

Release Notes - Maintenance

OmniSwitch 6465, 6860(E), 6860N,
6865, 6900, 6900-V72/C32, 6900-
X48C6/T48C6

Release 8.7.280.R01

The following is a list of issues that have been identified and corrected in this AOS software release along with any new features that have been introduced. This document is intended to be used as a pre-upgrade guide and does not replace the GA Release Notes which are created for every GA release of software and should be read prior to performing a maintenance release upgrade.

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Fixed Problem Reports Between Builds 277 (GA) and 280 (MR)

CR	Description
Case: 00487069 CRAOS8X-21451	Summary: WATERMARK_HIGH In Zone Low Memory Dumping. Explanation: The aluSubagent memory leak has been addressed by reverting from net-snmp-5.8 to the previous net-snmp-5.7.3 version. Additionally, net-snmp-5.7.3 does not support SHA224, SHA256 and SHA384 authentication algorithms added in 8.7R1 (CRAOS8X-21560).

Open Problem Reports and Known Issues

CR	Description
CRAOS8X-21560	Summary: AAA users with SHA224, SHA256, SHA384 authentication algorithms with or without AES encryption for authenticating the SNMP PDU for the user is not supported. These users can be used for switch authentication but cannot be used for SNMP operations. Workaround: This is due to reverting back to the previous net-snmp-5.7.3 version to address CRAOS8X-21451. There is no known workaround at this time.

SPB Over Shared Ethernet

SPB over shared Ethernet was introduced in the 8.7R1 GA release. By default, SPB-ISIS operates over point-to-point (P2P) links which allows only one adjacency on an SPB network interface. However, an SPB network interface can be configured to allow multiple adjacencies to form on the interface. This is particularly useful for extending an SPB backbone over a multiple access (multi-access) domain, such as a shared, service provider network or even connect to another SPB-ISIS domain.

Prerequisite: Software releases prior to AOS Release 8.7R1 do not process pseudo-node LSPs required for this feature. SPB over shared Ethernet requires all SPB nodes in the network to be upgraded to 8.7R1 or above. The network may become unstable or experience an outage if deployed with pre-8.7R1 nodes in the network.

Please refer to the 8.7R1 GA release notes for additional information.

New Features/Enhancements Introduced in 8.7.280.R01

There are no new features in this release.

Technical Support

Alcatel-Lucent technical support is committed to resolving our customer's technical issues in a timely manner. Customers with inquiries should contact us at:

Region	Phone Number
North America	800-995-2696
Latin America	877-919-9526
European Union	+800 00200100 (Toll Free) or +1(650)385-2193
Asia Pacific	+65 6240 8484

Email: ebg_global_supportcenter@al-enterprise.com

Internet: Customers with service agreements may open cases 24 hours a day via Alcatel-Lucent's Enterprise portal at: businessportal2.alcatel-lucent.com.

Upon opening a case, customers will receive a case number and may review, update, or escalate support cases on-line. Please specify the severity level of the issue per the definitions below. For fastest resolution, please have telnet or dial-in access, hardware configuration—module type and revision by slot, software revision, and configuration file available for each switch.

Severity 1 Production network is down resulting in critical impact on business—no workaround available.

Severity 2 Segment or Ring is down or intermittent loss of connectivity across network.

Severity 3 Network performance is slow or impaired—no loss of connectivity or data.

Severity 4 Information or assistance on product feature, functionality, configuration, or installation.

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Appendix A: General Upgrade Requirements and Best Practices

This section is to assist with upgrading an OmniSwitch. The goal is to provide a clear understanding of the steps required and to answer any questions about the upgrade process prior to upgrading. Depending upon the AOS version, model, and configuration of the OmniSwitch various upgrade procedures are supported.

Standard Upgrade - The standard upgrade of a standalone chassis or virtual chassis (VC) is nearly identical. All that's required is to upload the new image files to the *Running* directory and reload the switch. In the case of a VC, prior to rebooting the Master will copy the new image files to the Slave(s) and once the VC is back up the entire VC will be synchronized and running with the upgraded code.

