV-OMS
- RTRV-OTS
- RTRV-POS
- RTRV-STM1E
- RTRV-STS9C
- RTRV-T1
- RTRV-T3
- RTRV-VCM
- RTRV-VT2
- RTRV-WLEN

Table 53 *STARTUP_TYPE enum items added to Release 5.0.x*

Enum Name	Enum Value
STARTUP_TYPE_FALLING	“FALLING”
STARTUP_TYPE_RISING	“RISING”
STARTUP_TYPE_RISING_OR_FALLING	“RISING-OR-FALLING”

STARTUP_TYPE is used in the following commands:

- ENT-RMONTH-<MOD2-DATA>
- DLT-RMONTH-<MOD2-DATA>
- RTRV-RMONTH-<MOD2-DATA>

Table 54 *STM1E_MODE enum items added to Release 5.0.x*

Enum Name	Enum Value
STM1E_MODE_STM1_MODE	“STM1E”

STM1E_MODE is used in the following commands:

- ED-FAC

Table 55 *SYS_TYPE enum items no longer supported in Release 5.0.x*

Enum Name	Enum Value
SYS_TYPE_SMF_28_16CH_POWER	"SMF-28-16CH-POWER"
SYS_TYPE_SMF_28_8CH_POWER	"SMF-28-8CH-POWER"
SYS_TYPE_SMF_28_GAIN	"SMF-28-GAIN"
SYS_TYPE_SMF_28_POWER	"SMF-28-POWER"

SYS_TYPE is used in the following commands:

- ED-WDMANS
- RTRV-WDMANS

Table 56 *TMPER enum items added to Release 5.0.x*

Enum Name	Enum Value
TMPER_PER_HR	"1-HR"
TMPER_PER_MIN	"1-MIN"
TMPER_RAW_DATA	"RAW-DATA"

TMPER is used in the following commands:

- INIT-REG-MOD2
- RTRV-PM-G1000
- RTRV-PM-MOD2
- RTRV-PMSCHED-G1000
- RTRV-TH-ALL
- RTRV-TH-G1000
- RTRV-TH-MOD2
- SCHED-PMREPT-MOD2
- SET-TH-MOD2

Table 57 *TRCFORMAT enum items added to Release 5.0.x*

Enum Name	Enum Value
TRCFORMAT_16_BYTE	"16-BYTE"
TRCFORMAT_1_BYTE	"1-BYTE"
TRCFORMAT_64_BYTE	"64-BYTE"

TRCFORMAT is used in the following commands:

- ED-OCN-TYPE
- ED-TRC-CLNT
- ED-TRC-OCH

- RTRV-OCN-TYPE
- RTRV-TRC-CLNT
- RTRV-TRC-OCH

Table 58 TRCLEVEL enum items no longer supported in Release 5.0.x

Enum Name	Enum Value
TRCLEVEL_TL_J1_PATH	“J1”
TRCLEVEL_TL_TANDEM_1	“TCM1”
TRCLEVEL_TL_TANDEM_2	“TCM2”

TRCLEVEL is used in the following commands:

- ED-TRC-CLNT
- ED-TRC-OCH
- RTRV-TRC-CLNT
- RTRV-TRC-OCH

Table 59 TRCMODE enum items no longer supported in Release 5.0.x

Enum Name	Enum Value
TRCFORMAT_16_BYTE	“16-BYTE”
TRCFORMAT_1_BYTE	“1-BYTE”
TRCFORMAT_64_BYTE	“64-BYTE”

TRCMODE is used in the following commands:

- ED-OCN-TYPE
- ED-STS-PATH
- ED-TRC-CLNT
- ED-TRC-OCH
- ED-VT-PATH
- RTRV-OCN-TYPE
- RTRV-PATH
- RTRV-STS9C
- RTRV-TRC-CLNT
- RTRV-TRC-OC48
- RTRV-TRC-OCH
- RTRV-VT2

Table 60 VALIDITY enum items added to Release 5.0.x

Enum Name	Enum Value
VALIDITY_CV_OFF	“OFF”

VALIDITY is used in the following commands:

- RTRV-PM-G1000
- RTRV-PM-MOD2

Table 61 VERIFICATION_GUARD_TIMER enum items added to Release 5.0.x

Enum Name	Enum Value
VERIFICATION_GUARD_TIMER_1	"1.0"
VERIFICATION_GUARD_TIMER_500	"0.5"

VERIFICATION_GUARD_TIMER is used in the following commands:

- ED-FFP-MOD2
- ENT-FFP-MOD2
- RTRV-FFP-MOD2

Table 62 WCT enum items added to Release 5.0.x

Enum Name	Enum Value
WCT_ONEWAY	"1WAY"
WCT_TWOWAY	"2WAY"

WCT is used in the following commands:

- ENT-WLEN
- RTRV-WLEN

Related Documentation

Release-Specific Documents

- *Release Notes for the Cisco ONS 15327, Release 5.0*
- *Release Notes for the Cisco ONS 15454 SDH, Release 5.0*
- *Release Notes for the Cisco ONS 15454, Release 5.0.3*
- *Release Notes for the Cisco ONS 15600, Release 5.0*
- *Release Notes for the Cisco ONS 15310-CL, Release 5.0*
- *Cisco ONS 15327 Software Upgrade Guide, Release 5.0*

Platform-Specific Documents

- *Cisco ONS 15327 Procedure Guide*
Provides installation, turn up, test, and maintenance procedures

- *Cisco ONS 15327 Reference Manual*
Provides technical reference information for SONET/SDH cards, nodes, and networks
- *Cisco ONS 15327 Troubleshooting Guide*
Provides a list of SONET alarms and troubleshooting procedures, general troubleshooting information, and hardware replacement procedures
- *Cisco ONS SONET TL1 Command Guide*
Provides a comprehensive list of TL1 commands

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

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Obtaining Technical Assistance

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<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/en/US/support/index.html>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://tools.cisco.com/RPF/register/register.do>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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