RELEASE NOTES

AOS version R10.10.0
November 25, 2013

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Contents

Introduction

AOS version R10.10.0 is a major system release that adds new features and addresses customer issues that were uncovered in previous code releases.

This release is generally available code. Results obtained during internal testing have been evaluated and the code has been determined to be ready for general availability. Caveats discovered during testing but not addressed in this build are listed in *Errata on page 7*.

A list of new or updated documents for this release appears in *Documentation Updates on page 13*.

Configuration guides, white papers, data sheets, and other documentation can be found on ADTRAN's Support Forum, https://supportforums.adtran.com. The contents of these release notes will focus on the platforms listed below.

Supported Platforms

The following platforms are supported in AOS version R10.10.0. To confirm the Boot ROM version of the ADTRAN unit, Telnet or console to the unit and issue the **show version** command. In the command output, the Boot ROM version will be listed as **Boot ROM version XX.XX.XX**. If you require a Boot ROM upgrade, please contact ADTRAN Technical Support (support@adtran.com or 888-423-8726) for assistance.

Platform	Standard Feature Pack	Enhanced Feature Pack	SBC Feature Pack	Minimum Boot ROM
NetVanta 644		√		A5.01.B1
NetVanta 1234/1234P (2nd Gen. only)	√			XB.01.02
NetVanta 1235P	√			R10.4.0.B1
NetVanta 1238/1238P (2nd Gen. only)	√			XB.01.02
NetVanta 1534	√			17.06.03.00
NetVanta 1534 (2nd Gen.)	√			17.08.01.00
NetVanta 1534P (2nd Gen.)	√			17.09.01.00
NetVanta 1535P	√			17.08.01.00
NetVanta 1544/1544F	√			17.06.03.00
NetVanta 1544 (2nd Gen.)	√			17.08.01.00
NetVanta 1544P (2nd Gen.)	√			17.09.01.00
NetVanta 1638	√			18.02.01.SC
NetVanta 1638P	√			18.02.01.SC
NetVanta 1335		√		15.01.00
NetVanta 3120		√		14.04.00
NetVanta 3130		√		14.04.00
NetVanta 3200/3205 (3rd Gen. only)	√	√		17.02.01.00
NetVanta 3305 (2nd Gen. only)	√	√		04.02.00
NetVanta 3430	√	√		13.03.SB
NetVanta 3430 (2nd Gen.)	√	√	√	17.05.01.00
NetVanta 3448	√	√	√	13.03.SB

Platform	Standard Feature Pack	Enhanced Feature Pack	SBC Feature Pack	Minimum Boot ROM
NetVanta 3450	√	√		17.06.01.00
NetVanta 3458	√	√		17.06.01.00
NetVanta 4305 (2nd Gen. only)	√	√		08.01.00
NetVanta 4430	√	√	√	17.04.01.00
NetVanta 4660		√		R10.10.0
NetVanta 5305	√	√		11.03.00
NetVanta 6240		√	√	A5.01.00
NetVanta 6250		√	√	R10.9.0
NetVanta 6310/6330		√	√	A3.01.B2
NetVanta 6355		√	√	14.06.00
Total Access 900 Series (2nd Gen. only)		√		14.04.00
Total Access 900e Series (2nd Gen. only)		√	√	14.05.00.SA
Total Access 900e Series (3rd Gen. only)		√	√	R10.9.0

System Notes

- Beginning with AOS version 17.09.01, the syntax of certain commands was modified from previous AOS versions by either removing or adding the **ip** keyword. In general, when the **ip** keyword appears in a command, it signifies that the command is only applicable to IPv4 functionality. As more features introduce IPv6 support, the **ipv6** keyword is added to signify the command is only applicable to IPv6 functionality. The **ip** keyword has been removed from several commands to signify that the command has both IPv4 and IPv6 functionality.

  Due to this syntax change, downgrading a unit configured in AOS version R10.10.0 to a previous AOS version, could cause service disruption because the new syntax might not be recognized by the previous version. Upgrading a unit from an older AOS version to AOS version R10.10.0 will cause no service disruption because both the old and the new syntaxes are accepted. For more information on specific commands, refer to the *AOS Command Reference Guide* available at https://supportforums.adtran.com.

- It is recommended that your browser's cache be cleared before viewing the GUI after an upgrade.

Features and Enhancements

This section highlights the major features, commands, and behavioral changes for all Converged Access products running AOS version R10.10.0.