ISSU - The In Service Software Upgrade (ISSU) is used to upgrade the software on a VC or modular chassis with minimal network disruption. Each element of the VC is upgraded individually allowing hosts and switches which are dual-homed to the VC to maintain connectivity to the network. The actual downtime experienced by a host on the network should be minimal but can vary depending upon the overall network design and VC configuration. Having a redundant configuration is suggested and will help to minimize recovery times resulting in sub-second convergence times.

Virtual Chassis - The VC will first verify that it is in a state that will allow a successful ISSU upgrade. It will then copy the image and configuration files of the ISSU specified directory to all of the Slave chassis and reload each Slave chassis from the ISSU directory in order from lowest to highest chassis-id. For example, assuming chassis-id 1 is the Master, the Slave with chassis-id 2 will reload with the new image files. When Slave chassis-id 2 has rebooted and rejoined the VC, the Slave with chassis -id 3 will reboot and rejoin the VC. Once the Slaves are complete they are now using the new image files. The Master chassis is now rebooted which causes the Slave chassis to become the new Master chassis. When the original Master chassis reloads it comes back as a Slave chassis. To restore the role of Master to the original Master chassis the current Master can be rebooted and the original Master will takeover, re-assuming the Master role.

Modular Chassis - The chassis will first verify that it is in a state that will allow a successful ISSU upgrade. It will then copy the image and configuration files of the ISSU specified directory to the secondary CMM and reload the secondary CMM which becomes the new primary CMM. The old primary CMM becomes the secondary CMM and reloads using the upgraded code. As a result of this process both CMMs are now running with the upgraded code and the primary and secondary CMMs will have changed roles (i.e., primary will act as secondary and the secondary as primary). The individual NIs can be reset either manually or automatically (based on the NI reset timer).

Supported Upgrade Paths and Procedures

The following releases support upgrading using ISSU. All other releases support a Standard upgrade only.

Platform	AOS Releases Supporting ISSU to 8.7.280.R01 (MR)
OS6465	8.5.196.R04 (GA) 8.6.289.R01 (GA) 8.6.299.R01 (MR) 8.6.189.R02 (GA) 8.6.203.R02 (reGA) 8.7.277.R01 (GA)
OS6860(E)	8.5.196.R04 (GA) 8.6.289.R01 (GA) 8.6.299.R01 (MR) 8.6.189.R02 (GA) 8.6.203.R02 (reGA) 8.7.277.R01 (GA)
OS6860N	8.7.277.R01 (GA)
OS6865	8.5.196.R04 (GA) 8.6.289.R01 (GA) 8.6.299.R01 (MR) 8.6.189.R02 (GA) 8.6.203.R02 (reGA) 8.7.277.R01 (GA)
OS6900	8.5.196.R04 (GA) 8.6.289.R01 (GA) 8.6.299.R01 (MR) 8.6.189.R02 (GA) 8.6.203.R02 (reGA) 8.7.277.R01 (GA)
OS6900-V72/C32	8.5.196.R04 (GA) 8.6.289.R01 (GA) 8.6.299.R01 (MR) 8.6.189.R02 (GA) 8.6.203.R02 (reGA) 8.7.277.R01 (GA) See Appendix E when upgrading an OS6900-V72/C32.
OS6900-X48C6/T48C6	8.7.277.R01 (GA)

8.7.280.R01 ISSU Supported Releases

Prerequisites

These upgrade instructions require that the following conditions exist, or are performed, before upgrading. The person performing the upgrade must:

- Be the responsible party for maintaining the switch's configuration.
- Be aware of any issues that may arise from a network outage caused by improperly loading this code.

