



Release Notes for Cisco ONS 15327

Release 4.6.4

August, 2007

Release notes address closed (maintenance) issues, caveats, and new features for the Cisco ONS 15327 SONET multiplexer. For detailed information regarding features, capabilities, hardware, and software introduced with this release, refer to Release 4.6 of the *Cisco ONS 15327 Installation and Operations Guide*, *Cisco ONS 15327 Troubleshooting and Reference Guide*, and *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide*. For the most current version of the *Release Notes for Cisco ONS 15327 Release 4.6.4*, 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



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.

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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 4.6.4* since the production of the Cisco ONS 15327 System Software CD for Release 4.6.4.

The following changes have been added to the release notes for Release 4.6.4.

Changes to Caveats

The following caveat has been added.

[JRE Updates, page 2](#)

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

JRE Updates

Cisco ONS platforms ship with a Java Runtime Environment (JRE) from Sun Microsystems. Occasionally Sun releases maintenance releases to the JRE. The Sun Microsystems website lists JRE maintenance releases and the issues resolved for each. Cisco recommends that you review these listings to determine if the issues resolved in any given JRE maintenance release warrant a JRE upgrade for your particular network. Cisco tests only with the specific JRE actually shipped with the ONS software CD.

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 is under investigation.

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. The circuit Status will be defined more clearly 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 will be resolved in Release 5.0.

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 # 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 will be resolved in Release 5.0.

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 be resolved in a future release.

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. It is not known at this time when or if this issue will be resolved.

E Series and G Series 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 # CSCdy47038

G1000-2 path alarm profiles applied on port 2 are not updated to reflect the correct alarm severities. This issue is under investigation.

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. A future hardware release will incorporate improved hardware PLL circuitry on the G1000-2 line card to allow an active XTC removal without causing excessive traffic loss.

Path Protection Functionality

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 be resolved in Release 6.0.

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 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.

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 will be 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 will be resolved in Release 5.0

Performance Monitoring

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.

Resolved Software Caveats for Release 4.6.4

The following items are resolved in Release 4.6.4.

Maintenance and Administration

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.

DDTS # CSCee35403

When more than one user is logged into an ONS 15454/15327 network, nodes cannot be removed or deleted from the domains at the network view. If a node is moved from a domain to the parent view, the node immediately returns to its original domain. Nodes will also not be deleted. After repeated effort this procedure can work, but results are sporadic and unpredictable. To work around this issue, disable the global update feature that will update every user logged into a network of nodes whenever one user makes a change. This can be done by placing an altered CTC.INI file on each user's workstation. The result is that only the user who makes a change will see the change. This issue is resolved in Release 4.6.2.

DDTS # CSCed58066

If a workstation running CTC has multiple NIC cards installed, and the primary NIC card is not used to connect to the node, and the node is unable to send IP packets to the IP address of the primary NIC card, or if the workstation running CTC is separated from the node by a router that performs NAT translation of the CTC workstation IP address, CTC repeatedly disconnects and reconnects (every two minutes). In either of these cases, CTC registers for alarms and provisioning updates using the IP address of the primary NIC, which the node cannot contact. When the node attempts to contact CTC, the connection fails. This causes the node to remove CTC from its list of registered clients. When CTC subsequently polls the node, CTC determines that it is not registered. CTC resets itself to ensure that it has current alarms and provisioning from the node, causing the disconnect and reconnect.

To avoid this issue, enable the proxy server on all LAN connected nodes with the Proxy-only configuration. This issue is resolved in Release 4.6.1.

DDTS # CSCed60557

Connecting two nodes with the same IP address to the same LAN will result in a broadcast storm. If this occurs, disconnect one of the nodes with the duplicate IP address. This issue is resolved in Release 4.6.1.

DDTS # CSCdz90753

In the Maintenance > Cross Connect Resource Pane, the VT matrix port detail is inconsistent with the general VT matrix data. This can occur when a 1+1 protection scheme is in place. To avoid confusion, note that the VT matrix data counts the VTs for both the working and protect card, while the detail data counts the VTs only for the working card. This issue is resolved in Release 4.6.

DDTS # CSCeb09356

The CTC card level provisioning pane allows a different range of values for the PSC-W, PSC-S, and PSC-R thresholds from the range allowed in the defaults provisioning window. At the CTC card view for an OC-192 card, CTC will allow any values for the PSC-W, PSC-S, and PSC-R. When provisioning these same values using the CTC node view defaults pane, the range is restricted from 0 to 600. This issue is resolved in Release 4.6.

DDTS # CSCeb06071

Rarely, in the detailed circuit view for some VT circuits, a question mark may appear in the center of a port graphic. Ignore the question mark: it would indicate a problem with path trace functionality, but VT circuits do not have that functionality. This issue is resolved in Release 4.6.

DDTS # CSCdz84149

If a user is logged into CTC as a superuser (or other higher level security type), and then another superuser changes the first user's security level to "retrieve" (or another lower level security type) without first logging the user out, the lower level user is then still able to perform some actions authorized only for the original login security level. For example, a "provisioning" level user demoted to "retrieve" level in this manner can still provision and edit MS-SPRings (BLSRs) while logged into the current session, though the same user may no longer provision DCCs. To ensure that a user's level is changed completely, the superuser must log the user out prior to changing the security level. This issue is resolved in Release 4.6.

DDTS # CSCeb05404

PWR-A/B alarms can become stuck for an ONS 15327 node in the event of a transient power failure. The alarms will clear after resetting both XTCs. This issue is resolved in Release 4.6.

DDTS # CSCeb63327

The High Temperature Alarm is raised at 50 degrees Celsius. This is, however, not optimal on an Itemp rated system, which can tolerate up to 65 degrees Celsius. To work around this issue, the alarm can be downgraded or suppressed, but note that this will result in no temperature alarm provided at all. Alternatively, Cisco TAC provides a method of retrieving the temperature from the node, which can thus be monitored periodically for temperature-related problems. This issue is resolved in Release 4.6.

DDTS # CSCeb12993

When you perform a database restore initiated while the database is being saved, a DBOSYNC or BKUPMEMP alarm may be raised, accompanied by a silent restore failure. To avoid this issue, ensure no provisioning was changed within past 2 minutes before initiating a restore. This issue is resolved in Release 4.6.

DDTS # CSCec84338

With multiple unnamed circuits (circuit name listed as “Unknown”) on a node, where at least one is a path protection circuit, a cross-connect from one of these unnamed circuits will incorrectly appear on the Circuit Edit > UPSR Selectors, and Circuit Edit > UPSR Switch Counts tabs of the other unnamed circuits. Also, the State tab will show paths in the wrong column (for example, both source and destination in the CRS End B column).

This issue can manifest anytime you create multiple unnamed circuits (via TL1 or from CTC using the TL1-like option) on a node, where at least one is a path protection circuit. This issue is resolved in Release 4.6 and maintenance Releases 4.1.1 and 4.1.3.

DDTS # CSCec20521

After addition and deletion of a static route that overlaps with the internal IP addresses range, all cards in the shelf reboot. This can also happen after the node learns a similar route through OSPF or RIP updates. This issue is present in all releases through 4.1 and 4.5. To avoid this issue, do not provision static routes with a destination address in the subnet range 192.168.190.x, and avoid overlap between IP addresses in the network and the internal subnet range 192.168.190.x. If the issue does occur, reset your TCCs. This issue is resolved in Release 4.6 and in maintenance Release 4.1.3.

DDTS # CSCec16812

UNEQ-V alarms are incorrectly raised prior to connecting a TAP to a TACC, and also after disconnecting the TAP from the TACC. This issue is resolved in Releases 4.1.3 and 4.6.