- Added the ability to rename files on an AOS unit using the **rename** command.

- Added support for DHCP client option 60, which can be used to request vendor information.

- Added an SCP client to AOS.

- Added support for public key authentication for SSH and SCP.

- Added support for UDP relay in non-default VRFs.

- Add the ability to set TOS/DSCP and the DF flag for pings sourced from an AOS device.

- Added IGMP Snooping and Querier capabilities to all layer 3 switches.

This section highlights the voice specific features, commands, and behavioral changes available in products running AOS version R10.10.0.

- Added the ability to configure SIP Timers D & J, which affects how long a SIP transaction resource is reserved once the final message in a transaction is received.

- Added the ability for the client registration process to optionally send a SIP SUBSCRIBE request for message waiting indicator (MWI).

Fixes

This section highlights major bug fixes for all products running AOS version R10.10.0.

- When an Ethernet interface was configured for 2.5 Gbps/full duplex, the GUI would improperly indicate the interface was configured for 10 Mbps/half duplex.

- Setting a description on a T1 interface that was greater than 110 characters and then attempting to view the description using the **show interface t1 0/x** command caused the ADTRAN unit to reboot.

- When debugging on a heavily loaded unit, debug will be dropped to avoid congestion if necessary. In rare cases, the unit may have rebooted when that occurred.

- The MRRU value in the output of the **show interface ppp** command always displayed the default MRRU value of 1520, regardless of what was negotiated between the PPP peers.

- DNS queries created by an AOS device may have been sent using source port UDP 4500, which would prevent responses from being properly received if **ip crypto** was enabled.

- On layer 3 switches running AOS R10.7.0 and higher, IP routing could not be enabled or disabled from the GUI.

- On certain NetVanta routers, it was not possible to remove SNMP users.

- The **show interface adsl** command was not available in user mode.

This section highlights the voice specific bug fixes in products running AOS version R10.10.0, unless otherwise noted.

- In rare cases, a third generation Total Access 900e or NetVanta 6250 acting as a SIP Proxy may have experienced a lockup requiring a power cycle to restore functionality.

- DNS queries created by an AOS IP business gateway could be sent using the DSP port range, which prevented responses from being properly received.

- In rare cases, it was possible for B-channel resources to be released improperly, preventing the channel from being used.

- When both **g711alaw** and **g711ulaw** were present in a CODEC list, G.711u would be chosen by modem passthrough, even if **g711alaw** appeared higher in the CODEC list than **g711ulaw**.

- The GUI presented a unsupported **Disable** setting for forward disconnect on a voice user.

- The GUI **Disabled: Busy on Idle** and **Disabled: Busy Immediately** administrative status options on an ISDN voice trunk were not supported and have been removed.

Errata

The following is a list of errata that still exist in all products running AOS version R10.10.0.

- In rare cases, ICMP probes may transmit faster than the configured period.

- If a switchport is configured as part of a monitor session, IGMP snooping will not function on that interface until the interface has been removed from the monitor session and the switch is rebooted.

- On a NetVanta 1235P using a copper SFP forced to 100 Mbps/full duplex on Gigabit interface 0/2, roughly 2 to 3 percent of the data traversing that port is dropped in a bursty manner.

- On the NetVanta 6240, SNMP traps for warm start and cold start are reversed.

- On a NetVanta 4430, information for an inserted SFP does not display correctly.

- On the Total Access 900e (third generation), NetVanta 6250, and NetVanta 4660, the output of the **show process cpu** command may incorrectly display the system load as higher than it actually is. This issue is purely cosmetic.

- Ethernet interfaces in third generation Total Access 900e units are not visible in the Data > IP Interfaces GUI menu. These interfaces are visible and can be configured from the System > Physical Interfaces menu instead.

- If a SHDSL module is installed and a circuit is connected while the interface is activated, the unit will reboot when the SHDSL loop begins to train and an EFM group interface is not present. The workaround is to configure an EFM group interface before connecting the SHDSL circuit to the module.

- The GetResponse after an SNMP inform can be rejected causing a retransmission of the inform message.

- Naming a hardware ACL the same name as a previously created and deleted IP ACL will result in the creation of an IP ACL with an implicit permit.

- Configuring a NetVanta 160's channel setting to **least-congested** may not properly adjust to the least congested channel available.

- On the NetVanta 4660, IPv6 multicast traffic matches **match broadcast** in an EVC map instead of **match multicast**.