- Understand that the switch may need to be rebooted and network access may be affected by following this procedure.
- Have a working knowledge of the switch to configure it to accept an FTP connection through the EMP or Network Interface (NI) Ethernet port.
- Read the GA Release Notes prior to performing any upgrade for information specific to this release.
- Ensure there is a current certified configuration on the switch so that the upgrade can be rolled-back if required.
- Verify the current versions of UBoot and FPGA. If they meet the minimum requirements, (i.e. they were already upgraded during a previous AOS upgrade) then only an upgrade of the AOS images is required.
- Depending on whether a standalone chassis or VC is being upgraded, upgrading can take from 5 to 20 minutes. Additional time will be needed for the network to re-converge.
- The examples below use various models and directories to demonstrate the upgrade procedure. However, any user-defined directory can be used for the upgrade.
- If possible, have EMP or serial console access to all chassis during the upgrade. This will allow you to access and monitor the VC during the ISSU process and before the virtual chassis has been re-established.
- Knowledge of various aspects of AOS directory structure, operation and CLI commands can be found in the Alcatel-Lucent OmniSwitch User Guides. Recommended reading includes:
 - Release Notes - for the version of software you're planning to upgrade to.
 - The AOS Switch Management Guide
 - Chapter - Getting Started
 - Chapter - Logging Into the Switch
 - Chapter - Managing System Files
 - Chapter - Managing CMM Directory Content
 - Chapter - Using the CLI
 - Chapter - Working With Configuration Files
 - Chapter - Configuring Virtual Chassis

Do not proceed until all the above prerequisites have been met. Any deviation from these upgrade procedures could result in the malfunctioning of the switch. All steps in these procedures should be reviewed before beginning.

Switch Maintenance

It's recommended to perform switch maintenance prior to performing any upgrade. This can help with preparing for the upgrade and removing unnecessary files. The following steps can be performed at any time prior to a software upgrade. These procedures can be done using Telnet and FTP, however using SSH and SFTP/SCP are recommended as a security best-practice since Telnet and FTP are not secure.

1. Use the command 'show system' to verify current date, time, AOS and model of the switch.

```
6900-> show system
System:
  Description: Alcatel-Lucent OS6900-X20 8.6.289.R01 GA, July 14, 2019.,
  Object ID: 1.3.6.1.4.1.6486.801.1.1.2.1.10.1.1,
  Up Time: 9 days 0 hours 1 minutes and 44 seconds,
  Contact: Alcatel-Lucent, http://enterprise.alcatel-lucent.com,
  Name: 6900,
  Location: Unknown,
  Services: 78,
  Date & Time: MON AUG 12 2019 06:55:43 (UTC)
Flash Space:
  Primary CMM:
```

```
Available (bytes): 1111470080,  
Comments       : None
```

2. Remove any old tech_support.log files, tech_support_eng.tar files:

```
6900-> rm *.log  
6900-> rm *.tar
```

3. Verify that the /flash/pmd and /flash/pmd/work directories are empty. If they have files in them check the date on the files. If they are recently created files (<10 days), contact Alcatel-Lucent Service & Support. If not, they can be deleted.

4. Use the 'show running-directory' command to determine what directory the switch is running from and that the configuration is certified and synchronized:

```
6900-> show running-directory
```

```
CONFIGURATION STATUS  
Running CMM           : MASTER-PRIMARY,  
CMM Mode              : VIRTUAL-CHASSIS MONO CMM,  
Current CMM Slot      : CHASSIS-1 A,  
Running configuration : vc_dir,  
Certify/Restore Status : CERTIFIED  
SYNCHRONIZATION STATUS  
Running Configuration : SYNCHRONIZED
```

If the configuration is not certified and synchronized, issue the command 'write memory flash-synchro':

```
6900-> write memory flash-synchro
```

6. If you do not already have established baselines to determine the health of the switch you are upgrading, now would be a good time to collect them. Using the 'show tech-support' series of commands is an excellent way to collect data on the state of the switch. The show tech support commands automatically create log files of useful show commands in the /flash directory. You can create the tech-support log files with the following commands:

```
6900-> show tech-support  
6900-> show tech-support layer2  
6900-> show tech-support layer3
```

Additionally, the 'show tech-support eng complete' command will create a TAR file with multiple tech-support log files as well as the SWLOG files from the switches.

```
6900-> show tech-support eng complete
```

It is a good idea to offload these files and review them to determine what additional data you might want to collect to establish meaningful baselines for a successful upgrade.