Line Cards

DDTS # CSCed06531

Malformed IP packets can potentially cause the XTC, TCC/TCC+/TCC2 and TCCi/TCC2 control cards to reset. Repeated transmission of these malformed packets could cause both the control cards to reset at the same time. This issue is resolved in Release 5.0, and maintenance Releases 4.1.4, 2.3.5, 4.0.3, and 4.6.2.

DDTS # CSCed86946

Malformed ICMP packets can potentially cause the XTC, TCC/TCC+/TCC2 and TCCi/TCC2 control cards to reset. Repeated transmission of these malformed packets could cause both the control cards to reset at the same time. This issue is resolved in Release 5.0, and maintenance Releases 4.1.4, 2.3.5, 4.0.3, and 4.6.2.

DDTS # CSCec88426, CSCec88508, CSCed85088

Malformed TCP packets can potentially cause the XTC, TCC/TCC+/TCC2, and TCCi/TCC2 control cards to reset. Repeated transmission of these malformed packets could cause both the control cards to reset at the same time. This issue is resolved in Release 5.0, and maintenance Releases 4.1.4, 2.3.5, 4.0.3, and 4.6.2.

DDTS # CSCec59739, CSCed02439, CSCed22547

The XTC, TCC/TCC+/TCC2 and TCCi/TCC2 control cards are susceptible to a TCP-ACK Denial of Service (DoS) attack on open TCP ports. The controller card on the optical device will reset under such an attack.

A TCP-ACK DoS attack is conducted by withholding the required final ACK (acknowledgement) for a 3-way TCP handshake to complete, and instead sending an invalid response to move the connection to an invalid TCP state. This issue is resolved in maintenance Releases 4.1.4, 2.3.5, 4.0.3, and 4.6.2.

DDTS # CSCec88402, CSCed31918, CSCed83309, CSCec85982

Malformed UDP packets can potentially cause the XTC, TCC/TCC+/TCC2, and TCCi/TCC2 control cards to reset. Repeated transmission of these malformed packets could cause both the control cards to reset at the same time. This issue is resolved in Release 5.0, and maintenance Releases 4.1.4, 2.3.5, 4.0.3, and 4.6.2.

DDTS # CSCea16455, CSCea37089, CSCea37185

Malformed SNMP packets can potentially cause the XTC, TCC/TCC+/TCC2 and TCCi/TCC2 control cards to reset. Repeated transmission of these malformed packets could cause both the control cards to reset at the same time. This issue is resolved in Release 4.6, and maintenance Releases 4.0.1, 4.0.3, and 4.1.3.

DDTS # CSCed03215

The ONS 15327 XTC card allows soft reset immediately after a database change. After making any database change (for example, changing some provisioning) it is possible to soft reset the XTC card before the database change has been written to non-volatile memory. The result is that the most recent provisioning change might be lost. To avoid this issue, before soft resetting the XTC card, wait 2 minutes from the last provisioning change. This issue is resolved in Release 4.6.

DDTS # CSCec66218

A hard reset of the active XTC in a 1+1 configuration causes CTNEQPT-PBPROT to be raised in OC-3 trunk cards and OC-12 line cards. The hard reset also causes UNEQ-P to be raised in the OC-12 line cards. This issue is resolved in Release 4.6.

DDTS # CSCeb23183

On the ONS 15327 XTC, the j1 path trace values for the DS1 are incorrect. The table shows 28 entries, all with identical (but wrong) values, when an STS-1 (the only type that supports path trace on the XTC's DS1) only should have one entry. This can occur with an STS-1 circuit terminating at the XTC's DS1,

in the DS1 maintenance card view of the XTC. To find the actual path trace values for the DS1 circuit, open the detailed circuit map for that circuit, right-click on the port image of the DS1, and select “j1 path trace.” This issue is resolved in Release 4.6.

DDTS # CSCed05846

In Releases 4.0, 4.0.1, and 4.1 the standby TCC+, TCC2, or XTC card might reset automatically. This can occur at any time, but only rarely. This issue is resolved in Release 4.6, and maintenance Releases 4.1.1 and 4.1.3.

E Series and G Series Cards

DDTS # CSCed07126

If you provision a non-existent static route to a node's subnet and then delete it, the node will lose connectivity. If this occurs, remove and replace the Ethernet cable. This issue is resolved in Release 4.6.2.

DDTS # CSCdy63172

With E100/E1000 cards, a CARLOSS alarm present, and port alarms suppressed from CTC, Manual Alarm Suppression does not correctly suppress CARLOSS alarms. This issue is resolved in Release 4.6.

BLSR Functionality

DDTS # CSCeb24331 and CSCeb40119

If you create a four-fiber BLSR with a VT circuit on it, then delete the circuit and the ring, then created a two-fiber BLSR on the same ports, you may see an unexpected AIS-V on the path, even before any additional circuit is created. A soft switch of the XTC will clear the AIS-V condition. This issue is resolved in Release 4.6.

DDTS # CSCdz35479

Rarely, CTC Network view can freeze following the deletion or addition of a node from or to a BLSR. This can result in the CTC Network view no longer updating correctly. If this occurs, restart CTC. This issue is resolved in Release 4.6.

Path Protection Functionality

DDTS # CSCec04550

In a path protection configuration, upon detecting a double-path failure with UNEQ-P, the UNEQ-P on the protect path is not reported. This issue is resolved in Release 4.6.

TL1 Functionality

DDTS # CSCdz86121

In one rare case, the ONS 15454/15327 times out a user session without communicating the timeout to TL1. If this happens, the TL1 user remains logged in, although the session is actually timed out. This can occur when you log into the node with a timeout of X minutes. If the user session sits idle for all but 5 seconds of the X minutes, then you have only 5 seconds to type in a command to notify the node that the session is active. If you try this, you will likely miss the five second window, in which case the node will respond as though the session is inactive and deny access. However, because you have typed a key, irrespective of the five second window, TL1 responds as though the session is active and does not log you out (time out). You will not have access to the node and will receive a “DENY” response to TL1 commands. The error message may vary depending on commands issued. To recover from this situation, log out and log back in to TL1. This issue is resolved in Release 4.6.

DDTS # CSCec21039

Rarely, the TL1 craft port on the ONS 15327 XTC card may not respond to data sent to the port after a power cycle. A reset initiated from CTC may clear the problem. This issue is resolved in Releases 4.1.3 and 4.6.

New Features and Functionality

This section highlights new features and functionality for Release 4.6.x. For detailed documentation of each of these features, consult the user documentation.

New Software Features and Functionality

Security Enhancements

The following security enhancements are added or updated in Release 4.6.x. For specific details on these enhancements, consult the *Cisco ONS 15327 Reference Manual, Release 4.6*.

- Prevent password toggling
- Prevent account changes to logged in user
- Forced password change on next login
- Forced password change on first login
- Password aging
- Prevent password flipping
- LAN access security
- Disable inactive user

New Default Superuser Password

As of Release 4.6.x the default password for a superuser when you first log onto a new node is changed. The new default is “otbu+1” consistently across all ONS 15454, ONS 15454 SDH, ONS 15600, and ONS 15327 platforms. This change does not affect users upgrading from a previous release, who will continue to use the password they have selected that is stored in their previous release's database.

GNE Load Balancing

Release 4.6.x provides fault tolerant GNE load balancing capability, allowing CTC to reach ENEs over multiple GNEs without the ENEs being advertised by the GNE over OSPF.

Go-and-Return Path Protection Routing

The go-and-return path protection routing option allows you to route the path protection working path on one fiber pair and the protect path on a separate fiber pair. The working path will always be the shortest path. If a fault occurs, neither the working nor the protection fibers are affected. This feature only applies to bidirectional path protection circuits. The go-and-return option appears on the Circuit Attributes panel of the Circuit Creation wizard.