- The Total Access 900e (third generation) and NetVanta 6250 send a cold start SNMP trap on reload instead of a warm start trap.

- Executing a TCL script that issues the command **show tech** may inhibit the ability to further run **show tech** commands until the AOS device has been rebooted.

- On the NetVanta 6250 and Total Access 900e Series (third generation), when running a large amount of traffic across a VPN tunnel with crypto FFE disabled, the unit will occasionally reboot citing a memory issue. Enabling the **ip crypto ffe** command prevents this reboot from occurring and is the desired setting when configuring VPN due to the performance increase of the FFE functionality.

- When reconfiguring an Ethernet interface on a NetVanta 4660 from **speed 1000 nonegotiate** to **speed auto**, the Ethernet link may not come up. Disabling and re-enabling the interface resolves the issue.

- In rare cases, ICMP probes may transmit faster than the configured period.

- The NetVanta 3130 does not include an option in the GUI to select Annex M.

- On very rare occasions, port T1 3/3 on an Octal T1 NIM can stop negotiating LCP when it is part of an MLPPP bundle. Rebooting the device will restore the interface.

- On a NetVanta 6310, if a SHDSL circuit with a detected bad splice retrains to a different line rate, the distance of the bad splice will display incorrectly.

- If the top level ATM interface on a SHDSL ATM NIM2 module is disabled and re-enabled, the ATM circuit will no longer be able to pass traffic. The ADTRAN unit must be rebooted to correct the problem.

- The T1 EFM counters do not increment as traffic passes through the device.

- With the SHDSL ATM NIM2, the NetVanta 6310 drops approximately 1 out of every 15K packets from the SHDSL to Ethernet direction.

- Performance throughput for 66 byte packets on the NetVanta 6355 4 T1/NAT test cases has decreased approximately 40 percent. All other packet sizes, including IMIX traffic, have acceptable throughput.

- Removing a USB modem from the USB NIM while active could cause the AOS device to reboot. Shutting down the demand interface being used by the modem prior to removing the modem will prevent this reboot.

- Removing port channels from the configuration of an ActivChassis device while under a heavy load can cause the ActivChassis device to reboot.

- In redundant Ethernet mode, if the Ethernet interface is configured with subinterfaces, the NetVanta 644 will reboot when one of the Ethernet cables is removed.

- Copying a file larger than 20 MB from flash memory of an AOS device via HTTP can cause the AOS device to reboot.

- In rare cases, SFP ports on a NetVanta 1535P could get stuck in an up/up state even when physically disconnected. Shutting down the port and re-enabling it resolves the issue.

- The GUI of a NetVanta device acting as a wireless access controller can not display the software currently running on a connected access point.

- The command **boot config flash** *<filename>* does not function properly on many AOS platforms.

- A host name entry in an ACL may fail to resolve to the correct IP address even though the router's host table reflects the correct IP address. Workaround: Use IP addresses instead of a host name when creating an ACL.

- In a 3G demand interface configuration, Syslog traffic can intermittently be sourced from an incorrect IP address.

- When command authorization is enabled, issuing a **show** command with the **realtime** parameter does not display the statistics in real time.

- The IP Top Talkers Graphs in the GUI will sometimes truncate IP addresses.

- Event messages indicating a firmware upgrade was attempted may appear in the AOS event log for NetVanta 160 APs that are not being upgraded.

- Having more than two entries in a Network Monitor ICMP probe test list displays **Tracked by: Nothing** in the **show probe** command output. This is only a display error; the probes still function correctly.

- In the GUI, VQM may display a loopback interface when no loopback interface is configured.

- When configured for **terminal length 0** certain **show** commands will not provide complete output.

- The VNS verification process does not remove inconsistent A-type records from the host table after the configured number of attempts.

- Configuring over 1200 VNS entries on the NetVanta 3448 causes a SIP pre-parse error.

- If the **ethernet-cfm** command is configured on a MEF Ethernet interface, the output of the following CLI commands is not formatted properly:

  1. **show ethernet cfm association**

  2. **show ethernet cfm stack**

  3. **show ethernet cfm mep local**

  4. **show ethernet cfm mep local detail**

- Wi-Fi multimedia (WMM), configured with the command **qos-mode wmm,** does not function properly on NetVanta 150 Access Points.

- When configured with two port channels, each with more than two members, one of the port channels may not evenly distribute traffic sent over the aggregated link.