- If upgrading a standalone chassis or VC using a standard upgrade procedure please refer to [Appendix B](#) for specific steps to follow.
- If upgrading a VC using ISSU please refer to [Appendix C](#) for specific steps to follow.

Appendix B: Standard Upgrade - OmniSwitch Standalone or Virtual Chassis

These instructions document how to upgrade a standalone or virtual chassis using the standard upgrade procedure. Upgrading using the standard upgrade procedure consists of the following steps. The steps should be performed in order:

1. Download the Upgrade Files

Go to the Service and Support website and download and unzip the upgrade files for the appropriate model and release. The archives contain the following:

- OS6465 - Nos.img (**Note:** If upgrading an OS6465-P28, upgrading the FPGA to version 0.7 may be required to address CRAOS8X-12042. AOS must be upgraded prior to upgrading the FPGA. See [Appendix D.](#))
- OS6860 - Uos.img
- OS6860N - Uosn.img
- OS6865 - Uos.img (**Note:** If upgrading an OS6865-U28X, upgrading the FPGA to version 0.12 may be required to address CRAOS8X-4150. AOS must be upgraded prior to upgrading the FPGA. See [Appendix D.](#))
- OS6900 - Tos.img
 - If upgrading an OS6900-X72, upgrading the FPGA to version 0.1.11 is required to address CRAOS8X-11118. See [Appendix D.](#))
 - If upgrading an OS6900-X72, upgrading the u-boot/miniboot to version 8.6.189.R02 is required to address CRAOS8X-11118. See [Appendix D.](#))
- OS6900-V72/C32 - Yos.img. See [Appendix E.](#)
- OS6900-X48C6/T48C6 - Yos.img
- imgsha256sum (not required) -This file is only required when running in Common Criteria mode. Please refer to the Common Criteria Operational Guidance Document for additional information.

2. FTP the Upgrade Files to the Switch

FTP the image files to the *Running* directory of the switch you are upgrading. The image files and directory will differ depending on your switch and configuration.

3. Upgrade the image file

Follow the steps below to upgrade the image files by reloading the switch from the *Running* directory.

```
OS6900-> reload from working no rollback-timeout
Confirm Activate (Y/N) : y
This operation will verify and copy images before reloading.
It may take several minutes to complete....
```

If upgrading a VC the new image file will be copied to all the Slave chassis and the entire VC will reboot. After approximately 5-20 minutes the VC will become operational.

4. Verify the Software Upgrade

Log in to the switch to confirm it is running on the new software. This can be determined from the login banner or the **show microcode** command.

```
OS6900-> show microcode
```

Package	Release	Size	Description
Tos.img	8.7.280.R01	239607692	Alcatel-Lucent OS

```
6900-> show running-directory
CONFIGURATION STATUS
Running CMM           : MASTER-PRIMARY,
CMM Mode              : VIRTUAL-CHASSIS MONO CMM,
Current CMM Slot     : CHASSIS-1 A,
Running configuration : WORKING,
Certify/Restore Status : CERTIFY NEEDED
SYNCHRONIZATION STATUS
Running Configuration : SYNCHRONIZED
```

Note: If there are any issues after upgrading the switch can be rolled back to the previous certified version by issuing the `reload from certified no rollback-timeout` command.

5. Certify the Software Upgrade

After verifying the software and that the network is stable, use the following commands to certify the new software by copying the *Running* directory to the Certified directory.

```
OS6900-> copy running certified

-> show running-directory
CONFIGURATION STATUS
Running CMM           : MASTER-PRIMARY,
CMM Mode              : VIRTUAL-CHASSIS MONO CMM,
Current CMM Slot     : CHASSIS-1 A,
Running configuration : WORKING,
Certify/Restore Status : CERTIFIED
SYNCHRONIZATION STATUS
Running Configuration : SYNCHRONIZED
```