BLSR Enhancements

BLSR Maximum Ring Support

Release 4.6.x BLSR supports a maximum of five rings per node, with maximums of five two-fiber, and one four-fiber ring per node.

BLSR 6 Character Ring ID

The name can be from 1 to 6 characters in length. Any alphanumeric string is permissible, and upper and lower case letters can be combined. Do not use the character string “All” in either upper or lower case letters, this is a TL1 keyword and will be rejected. Do not choose a name that is already assigned to another BLSR.

CTC Enhancements

Alarms Window

Path Width Column

In alarm windows, the display now includes a column called “Path Width” that indicates how many STSs are contained in the alarmed path.

CTC Enhanced Alarm Severity Profiles

Card and Node View

With Release 4.6.x the profile name is more detailed for inherited profiles. Instead of “Inherited,” the name now offers descriptive information that gives you a better idea of where the severity values are derived from. For example, the name might say “Inherited from Node profile.”

Alarm Profile Editor in Card and Node Views

The “Alarm Profile Editor” tab has been added. You can create, download, clone, or delete alarm severity profiles now from the card view or node view in addition to the traditionally available network view capability.

Alarm Profile Editor, All Levels

The term “UNSET” has been replaced with “Use Default” to clarify where the severity value comes from.

If there is only one profile loaded, the store button is available and will autoselect that profile even if it is not selected.

Buttons have a horizontal layout.

There is a new check box option, “Only Show service-affecting severities.” If checked this box does as the description says. If unchecked, each cell shows the service-affecting/non-service-affecting severities, if applicable. For example, if a cell contains a Major severity, checking the box will show “MJ,” and unchecking the box will show “MJ/MN.”

Permanent profiles (for example, “Default” and “Inherited”) are not editable until the name is changed to a non-permanent-profile name.

Spanning Tree EtherBridge Circuits Window

Release 4.6.x allows you to manage spanning tree information more easily by providing the EtherBridge Circuits window. To see the window, in node view, click the Maintenance > EtherBridge > Circuits tabs.

In the EtherBridge Circuits window you can view the following information:

- Type—Identifies the type of Ethernet circuit mapped to the spanning tree, such as EtherSwitch point-to-point.
- Circuit Name/Port—Identifies the circuit name for the circuit in the spanning tree. This column also lists the Ethernet slots and ports mapped to the spanning tree for the node.
- STP ID—Shows the spanning tree protocol ID number.
- VLANs—Lists the VLANs associated with the circuit or port.

Context-Sensitive Help

With Release 4.6.x you can access context-sensitive help from any CTC window, dialog box, or wizard, affording you “What’s this?” level information about CTC fields and table columns at the network, node, and card views.

Configurable Superuser Clear PM

On a configurable basis, where the current system behavior is the default, a superuser can configure the security level required to clear PMs. The ability to baseline PM remains unchanged. You can configure this feature in NE defaults.

PID/VID Visibility

With Release 4.6.x CTC, TL1, SNMP, and the interface to CTM display the PID/VID information programmed into all components with PID/VIDs.

This applies to all platforms where PID/VID is stored on the components.

Release 4.6.x supports setting the PID/VID in the factory.

Proxy ARP Enhancement

Release 4.6.x enhances the ARP proxy function to perform proxy ARP for all target addresses in the system's routing table (not just for the DCC connected devices).

Alarming on Duplicate Node IDs

A minor, non-service affecting (MN, NSA) alarm is raised if duplicate node names are detected when two nodes are in the same DCC area. The alarm clears when the duplicate node name is changed or the DCC link is broken.

Alarm on Firewall Turned Off

Release 4.6.x raises a transient condition when the firewall feature (proxy) is disabled after having been enabled.

Rear Panel Ethernet Connection Detach Alarm

The rear panel Ethernet connection detach alarm, when raised, indicates that the backplane LAN connection has been disconnected from a GNE. This allows detection of anyone trying to use the connection to access a corporate DCN.

- The alarm clears under the following conditions:
- The backplane LAN connection is connected or reconnected.
- The node is set to be an ENE



Note This has impacts on proxy/firewall, as well.

The NE default parameter for this option is set to “off” (by a superuser only).

Port Status via Front Panel LCD

Release 4.6.x introduces an enhancement to the fan tray LCD display/controls to increase visibility to the status of various ports on the NE. Prior to Release 4.6, a craft person local to the node could not determine which tributary OC-x port card was carrying traffic in a protection group. This enhancement will now allow a craft person determine which OC-x port cards are carrying traffic without having to log into CTC.

With Release 4.6.x, using the fan tray LCD buttons, you can drill down to specific slots and ports to display:

- The working/protect provisioned status of the OC-x port in a 1+1 or a 2F/4F BLSR configuration.
- The current active/standby line status of the OC-x port in a 1+1 or a 2F/4F BLSR configuration.

IP Tunnel Throttle Capability

An IP tunnel that will tunnel traffic from foreign nodes in the form of UDP-i packets can flood the network. With Release 4.6.x you can throttle these tunnels. You can set the throttle bandwidth percentage in a text field labeled Max Bandwidth when you create an IP tunnel using the wizard. Once an IP Tunnel is created you can also edit the tunnel and set the throttle bandwidth. Alternatively, when you are changing an IP Tunnel from SDCC (traditional) to IP Encapsulated, you can set the throttle bandwidth at that time.

New TL1 Features

The following TL1 features are new as of Release 4.6. For detailed instructions on using TL1 commands, consult the TL1 Command Guide for Release 4.6.

Functional Differences

VCAT

VCAT/CCAT circuit provisioning is allowed from Release 4.6. Currently it is supported only on ML-series cards.

BLSR

Six character ring IDs are supported in BLSR/MSSP Rings.

Alarms

SF/SD alarms are supported on all electric cards. SFBER and SDBER parameters are introduced in the ED-T1, ED-T3, ED-EC1, and ED-DS3I commands.

Alarm on Fire wall can be turned On/Off using ALW-MSG-ALL/INH-MSG-ALL commands.

STS/VT cross-connections can now be retrieved at NE/Card/Port/Path level using new commands RTRV-STC and RTRV-VT.

TL1 Security Enhancements

The following security enhancements are available in Release 4.6

- The RTRV-USER-STATUS command is used to retrieve a list of logged in users.
- The reuse of old passwords is prevented for a specified amount of time. After that time has elapsed the old password can be reused again. A user may retrieve this value with the RTRV-USER-SECU command.
- The SET-ATTR-SECUDFLT command is used to set the POINT (Password Obsolescence Interval) value.
- The REPT^EVT^SESSION is used to indicate that the password needs to be updated.
- User can retrieve password aging interval with the RTRV-USER-SECU command.
- The INH-USER-SECU command is used to disable a userid. The ALW-USER-SECU command enables the userid.

- The REPT^EVT^SECU autonomous message is used to notify a superuser when a user has logged in to the NE.
- The CANC-USER-SECU command is used by a superuser to forcibly logout a user.
- The RTRV-USER-STATUS command is used to determine which userids are locked out.

TL1 Additional Support Added

OPR/RLS-PROTNSW-<mod2> and EX-SW commands support <dirn> parameter.

Program ID and Version ID of all components which have PID/VID programmed in them are now displayed in RTRV-INV command's response.

COPY-RFILE is enhanced to perform Database backup and restore.

INIT-REG command can now clear individual montypes.