- A NetVanta 1638 may occasionally display the following message on boot: HTTP_CLIENT CONNECT_TO_HTTP_SERVER errorCode 251. This does not cause a functional problem.

- The **called-number** command on a demand interface does not function properly.

- An ActivChassis stack cannot pass a full 10 Gbps of 64-byte frames over a single 10 Gb fiber link in a NetVanta Dual SFP+ XIM.

- It is possible to create a standard MAC ACL with the same name as an existing extended MAC ACL.

- If a line card has the same VCID as another line card, it cannot be added to the ActivChassis stack. The command **show ac detail** does not adequately point out the reason for this failure.

- If there are spanning tree topology changes in the network, spanning tree will reconverge at rates lower than rapid spanning tree (about 30 seconds).

- The NetVanta 1638 cannot boot from a firmware image stored on a connected USB flash drive.

- If an ActivChassis line card has NetVanta APs physically attached and if the line card is removed and re-added to the ActivChassis stack, the NetVanta APs will not properly indicate the AC that is controlling them. Bouncing the switchport on the line card or rebooting the ActivChassis master will resolve this issue.

- When using XAUTH with a VPN client, an AOS device requests CHAP authentication from the client but does not send a CHAP challenge payload. This can cause issues with VPN clients that expect to receive this payload.

- WEP encryption does not function properly on NetVanta 160s.

- Legacy switch stacking can not be configured if VLAN 2386 is created prior to enabling stacking.

- If a USB modem is physically disconnected from a USB WWAN NIM while active NIM is active, the demand interface being used by the modem will not automatically shut down. The demand interface should be disabled before removing the modem to prevent this issue.

- On the NetVanta 6310/6330, with FFE enabled, passing traffic from the Ethernet 0/1 interface out an Ethernet NIM2 can cause the Ethernet 0/1 interface to fail. The interface is recovered with a reboot. Disabling FFE on the Ethernet 0/1 interface prevents the issue.

- An SNMP walk of the NetVanta 6355 lists the physical address for the first interface index only.

- When a switchport on a NetVanta 1535P is running forced speed 100 Mbps in standard mode (not ActivReach mode), jumbo frames greater than 9000 bytes will be dropped.

- The chassis fans in some NetVanta PoE switches oscillate at a higher frequency than expected during periods when the switch is not being heavily utilized.

- The current AOS implementation of DHCP message construction may result in Windows XP machines not adopting the DNS servers defined in the DHCP Offer. A workaround using a numbered IP/hex option will allow the message to be constructed in a manner that Windows XP will accept. Microsoft also offers a hotfix to resolve this Windows issue.

- The system clock may drift and lose synchronization with higher stratum devices when NTP is enabled. This issue only affects the NetVanta 3448, 3458, and 6240 products.

- NetVanta 1500 and NetVanta 1600 Series switches may not properly prioritize traffic across port channels.

- Certain OIDs in the Bridge-MIB may not return a value on a second generation NetVanta 123X switch.

- The Layer 3 switch incorrectly reports forwarded frames statistics when subjected to a traffic stream consisting of invalid IPv4 header checksum values. The frames are properly dropped by the switch, but the statistics counter erroneously reports frames being forwarded

- The **vap-reference** command will not replicate VLAN IDs for an AP unless 802.1q encapsulation has been manually enabled on the AP expecting to receive the replicated configuration.

- Updating PRL values on a Sprint 3G CDMA NIM may not function properly.

- The parent map QoS statistics must be cleared in order to clear the child map statistics.

- A specific QoS map entry cannot be cleared without the entire map being cleared.

- In rare cases, when an IP PBX and IP phones are both passing through a NAT and the SIP proxy on an AOS device, some call flows can enter a one-way-audio state. Enabling the **ip rtp firewall-traversal enforce-symmetric-ip** command from the Global Configuration mode works around the issue.

- A large enough drift in the system clock can cause an error when the NTP server attempts to synchronize.

- On a NetVanta 1335, a switchport that is configured as a port channel cannot change the edge port mode and cannot be changed from a port channel to another configuration using the GUI.

- The **show interfaces** command output for multilink Frame Relay interfaces will display an incorrect available bandwidth value when a physical link residing in the bundle is down.

- When a QoS map is applied to a VLAN interface, the NetVanta 3448 and 3458 platforms fail to reset QoS map statistics after the **clear counters** command is issued. The **clear qos map** command will clear the statistics properly.