Appendix C: ISSU - OmniSwitch Chassis or Virtual Chassis

These instructions document how to upgrade a modular chassis or virtual chassis using ISSU. Upgrading using ISSU consists of the following steps. The steps should be performed in order:

1. Download the Upgrade Files

Go to the Service and Support Website and download and unzip the ISSU upgrade files for the appropriate platform and release. The archive contains the following:

- OS6465 - Nos.img (**Note:** If upgrading an OS6465-P28, upgrading the FPGA to version 0.7 may be required to address CRAOS8x-12042. AOS must be upgraded prior to upgrading the FPGA. See [Appendix D.](#))
- OS6860 - Uos.img
- OS6860N - Uosn.img
- OS6865 - Uos.img (**Note:** If upgrading an OS6865-U28X, upgrading the FPGA to version 0.12 may be required to address CRAOS8X-4150. AOS must be upgraded prior to upgrading the FPGA. See [Appendix D.](#))
- OS6900 - Tos.img
 - If upgrading an OS6900-X72, upgrading the FPGA to version 0.1.11 is required to address CRAOS8X-11118. See [Appendix D.](#))
 - If upgrading an OS6900-X72, upgrading the u-boot/miniboot to version 8.6.189.R02 is required to address CRAOS8X-11118. See [Appendix D.](#))
- OS6900-V72/C32 - Yos.img. See [Appendix E.](#)
- OS6900-X48C6/T48C6 - Yos.img
- imgsha256sum (not required) -This file is only required when running in Common Criteria mode. Please refer to the Common Criteria Operational Guidance Document for additional information.

Note: The following examples use `issu_dir` as an example ISSU directory name. However, any directory name may be used. Additionally, if an ISSU upgrade was previously performed using a directory named `issu_dir`, it may now be the *Running Configuration*, in which case a different ISSU directory name should be used.

2. Create the new directory on the Master for the ISSU upgrade:

```
OS6900-> mkdir /flash/issu_dir
```

3. Clean up existing ISSU directories

It is important to connect to the Slave chassis and verify that there is no existing directory with the path `/flash/issu_dir` on the Slave chassis. ISSU relies upon the switch to handle all of the file copying and directory creation on the Slave chassis. For this reason, having a pre-existing directory with the same name on the Slave chassis can have an adverse effect on the process. To verify that the Slave chassis does not have an existing directory of the same name as the ISSU directory on your Master chassis, use the internal VF-link IP address to connect to the Slave. In a multi-chassis VC, the internal IP addresses on the Virtual Fabric Link (VFL) always use the same IP addresses: 127.10.1.65 for Chassis 1, 127.10.2.65 for Chassis 2, etc. These addresses can be found by issuing the debug command `'debug show virtual-chassis connection'` as shown below:

```
OS6900-> debug show virtual-chassis connection
          Address          Address
Chas  MAC-Address      Local IP      Remote IP      Status
```



```
OS6900-> show microcode
/flash/working
Package      Release      Size      Description
-----+-----+-----+-----
Tos.img      8.7.280.R01 239607692 Alcatel-Lucent OS
```

11. Certify the Software Upgrade

After verifying the software and that the network is stable, use the following commands to certify the new software by copying the *Running* directory to the *Certified* directory:

```
OS6900-> copy running certified

-> show running-directory
CONFIGURATION STATUS
Running CMM           : MASTER-PRIMARY,
CMM Mode              : VIRTUAL-CHASSIS MONO CMM,
Current CMM Slot     : CHASSIS-1 A,
Running configuration : issu_dir,
Certify/Restore Status : CERTIFIED
SYNCHRONIZATION STATUS
Flash Between CMMs   : SYNCHRONIZED
Running Configuration : SYNCHRONIZED
```

Appendix D: FPGA Upgrade Procedure

The following CRs can be addressed by performing an FPGA/CPLD upgrade on the respective models.