TL1 Commands Added

The following commands were added in Release 4.6:

- CANC-USER-SECU
- CHG-ACCMD-DS3I
- CONN-TACC-DS3I
- ED-CMD-SECU
- ED-DS3I
- ED-NE-PATH
- ED-OCN-TYPE
- INIT-REG-DS3I
- OPR-LPBK-DS3I
- RLS-LPBK-DS3I
- RLS-LPBK-E43
- RMV-DS3I
- RST-DS3I
- RTRV-ALM-DS3I
- RTRV-ALMTH-EQPT
- RTRV-ALMTH-OC3
- RTRV-COND-DS3I
- RTRV-DFLT-SECU
- RTRV-DS3I
- RTRV-NE-PATH
- RTRV-PM-DS3I
- RTRV-PMSCHED-DS3I
- RTRV-STS
- RTRV-TH-ALL

- RTRV-TH-DS3I
- RTRV-VT
- SCHED-PMREPT-DS3I
- SET-ALMTH-EQPT
- SET-ALMTH-OC3
- SET-ATTR-SECUDFLT
- SET-TH-DS3I

TL1 Commands Enhanced

ENT-EQPT and ED-EQPT were enhanced to add the CMDMDE name/value parameter

ENUM Differences

ALL_MONTYPE enum items dropped from Release 4.5:

- ALL Montype enum items are now directly fetched from tcadefs.h - refer to Release 4.6_PM_Diff.html document.

ALL_MONTYPE enum items added to Release 4.6:

- ALL_MONTYPE_ALL_PM => "ALL"

ALL_MONTYPE is used in the following commands:

- INIT-REG-MOD2
- RTRV-PM-MOD2
- RTRV-TH-ALL
- RTRV-TH-MOD2
- SET-TH-MOD2

ALL_THR enum items dropped from Release 4.5:

- ALL Threshold enum items are now directly fetched from tcadefs.h from Release 4.6.

ALM_THR enum items added to Release 4.6:

- ALM_THR_BATV_EHIGH => "BATV-EHIGH"
- ALM_THR_BATV_ELOW => "BATV-ELow"
- ALM_THR_BATV_HIGH => "BATV-HIGH"
- ALM_THR_BATV_LOW => "BATV-LOW"
- ALM_THR_LAT_HIGH => "LAT-HIGH"
- ALM_THR_LAT_LOW => "LAT-LOW"
- ALM_THR_LBCL_LOW => "LBCL-LOW"
- ALM_THR_RXT_HIGH => "RXT-HIGH"
- ALM_THR_RXT_LOW => "RXT-LOW"
- ALM_THR_XCVR_HIGH => "XCVR-HIGH"
- ALM_THR_XCVR_LOW => "XCVR-LOW"

ALM_THR is used in the following commands:

- RTRV-ALMTH-MOD2O
- RTRV-ALMTH-OC3
- RTRV-ALMTH-OTS
- SET-ALMTH-MOD2O

CRS_TYPE enum items added to Release 4.6:

- CRS_TYPE_VT1 => "VT1"

CRS_TYPE is used in the following commands:

- RTRV-CRS

DATARATE enum items added to Release 4.6:

- DATARATE_DR_GIG_E => "GIG_E"
- DATARATE_DR_PASS_THRU => "PASS_THRU"
- DATARATE_DR_TEN_GIG_E => "TEN_GIG_E"

DATARATE is UNUSED in any command.

DS_LINE_TYPE enum items added to Release 4.6:

- DS_LINE_TYPE_LT_AUTO_PROV => "AUTO-PROV"

DS_LINE_TYPE is used in the following commands:

- ED-DS3I
- ED-T3
- RTRV-DS3I
- RTRV-T3

DWDM_RING_TYPE enum items added to Release 4.6:

- DWDM_RING_TYPE_NOT_DWDM => "NOT-DWDM"

DWDM_RING_TYPE is used in the following commands:

- ED-WDMANS
- RTRV-WDMANS

EQPT_TYPE enum items dropped from Release 4.5:

- EQPT_TYPE_EQPT_ID_DS1N_14 => "DS1N-14"
- EQPT_TYPE_EQPT_ID_DS1_14 => "DS1-14"
- EQPT_TYPE_EQPT_ID_DS3ATM_12 => "DS3ATM-12"
- EQPT_TYPE_EQPT_ID_DS3CR_12 => "DS3CR-12"
- EQPT_TYPE_EQPT_ID_DS3E_12 => "DS3E-12"
- EQPT_TYPE_EQPT_ID_DS3NE_12 => "DS3NE-12"
- EQPT_TYPE_EQPT_ID_DS3N_12 => "DS3N-12"
- EQPT_TYPE_EQPT_ID_DS3XM_6 => "DS3XM-6"
- EQPT_TYPE_EQPT_ID_DS3_12 => "DS3-12"
- EQPT_TYPE_EQPT_ID_E1000T_2 => "E1000T-2"
- EQPT_TYPE_EQPT_ID_E100T_12 => "E100T-12"

- EQPT_TYPE_EQPT_ID_E327_4 => “E100T-4”
- EQPT_TYPE_EQPT_ID_EC1N_12 => “EC1N-12”
- EQPT_TYPE_EQPT_ID_EC1_12 => “EC1-12”
- EQPT_TYPE_EQPT_ID_MIC_GEN => “MIC-GEN”
- EQPT_TYPE_EQPT_ID_OC12_327 => “OC12-327”
- EQPT_TYPE_EQPT_ID_OC3ATM_IR_6 => “OC3ATM-IR-6”
- EQPT_TYPE_EQPT_ID_OC3POS_SR_4 => “OC3POS-SR-4”
- EQPT_TYPE_EQPT_ID_OC3_327 => “OC3-327”
- EQPT_TYPE_EQPT_ID_OC48_327 => “OC48-327”
- EQPT_TYPE_EQPT_ID_XC_VT => “XC-VT”

EQPT_TYPE enum items added to Release 4.6:

- EQPT_TYPE_EQPT_ID_DS1N_14 => “DS1N”
- EQPT_TYPE_EQPT_ID_DS1_14 => “DS1”
- EQPT_TYPE_EQPT_ID_DS3E_12 => “DS3E”
- EQPT_TYPE_EQPT_ID_DS3NE_12 => “DS3NE”
- EQPT_TYPE_EQPT_ID_DS3N_12 => “DS3N”
- EQPT_TYPE_EQPT_ID_DS3XM_6 => “DS3XM”
- EQPT_TYPE_EQPT_ID_DS3_12 => “DS3”
- EQPT_TYPE_EQPT_ID_E1000T_2 => “E1000T”
- EQPT_TYPE_EQPT_ID_E100T_12 => “E100T”
- EQPT_TYPE_EQPT_ID_E327_4 => “E100T”
- EQPT_TYPE_EQPT_ID_EC1N_12 => “EC1N”
- EQPT_TYPE_EQPT_ID_EC1_12 => “EC1”
- EQPT_TYPE_EQPT_ID_MIC_GEN => “MIC”
- EQPT_TYPE_EQPT_ID_OC12_327 => “OC12”
- EQPT_TYPE_EQPT_ID_OC3_327 => “OC3”
- EQPT_TYPE_EQPT_ID_OC48_327 => “OC48”
- EQPT_TYPE_EQPT_ID_TSC => “TSC”
- EQPT_TYPE_EQPT_ID_XC_VT => “XCVT”

EQPT_TYPE is used in the following commands:

- INIT-REG-OTS

FRAME_FORMAT enum items added to Release 4.6:

- FRAME_FORMAT_LT_BITS_2MHZ => “BITS-2MHZ”
- FRAME_FORMAT_LT_BITS_64K => “BITS-64K”

FRAME_FORMAT is used in the following commands:

- ED-BITS
- ED-T1
- RTRV-BITS

- RTRV-T1

IMPEDANCE enum items added to Release 4.6:

- None

IMPEDANCE is used in the following commands:

- ED-BITS
- RTRV-BITS

LINE_CODE enum items added to Release 4.6:

- LINE_CODE_LC_HDB3 => “HDB3”

LINE_CODE is used in the following commands:

- ED-BITS
- ED-T1
- RTRV-BITS
- RTRV-T1

LPBK_TYPE enum items added to Release 4.6:

- LPBK_TYPE_LINE_LPBK => “LINE”

LPBK_TYPE is used in the following commands:

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

MOD2 enum items added to Release 4.6:

- MOD2_M2_DS3I => “DS3I”
- MOD2_M2_EQPT => “EQPT”
- MOD2_M2_STS => “STS”
- MOD2_M2_VT => “VT”

MOD2 is used in the following commands:

- RTRV-LNK-OTS
- RTRV-NE-WDMANS
- RTRV-PMSCHED-ALL
- RTRV-TRC-CLNT
- RTRV-TRC-OCH

MOD2ALM enum items added to Release 4.6:

- MOD2ALM_M2_DS3I => “DS3I”

MOD2ALM is used in the following commands:

- RTRV-ALM-WLEN
- RTRV-COND-WLEN

MOD2B enum items added to Release 4.6:

- MOD2B_M2_DS3I => “DS3I”

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-TH-ALL

MOD2O enum items added to Release 4.6:

- MOD2O_M2_EQPT => "EQPT"
- MOD2O_M2_OC3 => "OC3"

MOD2O is used in the following commands:

- RTRV-ALMTH-OC3
- RTRV-ALMTH-OTS

MOD2_IO enum items added to Release 4.6:

- MOD2_IO_M2_DS3I => "DS3I"

MOD2_IO is used in the following commands:

- None

MOD_PATH enum items added to Release 4.6:

- None

MOD_PATH is used in the following commands:

- RTRV-CRS
- RTRV-STS9C
- RTRV-TRC-OC48

MOD_PORT enum items dropped from Release 4.5:

- MOD_PORT_M2_EC1 => "EC1"
- MOD_PORT_M2_G1000 => "G1000"
- MOD_PORT_M2_OC12 => "OC12"
- MOD_PORT_M2_OC192 => "OC192"
- MOD_PORT_M2_OC3 => "OC3"
- MOD_PORT_M2_OC48 => "OC48"
- MOD_PORT_M2_T1 => "T1"
- MOD_PORT_M2_T3 => "T3"

MOD_PORT is used in the following commands:

- None.

OPTICAL_BAND enum items dropped from Release 4.5:

- OPTICAL_BAND_BN_UNKNOWN => "USE-DEFAULT"

OPTICAL_BAND enum items added to Release 4.6:

- OPTICAL_BAND_BN_UNKNOWN => “UNKNOWN”

OPTICAL_BAND is used in the following commands:

- ED-OMS
- RTRV-LNK-OTS
- RTRV-OMS

OPTICAL_LINK_TYPE enum items added to Release 4.6:

- OPTICAL_LINK_TYPE_OL_HITLESS_OCH => “HITLESS-OCH”
- OPTICAL_LINK_TYPE_OL_HITLESS_OMS => “HITLESS-OMS”
- OPTICAL_LINK_TYPE_OL_OCH => “OCH”
- OPTICAL_LINK_TYPE_OL_OMS => “OMS”

OPTICAL_LINK_TYPE is used in the following commands:

- RTRV-LNK-MOD2LNK
- RTRV-LNK-OTS

REVERTIVE_TIME enum items added to Release 4.6:

- REVERTIVE_TIME_RT_0 => “0.0”

REVERTIVE_TIME is used in the following commands:

- ED-BLSR
- ED-EQPT
- ED-FFP-CLNT
- ED-FFP-OCH
- ED-FFP-OCN-TYPE
- ED-NE-SYNCN
- ED-STS-PATH
- ED-VT-PATH
- ED-VT1
- ENT-BLSR
- ENT-EQPT
- ENT-FFP-CLNT
- ENT-FFP-OCN-TYPE
- RTRV-BLSR
- RTRV-EQPT
- RTRV-FFP-CLNT
- RTRV-FFP-OC48
- RTRV-FFP-OCH
- RTRV-NE-SYNCN
- RTRV-STS9C
- RTRV-VT1

SA_BIT enum items added to Release 4.6:

- SA_BIT_SA_BYTE_4 => “BYTE-4”
- SA_BIT_SA_BYTE_5 => “BYTE-5”
- SA_BIT_SA_BYTE_6 => “BYTE-6”
- SA_BIT_SA_BYTE_7 => “BYTE-7”
- SA_BIT_SA_BYTE_8 => “BYTE-8”

SA_BIT is used in the following commands:

- ED-BITS
- RTRV-BITS

SST enum items added to Release 4.6:

- SST_SS_UNKNOWN => “UNKNOWN”

SST is used in Most ED/RTRV commands.

STS_PATH enum items dropped from Release 4.5:

- STS_PATH_STS1 => “STS1”
- STS_PATH_STS12C => “STS12C”
- STS_PATH_STS192C => “STS192C”
- STS_PATH_STS24C => “STS24C”
- STS_PATH_STS3C => “STS3C”
- STS_PATH_STS48C => “STS48C”
- STS_PATH_STS6C => “STS6C”
- STS_PATH_STS9C => “STS9C”

STS_PATH is used in the following commands:

- RTRV-CRS-STS9C
- RTRV-STS9C
- RTRV-TRC-OC48

TACC_MODE enum items added to Release 4.6:

- TACC_MODE_SPLTAB => “SPLTAB”

TACC_MODE is used in the following commands:

- CHG-ACCMD-MOD-TACC
- CONN-TACC-MOD-TACC
- RTRV-TACC

TAPTYPE enum items added to Release 4.6:

- TAPTYPE_DUAL => “DUAL”
- TAPTYPE_SINGLE => “SINGLE”

TAPTYPE is used in the following commands:

- ED-DS1
- ED-DS3I
- ED-STS-PATH
- ED-T1

- ED-T3
- ED-VT-PATH
- RTRV-DS1
- RTRV-DS3I
- RTRV-STS9C
- RTRV-T1
- RTRV-T3

TRCMODE enum items added to Release 4.6:

- TRCFORMAT_16_BYTE => “16-BYTE”
- TRCFORMAT_1_BYTE => “1-BYTE”
- TRCFORMAT_64_BYTE => “64-BYTE”

TRCMODE is used in the following commands:

- ED-STS-PATH
- ED-TRC-CLNT
- ED-TRC-OCH
- RTRV-STS9C
- RTRV-TRC-CLNT
- RTRV-TRC-OC48
- RTRV-TRC-OCH

USER_LOGINS enum items added to Release 4.6:

- USER_LOGINS_MULTIPLE => “MULTIPLE”
- USER_LOGINS_SINGLE => “SINGLE”

USER_LOGINS is used in the following commands:

- SET-ATTR-SECUDFLT

WDM enum items dropped from Release 4.5:

- TRCFORMAT_16_BYTE => “16-BYTE”
- TRCFORMAT_1_BYTE => “1-BYTE”
- TRCFORMAT_64_BYTE => “64-BYTE”
- WDM_WDM_CLNT => “CLNT”
- WDM_WDM_OCH => “OCH”
- WDM_WDM_OMS => “OMS”
- WDM_WDM_OTS => “OTS”

WDM is UNUSED in any command.