- The VLAN ID for an access point cannot be changed using the GUI.

- The **show atm pvc** counters do not increment.

- The **show bridge** *<number>* command might not show any entries.

- Using SCEP, AOS devices can fail to enroll certificates to a Red Hat Certificate Authority.

- On a NetVanta 1534, if an interface is configured as a port mirror destination (**monitor session 1 destination interface gigabit-switchport** *<slot/port>*), then port authentication will no longer be configurable on that port, even after removal of the **port mirror** command from the configuration.

- A VLAN interface for a VLAN that is not accessed by other switchports will not be advertised by GVRP.

- The NetVanta 1638 fails to count output discards when throttling down the transmission of traffic (as a result of receiving pause frames).

- The input/output rate counters for a T1 interface are exaggerated for approximately 15 seconds after clearing them.

- The GUI statistics page for the SHDSL interface does not refresh when in 4-wire mode.

- The GUI shows invalid line rate options for a SHDSL interface in 2-wire mode.
- The GUI line rate options for a SHDSL interface do not match those of the CLI.
- Adding an IPv6-enabled PPP interface to a bridge group does not require the user to first remove the IPv6 address from the PPP interface.
- Configuring a port channel on a NetVanta 3448 can cause the STP topology to become unstable.
- Switch platforms count input discards on the ingress interface when receiving 802.3x pause frames.
- Sierra Wireless USB305 3G modems are sometimes not recognized by the USB WWAN NIM.
- Changing the route metric value using **ipv6 address autoconfig default metric** *<value>* command does not change the administrative distance of the default route.
- The NetVanta 5305 can drop some traffic prioritized by class-based weighted fair queuing (CBWFQ) on a MLPPP interface when a stand-alone QoS map is applied.
- The DNS server can take action on received DNS responses that are not associated with an open request, posing a DoS attack vulnerability.
- A NetVanta 5305 can stop passing traffic for brief intervals when negotiating frequent VPN tunnels using Diffie Hellman Group 5.
- The output queue statistics on an Ethernet interface can fail to display output queue drops when FIFO is enabled.
- Prioritized traffic can be dropped at a significant rate on PPP interfaces when using a parent QoS map (that references a child map with priority allocation), if the shaped rate is configured for more than 75 percent of the line rate.
- The CLI does not display the correct value for Required Bandwidth in the event message generated by applying a QoS map.
- The output from **show qos map interface ppp 1** displays incorrect values for the number of packets sent.
- The NetVanta 5305 can fail to generate an event message to confirm that a QoS map has been applied.
- EAP Identity responses from a wireless client that do not contain an Identity field can result in a malformed RADIUS packet created by the NetVanta 150.
- NetVanta 150s might not properly handle immediate Access-Accept responses to Access-Request messages.
- In certain instances, an SFP port on a NetVanta 1544 will not function with RAD MiRiCi-E3T3 SFPs.
- 3G connections using a NetVanta USB WWAN NIM and a Sierra Lightning modem can fail.
- The name of a deleted IPv4 ACL cannot be used to name a new IPv6 ACL.
- The cellular interface can trigger a core dump on a NetVanta 3448 when changing states.
- Port mirroring on a NetVanta 1544 switch may not mirror traffic in both directions.
- Proxy user templates cannot modify SDP IP addresses correctly in certain applications.
- Browsing to the Switchports menu from the Port Security menu on the NetVanta 1335 WiFi GUI results in a 503 Service Unavailable error.
- Connecting a Novatel U547 USB modem to the NetVanta USB WWAN NIM can cause the router to reboot.
- A startup configuration with greater than 2743 IPv6 prefixes on a VLAN interface causes the NetVanta 3448 to reboot.

- A Spanning Tree L2 broadcast storm lasting several hours can cause the NetVanta 1335 to reboot.

- The L3 Switch Header Error and Discard counters on the NetVanta 1544P (second generation) do not increment.

- The pass phrase for the Wireless Wizard does not persist across reboots.

- Removing and restoring cross-connects multiple times can cause the PC configuration thread depth to reach 100 percent.

- Rapidly removing and adding cross-connects using the CONSOLE port and SSH at the same time can result in a reboot.

- When a switchport on a NetVanta 3458 is configured for **port-security**, it does not receive BPDUs. If multiple connections between the NetVanta 3458 and another switch are made, a switching loop could occur because both ports will automatically enter a forwarding state even though the Spanning Tree protocol should cause one port to enter a blocking state.