CR	Summary
CRAOS8X-12042	OS6465-P28 - Switch does not shutdown after crossing danger threshold temperature. (FPGA version 0.7)
CRAOS8X-7207	OS6560-P24Z24,P24Z8,P48Z16 (903954-90) - Chassis reboots twice to join a VC. (FPGA version 0.7)
CRAOS8X-4150	OS6865-U28X - OS6865-U28X VC LED status behavior. (FPGA version 0.12)
CRAOS8X-11118	OS6900-X72 - 1000BaseT SFP interface up before system ready (8.7R1) - (U-boot version 8.6.R02.189) - (FPGA version 0.1.11)

Note: AOS must be upgraded prior to performing an FPGA upgrade.

1. Download and extract the upgrade archive from the Service & Support website. In addition to the AOS images, the archive will also contain an FPGA upgrade kit and U-boot file, for example.

- CPLD File - fpga_kit_6948
- U-boot.8.6.R02.189.tar.gz

2. FTP (Binary) the files to the /flash directory on the primary CMM.

3. Enter the following to upgrade the FPGA. The 'all' parameter should be used when upgrading with an FPGA kit. Additionally, this will update all the elements of a VC, for example:

```
-> update fpga-cpld cmm all file fpga_kit_6948
Parse /flash/fpga_kit_6948
fpga file: OS6900-X72_CPLD_V01B_20191204.vme
Please wait...
fpga file: OS6900-X72_CPLD_V01B_20191204.vme
update chassis 1
Starting CMM ALL FPGA Upgrade
CMM 1/1
Successfully updated
Reload required to activate new firmware.
```

4. If required, a u-boot upgrade can then be performed, for example:

```
-> update uboot cmm all file /flash/u-boot.8.6.R02.189.tar.gz
Starting CMM ALL UBOOT Upgrade
Please wait...
CMM 1/1
u-boot-ppc_2040.bin: OK
U-boot successfully updated
Successfully updated
```

5. Once complete, a reboot is required.

Appendix E: OS6900-V72/C32 Flash Cleanup Procedure / FEC Disable

Prior to performing a standard or ISSU upgrade on an OS6900-V72/C32 it's required to perform a cleanup of some files in the flash memory. This procedure must be performed when upgrading from the releases listed below. A script file has been created that will automatically perform the file cleanup on a VC or standalone chassis. It must be run from the maintenance shell prior to upgrading.

Additionally, the script will prompt the user to confirm if an ISSU upgrade is being performed. If an ISSU upgrade is being performed the script will create an additional file (*issu_no_fec_vfl_pre_86R2*) in the **/flash** directory on both chassis in the VC. This file will prevent (Forward Error Correction) FEC from being automatically enabled on any 10G/40G VFLs, which is the default setting beginning in 8.6R2, after the upgrade to 8.6R2. This prevents a FEC mismatch between the Master and Slave chassis (enabled on Slave chassis / disabled on the Master chassis) during the ISSU upgrade.

- Standard Upgrade
 - If upgrading from AOS Release 8.5R02, 8.5R03, or 8.5R04 - Script file will perform flash cleanup.
 - If upgrading from AOS Release 8.6R01 - Script file not needed.
- ISSU Upgrade
 - If upgrading from AOS Release 8.5R04 - Script file will perform flash cleanup and FEC disable.
 - If upgrading from AOS Release 8.6R01 - Script file will perform FEC disable.
- Script file name: *pre_update_script.sh* (Available from service & support website)
 - **Note:** An error, **"/mnt/chassis*: No such file or directory"**, may be displayed when running the script on a standalone chassis. This error has no affect on the upgrade.

1. FTP the script file to the **/flash** directory on the Master chassis of the VC or standalone chassis.
2. OS6900-> su
3. YUKON #-> cd /flash
4. YUKON #-> sh pre_update_script.sh
5. YUKON #-> exit
6. OS6900->
7. You may now proceed to performing a standard or ISSU upgrade.
8. If performing an ISSU upgrade, perform the following after the upgrade is complete:

- Delete the *issu_no_fec_vfl_pre_86R2* file from the **/flash** directory.
- Enable FEC on the VFL ports using the **'interfaces chassis/slot/port fec auto'** command. Enable FEC on a pair-by-pair basis.