COMMAND Syntax Changes

The syntax of the following commands was changed from Release 4.5 to Release 4.6:

CONN-TACC-DS1 syntax changed:

CONN-TACC-DS1[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-DS1[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS1 syntax changed:
 CONN-TACC-STS1[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS1[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS12C syntax changed:
 CONN-TACC-STS12C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS12C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS192C syntax changed:
 CONN-TACC-STS192C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS192C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS24C syntax changed:
 CONN-TACC-STS24C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS24C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS3C syntax changed:
 CONN-TACC-STS3C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS3C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS48C syntax changed:
 CONN-TACC-STS48C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS48C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS6C syntax changed:
 CONN-TACC-STS6C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS6C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-STS9C syntax changed:
 CONN-TACC-STS9C[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-STS9C[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-T1 syntax changed:
 CONN-TACC-T1[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-T1[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-T3 syntax changed:
 CONN-TACC-T3[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-T3[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 CONN-TACC-VT1 syntax changed:
 CONN-TACC-VT1[:<TID>]:<aid>:<CTAG>[:<tap>]:MD=<md>;
 CONN-TACC-VT1[:<TID>]:<aid>:<CTAG>::<tap>:MD=<md>;
 COPY-IOSCFG syntax changed:
 COPY-IOSCFG[:<TID>]:<src>:<CTAG>::SRC=<src l>,DEST=<dest>;
 COPY-IOSCFG[:<TID>]:<aid>:<CTAG>::SRC=<src>,DEST=<dest>;

COPY-RFILE syntax changed:

```
COPY-RFILE[:<TID>]:<src>:<CTAG>::TYPE=<xfertype>,[SRC=<srcurl>],[DEST=<desturl>];
COPY-RFILE[:<TID>]:<src>:<CTAG>::TYPE=<xfertype>,[SRC=<srcurl>],[DEST=<desturl>],[
OVWRT=<ovwrt>],[FTTD=<fttd>];
```

DLT-EQPT syntax changed:

```
DLT-EQPT[:<TID>]:<aid>:<CTAG>[:::];
DLT-EQPT[:<TID>]:<tap>:<CTAG>;
```

DLT-UCP-CC syntax changed:

```
DLT-UCP-CC[:<TID>]:<aid >:<CTAG>[:::];
DLT-UCP-CC[:<TID>]:<aid>:<CTAG>[:::];
```

ED-BITS syntax changed:

```
ED-BITS[:<TID>]:<aid>:<CTAG>[:::LINECDE=<linecde>],[FMT=<fmt>],[LBO=<lbo>],[SYNC
MSG=<syncmsg>],[AISTHRSHLD=<aisthrshld>][:<pst>];
ED-BITS[:<TID>]:<aid>:<CTAG>[:::LINECDE=<linecde>],[FMT=<fmt>],[SABIT=<sabit>],[I
MPEDANCE=<impedance>],[LBO=<lbo>],[SYNCSMSG=<syncmsg>],[AISTHRSHLD=<aisthrsh
ld>][:<pst>];
```

ED-CLNT syntax changed:

```
ED-CLNT[:<TID>]:<aid>:<CTAG>[:::NAME=<portname>],[SFBER=<sfber>],[SDBER=<sdber
>],[ALSMODE=<alsmode>],[ALSRCINT=<alsrcint>],[ALSRCPW=<alsrcpw>],[COMM=<com
m>],[MACADDR=<macaddr>],[SYNCSMSG=<syncmsg>],[SENDDUS=<senddus>],[RLASER=<
rlaser>],[SOAK=<soak>][:<pst>],[<sst>];
ED-CLNT[:<TID>]:<aid>:<CTAG>[:::NAME=<portname>],[SFBER=<sfber>],[SDBER=<sdber
>],[ALSMODE=<alsmode>],[ALSRCINT=<alsrcint>],[ALSRCPW=<alsrcpw>],[COMM=<com
m>],[MACADDR=<macaddr>],[SYNCSMSG=<syncmsg>],[SENDDUS=<senddus>],[RLASER=<
rlaser>],[SOAK=<soak>],[OSPF=<ospf>][:<pst>],[<sst>];
```

ED-DS1 syntax changed:

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

ED-EQPT syntax changed:

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

ED-NE-SYNCN syntax changed:

```
ED-NE-SYNCN[:<TID>]:<CTAG>[:::TMMD=<tmmd>],[SSMGEN=<ssmgen>],[QRES=<qres>,
][RVRTV=<rvrtv>],[RVTM=<rvtm>];
ED-NE-SYNCN[:<TID>]:<CTAG>;
```

ED-OCH syntax changed:

```
ED-OCH[:<TID>]:<aid>:<CTAG>[:::RDIRN=<rdirn>],[EXPWLEN=<expwlen>],[VOAATTN=<
voaattn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>],[NAME=<
portname>],[SFBER=<sfber>],[SDBER=<sdber>],[ALSMODE=<alsmode>],[ALSRCINT=<alsrc
```

```
int>],[ALSRCPW=<alsrcpw>],[COMM=<comm>],[GCCRATE=<gccrate>],[OSFBER=<sfber>],[
OSDBER=<sdber>],[DWRAP=<drwrap>],[FEC=<fec>],[MACADDR=<macaddr>],[SYNCMSG=
<syncmsg>],[SENDDUS=<senddus>],[RLASER=<rlaser>],[SOAK=<soak>][:<pst>],[<sst>];
```

```
ED-OCH[:<TID>]:<aid>:<CTAG>[:::RDIRN=<rdirn>],[EXPWLEN=<expwlen>],[VOAATTN=<voa
attn>],[VOAPWR=<voapwr>],[CALOPWR=<calopwr>],[CHPOWER=<chpower>],[NAME=<
portname>],[SFBER=<sfber>],[SDBER=<sdber>],[OSDBER=<sdber>],[ALSMODE=<alsmode>],
[ALSRCINT=<alsrcint>],[ALSRCPW=<alsrcpw>],[COMM=<comm>],[GCCRATE=<gccrate>],
[DWRAP=<drwrap>],[FEC=<fec>],[MACADDR=<macaddr>],[SYNCMSG=<syncmsg>],[SEND
DUS=<senddus>],[RLASER=<rlaser>],[SOAK=<soak>],[OSPF=<ospf>][:<pst>],[<sst>];
```

ED-OTS syntax changed:

```
ED-OTS[:<TID>]:<aid>:<CTAG>[:::RDIRN=<rdirn>],[VOAATTN=<voaattn>],[VOAPWR=<voa
pwr>],[CALOPWR=<calopwr>],[CALTILT=<caltilt>],[OSRI=<osri>],[EXPGAIN=<gain>][:<pst
>],[<sst>];
```

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

ED-T1 syntax changed:

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

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

ED-T3 syntax changed:

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

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

ED-VT1 syntax changed:

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

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

ED-WDMANS syntax changed:

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

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

ENT-EQPT syntax changed:

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

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

ENT-UCP-CC syntax changed:

```
ENT-UCP-CC[:<TID>][:<aid>]:<CTAG>[:::NBRIX=<nbrix>],[CCTYPE=<cctype>],[PORT=<port>],[LOCALCCID=<localccid>],[LOCALIPCC=<localipcc>],[REMOTCCID=<remoteccid>],[REMOTEIPCC=<remoteipcc>],[LMPHELLOINT=<lmphelloint>],[LMPHELLODEADINT=<lmphelloheadint>],[MTU=<mtu>],[CRCMD=<crcmd>],[TUNMD=<tunmd>][:];
```

```
ENT-UCP-CC[:<TID>][:<aid>]:<CTAG>:::NBRIX=<nbrix>,CCTYPE=<cctype>,[PORT=<port>],[LOCALCCID=<localccid>],[LOCALIPCC=<localipcc>],[REMOTCCID=<remoteccid>],[REMOTEIPCC=<remoteipcc>],[LMPHELLOINT=<lmphelloint>],[LMPHELLODEADINT=<lmphelloheadint>],[MTU=<mtu>],[CRCMD=<crcmd>],[TUNMD=<tunmd>][:];
```