- Booting a second generation NetVanta 1534 or NetVanta 1535 with greater than 20 NetVanta 160 Access Points (APs) attached can cause some of the APs to pull incomplete configuration from the NetVanta switch, if they are being used as an access controller for the APs.

- Using the command **debug ethernet cfm loopback request domain** *<domain name>* to filter Ethernet CFM loopback debugs may not display the debug output to the console. Removing the filter and using the **debug ethernet cfm loopback request** command will function properly.

- The output of the command **show ethernet cfm mep loca**l may display an incorrect maintenance association for a MEP ID if multiple maintenance associations are configured on the unit.

- The NetVanta 6240 should send warm_start SNMP traps when the unit is told to reboot by software. It should only send cold_start traps when the power is cycled. Instead, it is sending cold_start traps, even when reloaded by software.

- In the VQM RTP Monitoring menu, the Source IPs and Interfaces menus have invisible data points that appear and display data when the cursor hovers over them. The invisible data point information duplicates a visible data point and can usually be found hidden above the visible data point.

- In the VQM RTP Monitoring menu, the refresh button refreshes the displayed graphic, but it also duplicates information in the lower part of the menu. Also, when the cursor hovers over a data point, it displays multiple instances of the same data.

The following is a list of voice specific errata that exist in products running AOS version R10.10.0**, unless otherwise noted.**

- FXS users that are members of a Metaswitch Business Group cannot transfer calls when the Music on Hold feature is enabled on the Business Group.

- If two Diversion headers are appended with a comma, AOS only preserves the second Diversion header.

- When an FXS interface is configured for neon message waiting indication (MWI), the FXS port will lock up if a fault condition is experienced while the neon MWI is lit.

- SIP proxy failover may not function correctly when a SIP access class is applied to inbound SIP traffic.

- When outbound requests pass through the proxy and UDP is the specified transport, the transport-param may be removed.

- Call waiting caller ID may not function properly when received via a SIP INFO message instead of a new INVITE.

- On the NetVanta 644, hairpinned TDM calls may not have a talk path.

- In rare cases, the NetVanta 644 may reboot if a PRI interface goes down and then comes back up in quick succession.

- The command **ip mgcp qos dscp** *<value>* will not take effect until either **ip mgcp** is disabled and then re-enabled or the AOS device is reset.

- When the SIP server monitor clears the primary SIP server from a delayed state due to a failure of the secondary SIP server, there will be a 60-second delay until a SIP registration is attempted to the primary SIP server. This delay will not occur if the SIP server monitor is clearing the secondary SIP server from a delayed state due to a failure of the primary SIP server.

- When **mwi-member** is configured on a ring group, received NOTIFY messages will not match against SIP identities/aliases configured on the ring group.

- When using **ringback override 180**, it is possible to have one-way or no audio after an inbound call completes due to the AOS device resending stale SDP.

- Invalid characters are allowed in a host name for the SIP server on a voice trunk.

- If a call is ringing due to a SIP 180 response for longer than the value of **ip rtp session timeout** (45 seconds by default), there will be no talk path in the SIP to TDM direction when the call is answered.

- When **voice codec-priority user** is configured, calls to a ring group can result in a less preferable CODEC being selected.

- If an ADTRAN unit is configured with single call appearance mode, forwarded calls on a PRI trunk will fail.

- Receiving a 183 after a 183 on hairpin calls when using media anchoring could result in no early media if the SDP in the second 183 differs from the first.

- Echo cancellation is not enabled on 3-way calls when using the local conferencing feature.

- AOS does not properly handle more than two Diversion headers that are appended with a comma.

Upgrade Instructions

Upgrading ADTRAN products to the latest version of AOS firmware is explained in detail in the configuration guide *Upgrading Firmware in AOS*, available at https://supportforums.adtran.com.

Documentation Updates

The following documents were updated or newly released for AOS version R10.10.0 or later specifically for the AOS products. These documents can be found on ADTRAN's Support Forum available at https://supportforums.adtran.com. You can select the hyperlink below to be immediately redirected to the document.

- *AOS Command Reference Guide*

- *SNMP in AOS*

- *Configuring Ethernet OAM Using Y.1731*

- *Configuring IGMP Snooping*

- *Layer2/Layer 3 Carrier Ethernet Services in AOS*