ENT-UCP-IF syntax changed:

```
ENT-UCP-IF[:<TID>]:<aid>:<CTAG>[:::NBRIX=<nbrix>],[CCID=<ccid>],[LOCALIFID=<localifid>],[REMOTEIFID=<remoteifid>],[TNATYPE=<tnatype>],[TNAADDR=<tnaaddr>],[CORENETWORKID=<corenetworkid>][:];
```

```
ENT-UCP-IF[:<TID>]:<aid>:<CTAG>:::NBRIX=<nbrix>,[CCID=<ccid>],[LOCALIFID=<localifid>],[REMOTEIFID=<remoteifid>],[TNATYPE=<tnatype>],[TNAADDR=<tnaaddr>],[CORENETWORKID=<corenetworkid>][:];
```

EX-SW-OC12 syntax changed:

```
EX-SW-OC12[:<TID>]:<aid>:<CTAG>[::<st>];
```

```
EX-SW-OC12[:<TID>]:<aid>:<CTAG>[::,<st>][,<dirn>];
```

EX-SW-OC192 syntax changed:

```
EX-SW-OC192[:<TID>]:<aid>:<CTAG>[::<st>];
```

```
EX-SW-OC192[:<TID>]:<aid>:<CTAG>[::,<st>][,<dirn>];
```

EX-SW-OC48 syntax changed:

```
EX-SW-OC48[:<TID>]:<aid>:<CTAG>[::<st>];
```

```
EX-SW-OC48[:<TID>]:<aid>:<CTAG>[::,<st>][,<dirn>];
```

INIT-REG-CLNT syntax changed:

```
INIT-REG-CLNT[:<TID>]:<src>:<CTAG>:::,<location>],[<direction>],[<tmper>][,];
```

```
INIT-REG-CLNT[:<TID>]:<aid>:<CTAG>::<montype>,<locn>],[<dirn>],[<tmper>][,];
```

INIT-REG-DS1 syntax changed:

```
INIT-REG-DS1[:<TID>]:<aid>:<CTAG>:::,<locn>],[<dirn>],[<tmper>][,];
```

```
INIT-REG-DS1[:<TID>]:<aid>:<CTAG>::<montype>,<locn>],[<dirn>],[<tmper>][,];
```

INIT-REG-EC1 syntax changed:

```
INIT-REG-EC1[:<TID>]:<aid>:<CTAG>:::,<locn>],[<dirn>],[<tmper>][,];
```

```
INIT-REG-EC1[:<TID>]:<aid>:<CTAG>::<montype>,<locn>],[<dirn>],[<tmper>][,];
```

INIT-REG-G1000 syntax changed:

```
INIT-REG-G1000[:<TID>]:<aid>:<CTAG>:::,<locn>],[<dirn>],[<tmper>][,];
```

```
INIT-REG-G1000[:<TID>]:<aid>:<CTAG>::<montype>,<locn>],[<dirn>],[<tmper>][,];
```

INIT-REG-OC12 syntax changed:

```
INIT-REG-OC12[:<TID>]:<aid>:<CTAG>:::,<locn>],[<dirn>],[<tmper>][,];
```

```
INIT-REG-OC12[:<TID>]:<aid>:<CTAG>::<montype>,<locn>],[<dirn>],[<tmper>][,];
```

INIT-REG-OC192 syntax changed:

INIT-REG-OC192[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OC192[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OC3 syntax changed:

INIT-REG-OC3[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OC3[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OC48 syntax changed:

INIT-REG-OC48[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OC48[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OCH syntax changed:

INIT-REG-OCH[:<TID>]:<src>:<CTAG>::,,[<location>],[<direction>],[<tmper>][,.,];

INIT-REG-OCH[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OMS syntax changed:

INIT-REG-OMS[:<TID>]:<src>:<CTAG>::,,[<location>],[<direction>],[<tmper>][,.,];

INIT-REG-OMS[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-OTS syntax changed:

INIT-REG-OTS[:<TID>]:<src>:<CTAG>::,,[<location>],[<direction>],[<tmper>][,.,];

INIT-REG-OTS[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS1 syntax changed:

INIT-REG-STS1[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS1[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS12C syntax changed:

INIT-REG-STS12C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS12C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS192C syntax changed:

INIT-REG-STS192C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS192C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS24C syntax changed:

INIT-REG-STS24C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS24C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS3C syntax changed:

INIT-REG-STS3C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS3C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS48C syntax changed:

INIT-REG-STS48C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS48C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS6C syntax changed:

INIT-REG-STS6C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,];

INIT-REG-STS6C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-STS9C syntax changed:

INIT-REG-STS9C[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-STS9C[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-T1 syntax changed:

INIT-REG-T1[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-T1[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-T3 syntax changed:

INIT-REG-T3[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-T3[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-VT1 syntax changed:

INIT-REG-VT1[:<TID>]:<aid>:<CTAG>::,,[<locn>],[<dirn>],[<tmper>][,.,,];

INIT-REG-VT1[:<TID>]:<aid>:<CTAG>::<montype>,,[<locn>],[<dirn>],[<tmper>][,.,,];

OPR-PROTNSW-OC12 syntax changed:

OPR-PROTNSW-OC12[:<TID>]:<aid>:<CTAG>::<sc>,[<switchType>][:];

OPR-PROTNSW-OC12[:<TID>]:<aid>:<CTAG>::<sc>[,<switchType>][:<dirn>];

OPR-PROTNSW-OC192 syntax changed:

OPR-PROTNSW-OC192[:<TID>]:<aid>:<CTAG>::<sc>,[<switchType>][:];

OPR-PROTNSW-OC192[:<TID>]:<aid>:<CTAG>::<sc>[,<switchType>][:<dirn>];

OPR-PROTNSW-OC3 syntax changed:

OPR-PROTNSW-OC3[:<TID>]:<aid>:<CTAG>::<sc>,[<switchType>][:];

OPR-PROTNSW-OC3[:<TID>]:<aid>:<CTAG>::<sc>[,<switchType>][:<dirn>];

OPR-PROTNSW-OC48 syntax changed:

OPR-PROTNSW-OC48[:<TID>]:<aid>:<CTAG>::<sc>,[<switchType>][:];

OPR-PROTNSW-OC48[:<TID>]:<aid>:<CTAG>::<sc>[,<switchType>][:<dirn>];

OPR-SYNCNSW syntax changed:

OPR-SYNCNSW[:<TID>][:<aid>]:<CTAG>::<switchto>,[<sc>];

OPR-SYNCNSW[:<TID>]::<CTAG>;

RLS-EXT-CONT syntax changed:

RLS-EXT-CONT[:<TID>]:<aid>:<CTAG>[::,];

RLS-EXT-CONT[:<TID>][:<aid>]:<CTAG>;

RLS-PROTNSW-OC12 syntax changed:

RLS-PROTNSW-OC12[:<TID>]:<aid>:<CTAG>[::,];

RLS-PROTNSW-OC12[:<TID>]:<aid>:<CTAG>[::<dirn>];

RLS-PROTNSW-OC192 syntax changed:

RLS-PROTNSW-OC192[:<TID>]:<aid>:<CTAG>[::,];

RLS-PROTNSW-OC192[:<TID>]:<aid>:<CTAG>[::<dirn>];

RLS-PROTNSW-OC3 syntax changed:

RLS-PROTNSW-OC3[:<TID>]:<aid>:<CTAG>[:];
 RLS-PROTNSW-OC3[:<TID>]:<aid>:<CTAG>[:<dirn>];

RLS-PROTNSW-OC48 syntax changed:

RLS-PROTNSW-OC48[:<TID>]:<aid>:<CTAG>[:];
 RLS-PROTNSW-OC48[:<TID>]:<aid>:<CTAG>[:<dirn>];

RTRV-ALM-ENV syntax changed:

RTRV-ALM-ENV[:<TID>]:<aid>:<CTAG>[:<ntfncde>],[<almtype>];
 RTRV-ALM-ENV[:<TID>]:<aid>:<CTAG>[:<ntfncde>],[<almtype>];

RTRV-BITS response changes:

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

RTRV-CLNT response changes:

<aid>:.,[<role>],[<status>]:[<plgtype>],[<serialnum>],[<partnum>],[<vendor>],[<vendorrev>],[<vendorid>],[<clei>],[<portname>],[<sfber>],[<sdber>],[<alsmode>],[<alsrcint>],[<alsrcpw>],[<comm>],[<macaddr>],[<syncmsg>],[<senddus>],[<lsrstat>],[<soak>],[<soakleft>]:<pst>,[<sst>
 <aid>:.,[<role>],[<status>]:[<plgtype>],[<serialnum>],[<vendorrev>],[<clei>],[<portname>],[<sfber>],[<sdber>],[<alsmode>],[<alsrcint>],[<alsrcpw>],[<comm>],[<partnum>],[<vendor>],[<vendorid>],[<macaddr>],[<syncmsg>],[<senddus>],[<lsrstat>],[<soak>],[<soakleft>],[<ospf>]:<pst>,[<sst>

COMMAND Response Changes:

RTRV-DS1 response changes:

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

RTRV-G1000 response changes:

<aid>::[<mfs>],[<flow>],[<lan>],[<optics>],[<soak>],[<als>],[<trans>],[<tport>],[<lwmrk>],[<hiw
 mrk>],[<buff>],[<soakleft>]:<pst>,[<sst>
 <aid>::[<mfs>],[<flow>],[<lan>],[<optics>],[<soak>],[<als>],[<trans>],[<tport>],[<lwmrk>],[<hiw
 mrk>],[<buff>]:[<soakleft>]:<pst>,[<sst>

RTRV-INV response changes:

<aid>,<aidtype>::[<pn>],[<hwrev>],[<fwrev>],[<sn>],[<clei>],[<twl1=nw1 in code>],[<twl2= w11
 in code>],[<twl3=w12 in code>],[<twl4=w13 in
 code>],[<pluginvendorid>],[<pluginpn>],[<pluginhwrev>],[<pluginfwrev>],[<pluginsn>],[<ilossr
 ef>
 <aid>,<aidtype>::[<plugtype>],[<vendor>],[<pn>],[<hwrev>],[<fwrev>],[<sn>],[<clei>],[<twl1=
 nw1 in code>],[<twl2= w11 in code>],[<twl3=w12 in code>],[<twl4=w13 in
 code>],[<pluginvendorid>],[<pluginpn>],[<pluginhwrev>],[<pluginfwrev>],[<pluginsn>],[<ilossr
 ef>],[<productId>],[<versionId>],[<fpgaVersion>

RTRV-OCH response changes:

<aid>:.,[<role>],[<status>]:[<rdirn>],[<opticalPortType>],[<power>],[<expWlen>],[<actWlen>],[
 <iloss>],[<voamode>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr>],[<calo
 pwr>],[<chpower>],[<portname>],[<sfber>],[<sdber>],[<alsmode>],[<alsrcint>],[<alsrcpw>],[<c
 omm>],[<gccrate>],[<dwrap>],[<fec>],[<osfber>],[<osdber>],[<macaddr>],[<syncmsg>],[<sendd
 us>],[<lsrstat>],[<soak>],[<soakleft>]:<pst>,[<sst>

```
<aid>:.,[<role>],[<status>]:[<rdirn>],[<opticalPortType>],[<power>],[<expWlen>],[<actWlen>],[
<iLoss>],[<voamode>],[<voaattn>],[<voapwr>],[<voarefattn>],[<voarefpwr>],[<refopwr>],[<calo
pwr>],[<chpower>],[<portname>],[<sfber>],[<sdber>],[<alsmode>],[<alsrcint>],[<alsrerpw>],[<c
omm>],[<gccrate>],[<dwrap>],[<fec>],[<osfber>],[<osdber>],[<macaddr>],[<syncmsg>],[<sendu
s>],[<lsrstat>],[<soak>],[<soakleft>],[<ospf>]:<pst>,<sst>
```

RTRV-OTS response changes:

```
<aid>::<rdirn>,<opticalPortType>,[<power>],[<iLoss>],[<voamode>],[<voaattn>],[<voapwr>],[<v
oarefattn>],[<voarefpwr>],[<laserst>],[<osri>],[<amplmode>],[<gain>],[<expgain>],[<refopwr>],
[<calopwr>],[<refilt>],[<caltilt>],[<dcuLoss>],[<awgst>],[<heatst>]:<pst>,<sst>
```

```
<aid>::<rdirn>,<opticalPortType>,[<power>],[<iLoss>],[<voamode>],[<voaattn>],[<voapwr>],[<v
oarefattn>],[<voarefpwr>],[<laserst>],[<osri>],[<alsmode>],[<alsrcint>],[<alsrerpw>],[<amplmod
e>],[<gain>],[<expgain>],[<refopwr>],[<calopwr>],[<refilt>],[<caltilt>],[<dcuLoss>],[<awgst>],[
<heatst>]:<pst>,<sst>
```

RTRV-ST59C response changes:

```
<aid>::[<level>],[<sfber>],[<sdber>],[<rvrtv>],[<rvtm>],[<swpdip>],[<holdofftimer>],[<exptrc>]
,[<trc>],[<inctrc>],[<trcmode>],[<tacc>],[<upsrpthstate>],[<c2>],[<blsrpthstate>]:<pst>,<sst>
```

```
<aid>::[<level>],[<sfber>],[<sdber>],[<rvrtv>],[<rvtm>],[<swpdip>],[<holdofftimer>],[<exptrc>]
,[<trc>],[<inctrc>],[<trcmode>],[<tacc>],[<tatype>],[<upsrpthstate>],[<c2>],[<blsrpthstate>]:<
pst>,<sst>
```

RTRV-T1 response changes:

```
<aid>::[<linecde>],[<fmt>],[<lbo>],[<tacc>],[<soak>],[<soakleft>],[<sfber>],[<sdber>]:<pst>,<ss
st>
```

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

RTRV-T3 response changes:

```
<aid>::[<fmt>],[<linecde>],[<lbo>],[<tacc>],[<soak>],[<soakleft>],[<sfber>],[<sdber>]:<pst>,<ss
st>
```

```
<aid>::[<fmt>],[<linecde>],[<lbo>],[<inhfelpbk>],[<tacc>],[<tatype>],[<soak>],[<soakleft>],[<ss
fber>],[<sdber>]:<pst>,<sst>
```

RTRV-TRC-CLNT response changes:

```
<aid>,<aidtype>::[<trclevel>],[<exptrc>],[<trc>],[<inctrc>],[<trcmode>],[<trcformat>]
```

```
[<trclevel>],[<exptrc>],[<trc>],[<inctrc>],[<trcmode>],[<trcformat>]
```

RTRV-WLEN response changes:

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

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

SET-TOD syntax changed:

```
SET-TOD[:<TID>]::<CTAG>:<year>,<month>,<day>,<hour>,<minute>,<second>,[<difference>
]:[:DST=<dst>];
```

```
SET-TOD[:<TID>]::<CTAG>;
```

Related Documentation

Release-Specific Documents

- *Release Notes for the Cisco ONS 15327, Release 4.6.2*
- *Release Notes for the Cisco ONS 15454, Release 4.6.4*
- *Cisco ONS 15327 Software Upgrade Guide, Release 4.6*

Platform-Specific Documents

- *Cisco ONS 15327 Procedure Guide, Release 4.6*
- *Cisco ONS 15327 Reference Manual, Release 4.6*
- *Cisco ONS 15327 Troubleshooting Guide, Release 4.6*
- *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide, Release 4.6*
- *Cisco ONS 15327 Product Overview, Release 4.6*

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.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:

http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

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To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Attn Document Resource Connection
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

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To access Cisco.com, go to the following website:

<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/tac>

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://www.cisco.com/register/>

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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